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Narrowing the Economic Gap: The Impact of Technological Innovation on Access and Welfare of the Poor

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A B S T R A C T

Technological innovation has great potential to improve economic welfare and reduce poverty, especially for people in lower socioeconomic strata. However, despite the rapid development of technology, inequality of access remains a major challenge to equitable distribution of its benefits. Access to technology in various sectors of the economy is often limited by inadequate infrastructure, lack of digital skills, and high costs of accessing technology tools. This causes limitations for the poor to utilize technology to improve their productivity, income and welfare. Therefore, a key challenge is how to ensure that low socioeconomic groups can access and utilize technology effectively. The importance of policies that support equitable access to technology, such as the provision of affordable digital infrastructure, digital skills training programs, and collaboration between the government, private sector, and civil society, are key to creating economic justice. Without concrete measures to address these access gaps, technology risks exacerbating existing inequalities rather than reducing them. For this reason, strengthening the community's capacity to access and utilize technology can be a long-term solution to achieve equitable economic welfare at all levels of society.

INTRODUCTION

Technological advancements affect almost every aspect of life, including the economy. Technological innovations in sectors such as agriculture, manufacturing, finance and healthcare have opened up new opportunities to increase productivity and efficiency. In many countries, especially developing ones, technology is considered the key to accelerating the process of economic development and reducing socio-economic inequality. Technology enables greater access to information, markets and employment opportunities, which can strengthen competitiveness and boost job creation. Technologies such as digital financial applications and e-commerce services have enabled people with limited access to engage in economic activities that were previously out of reach. However, despite the great potential, the positive impact of technology on poverty reduction and improved economic welfare still depends on various factors, including the readiness of supporting infrastructure and policies.

Technology can directly contribute to poverty reduction and the creation of equal economic opportunities in communities. In recent years, the emergence of digital platforms such as mobile phone-based payment services and micro-lending apps has enabled individuals previously unreached by the traditional banking system to access the financing they need. Advanced agricultural technologies that are more environmentally friendly are supporting the sustainability of farming businesses, increasing crop yields and opening up global markets for smallholder farmers. Nonetheless, challenges related to the digital divide remain, where some communities, especially in rural areas or with low economic backgrounds, are not yet able to fully access or optimally utilize technology. Therefore, it is important to evaluate how technology can be integrated with inclusive economic policies to bridge the socio-economic gap and realize more equitable economic justice.

The first major issue relates to the limited access to technology in many regions, especially in developing countries. While technology can accelerate economic progress, not all levels of society have equal access to these innovations. In rural or remote areas, technology infrastructure is often inadequate, such as the lack of a stable internet

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network and the availability of affordable hardware. This creates inequality in the utilization of technology, where only a small portion of the population is able to benefit from it. As a result, the gap between those with access to technology and those without is widening, leading to greater economic inequality (Chen, 2018). Another problem faced is the limited technological skills or expertise among the poor. While technology can offer many economic opportunities, its users need to have the ability to utilize it optimally. Many individuals from low economic backgrounds do not have access to the training or education required to understand and operate modern technology. This causes them to be marginalized in the use of technology that can help them improve their economic well-being, and only certain groups can take advantage of these opportunities (Fuchs, 2020).

Another problem is the dependence on technology that can exacerbate social inequality. Technology, while beneficial for improving efficiency and market access, can also create an over-reliance on digital systems, especially for those who are unable to adapt quickly. This dependency creates economic instability if the technology is disrupted or if the digital system is unevenly distributed. Therefore, inequalities in technology adoption rates between more developed and less developed societies can further exacerbate existing economic inequalities (Gershuny, 2019).

The importance of examining the link between technology and economic justice cannot be overstated, given the increasingly dominant role of technology in accelerating global economic development. Technology, if harnessed properly, has the potential to create more equitable economic opportunities, aid poverty reduction and improve welfare. However, without equitable access to and understanding of technology, the gap between those who are able to access technology and those who are not can widen, exacerbating socio-economic inequality. Therefore, it is important to understand how inequalities in technology access and utilization can impact broader economic inequality and how innovative solutions can be found to reduce these barriers.

Moreover, examining this issue also has a high urgency to ensure that the digital transformation taking place around the world does not create disadvantaged groups. Sectors previously excluded from the digital market, such as agriculture, micro-industries and small businesses, have the potential to benefit greatly from technological innovation. However, without sufficient attention to the equitable distribution of access to technology, people in remote areas or with low levels of education could be marginalized from these opportunities. By addressing these linkages, we can ensure that technology benefits the people who need it and improves the quality of life for all, creating a more inclusive and sustainable economy.

The purpose of this study is to analyze the role of technological innovation to reduce poverty and improve economic welfare, especially among low-income communities. This research aims to explore how technology can open up access to better economic opportunities, as well as how technology can be used to empower underprivileged communities. This research also aims to identify the challenges that arise in efforts to equalize access to technology, in order to achieve economic justice in society. The focus is on understanding the barriers faced by underserved communities so that steps can be taken to create more inclusive and impactful solutions.

RESEARCH METHOD

The research method used in this study is a literature study approach. This approach allows researchers to explore and analyze various relevant sources on the linkages between technology and economic justice, especially in relation to poverty reduction and economic welfare improvement. By using a literature review, this research will identify findings from previous studies that focus on technological innovation, its impact on the economy, and the challenges faced in equitable access to technology. It also provides an understanding of existing theories and policies that have been implemented in various countries (Zhao & Cao, 2020).

Through the literature analysis, this research will also explore successful models and initiatives to utilize technology to reduce social and economic disparities. Previous studies have shown that technologies, such as internet access and digital platforms, have increased economic opportunities for low-income people, especially in education and entrepreneurship (Banga, 2020). However, this research will also highlight the challenges that arise in equitable access to technology, including limited infrastructure in remote areas and the high cost of technology access. This literature analysis will include studies from countries with different levels of technological progress and economic equity.

This research will analyze the policies that have been implemented by various governments to facilitate technology access and promote inclusive economic development. This includes studies on the role of public policies to create equal access to

technology, such as digital training programs, provision of infrastructure, and reduction of economic barriers for underprivileged groups. By drawing on previous research, this literature review aims to present a comprehensive picture of how technology can contribute to economic justice and what factors influence the effectiveness of technology implementation (Chander & Vines, 2021).

RESULT AND DISCUSSION

Technological innovation plays a crucial role in reducing poverty and improving the economic welfare of low-income communities. Through the utilization of digital technologies, such as e-commerce and fintech, individuals and small businesses can access wider markets, increase productivity, and gain better access to financing. This creates new opportunities to improve their income and quality of life. Technological innovation serves as a tool to improve efficiency, and as a means of empowerment for low-income communities. With information and communication technology, farmers and small businesses can market their products directly to consumers, reducing dependence on middlemen. This increases profit margins, and provides opportunities for them to participate in the wider economy.

E-commerce has been one of the most significant innovations in improving economic welfare. With digital platforms, small businesses can sell their products online, reaching customers beyond the local area. This creates a more inclusive economic ecosystem, where low-income communities can compete in a larger market and gain access to various business opportunities.

Financial technology (fintech) also plays an important role in increasing access to finance for low-income communities. With microloans and digital finance platforms, individuals can start small businesses without having to put up large amounts of collateral. This opens up opportunities for them to invest in education and training, further improving skills and income. Fintech enables people to manage their finances better, so they can plan for a better future.

Technological innovation has an impact on the economy, and on people's quality of life. Access to health and education services through digital platforms helps low-income communities to get better information and services. As such, technological innovation contributes to the overall improvement of well-being, creating a healthier and more educated society. This is important for creating a positive cycle that supports long-term economic growth.

The opportunities created by technological innovation are enormous for low-income communities. With access to digital technology, they have the opportunity to participate in the rapidly growing digital economy. However, to maximize this potential, training and education that focuses on digital skills is essential. Governments and private institutions need to work together to provide the necessary access and training, so that people can make optimal use of technology.

Thus, technological innovation has great potential in reducing poverty and improving economic welfare. By utilizing digital technology, low-income communities can increase their income and quality of life. Continuous efforts in empowerment and education will ensure that the benefits of technology can be felt by all levels of society. Through collaboration between various parties, we can create an enabling environment for inclusive and sustainable economic growth.

The Role of Technological Innovation in Poverty Reduction and Economic Welfare Improvement among Low Income Communities

Technological innovation has great potential to reduce poverty and improve economic welfare, but the main challenge lies in how people from lower socioeconomic strata can access and utilize it effectively. Digital technologies, especially the internet and technology-based applications, can open up a range of opportunities for them to access information, education and broader markets. For example, e-commerce platforms give farmers and micro-entrepreneurs access to sell their products directly to consumers, avoiding middlemen and increasing income (Goyal, 2021). However, inequalities in access to technology-both in terms of infrastructure, digital skills and costs-are a major barrier that needs to be addressed.

To ensure that technology can be utilized by low-income groups, inclusive access policies are necessary. One example of such a policy is a program to provide cheap or even free internet access in remote areas. Countries such as India and Indonesia have launched initiatives to extend internet coverage to isolated villages with the aim of promoting economic and social inclusion (Tiwari & Singh, 2020). The importance of digital literacy programs that can provide basic skills to use technology, such as training for children, students, and workers in the informal sector, is also crucial to improve human resource capacity among the poor.

Technology can also open up access to the education sector that was previously unreachable by

lower socioeconomic layers. For example, online learning gives students in remote areas the opportunity to access quality educational materials that are usually only available in big cities (Mumtaz & Siregar, 2020). By using technology, education becomes more affordable and is not limited by distance or physical infrastructure, which opens up opportunities to improve the skills needed in the global job market. Better access to education can also help reduce unemployment rates and improve the quality of the workforce that will contribute to the economy.

However, in addition to providing wider access, another challenge is how to ensure that the technology actually benefits the poor directly. One potential solution is to bring technological innovations closer to sectors that are important to their lives, such as agriculture, fisheries and local crafts. App-based technologies can help farmers by providing real-time weather information, soil analysis, or recommendations for selecting more profitable crops based on market analysis (Bawa, 2021). This can increase agricultural yields and farmers' income in a more efficient and sustainable way.

Digital economic empowerment, such as the use of digital wallets for financial transactions, can benefit people who previously did not have access to traditional banking services. Innovations such as mobile banking have successfully increased financial inclusion, especially in developing countries, by allowing individuals to save, send, or receive money via mobile phones without requiring access to a physical bank (Burris, 2021). As such, technology can increase the participation of the poor in the formal economy, enabling them to more easily manage their finances and improve personal economic stability.

However, technology adoption by low socioeconomic groups will not be effective without involving relevant socio-cultural aspects. Several studies have shown that behavior change and technology acceptance among the poor depend heavily on social beliefs, past experiences, and the suitability of technology to local needs (Sharma & Gupta, 2021). Therefore, it is important to involve communities in the process of technology design and implementation, ensuring that the solutions offered are appropriate to their socio-economic and cultural conditions so that they can be better accepted and utilized.

While technological innovation has great potential to reduce poverty and improve the economic well-being of underprivileged groups, achieving this requires an integrated approach. This includes providing infrastructure, improving digital skills, economic empowerment through technology-based applications, and active participation of communities to design solutions that are relevant to their needs. With such measures, technology can become a more effective instrument to improve the quality of life for those who need it most.

Challenges in Equitable Access to Technology to Improve Economic Justice in Society

Equitable access to technology in various sectors of the economy is a major challenge in many countries, especially in developing countries. One of the main challenges is the disparity in technology infrastructure between urban and rural areas. While big cities often have better access to fast internet networks and advanced devices, many rural areas still struggle to access basic technology. This creates a gap in the ability of individuals and communities to participate in the digital economy, which ultimately affects their ability to improve their economic well-being (Dlodlo & Pretorius, 2021). These inequalities, if not addressed, can exacerbate existing social and economic injustices.

The issue of digital skills is another major barrier to equitable access to technology. Many individuals, especially those in lower socioeconomic strata, lack the necessary skills to utilize technology effectively. Without adequate skills, they will struggle to access the economic opportunities afforded by digitization, such as remote work, e-commerce, or even online education. For this reason, this gap in technological skills is one of the main factors exacerbating economic inequality (Mhlanga & Rhoades, 2021). Effective digital training initiatives are important to strengthen human resource capacity among marginalized groups.

Furthermore, the cost of technology is also a major barrier to ensuring equitable access. For many low-income families, the cost of devices such as computers, smartphones and internet subscriptions can be a heavy burden. Without access to adequate devices, individuals cannot utilize technology for various needs, such as education, work, or digitally-based healthcare. For example, during the COVID-19 pandemic, the inability to afford devices and internet subscriptions prevented many children from poor families from participating in online learning (Huang, 2020). This shows that while technology offers various benefits, high costs remain one of the biggest barriers to achieving them.

Reliance on high technology also creates an imbalance between sectors of the economy that are

able to access technology and those that are not. Sectors such as traditional agriculture, which rely heavily on manual labor, often lag behind in terms of technology adoption. This is due to limited access to tools and knowledge of the latest technologies that can improve production efficiency. In contrast, sectors such as manufacturing and service industries that are more integrated with technology are often able to achieve greater economic gains. This imbalance leads to inequality in the distribution of benefits from technology, further exacerbating existing economic inequalities (Agwu & Oji, 2021).

One of the impacts of unequal access to technology is limited access to better economic opportunities. People who do not have access to or the ability to use digital technologies tend to be marginalized in the labor market. Jobs that rely on digital skills are increasingly in demand, while traditional sectors that rely on manual skills are declining. This leads to a gap in earnings between those with technological skills and those without. For example, jobs in the technology sector and internet-based services tend to pay higher than jobs in traditional sectors such as agriculture or manufacturing (Smith & Jones, 2020). Therefore, to ensure economic equity, measures are needed to improve digital access and skills among the broader population.

The public sector and government play a key role in addressing this inequality. Policies that support equitable access to technology are needed to create more equal conditions. The government can play a role in providing basic infrastructure, such as cheap internet networks and access to affordable digital devices. They can also provide technology skills training programs for marginalized groups so that they can more easily access the digital job market. These policies will contribute to reducing social and economic disparities and accelerate the process of economic digitalization among disadvantaged groups (Adebayo & Igbalajobi, 2021).

Finally, to achieve sustainable equitable access to technology, there needs to be cooperation between the public, private and civil society sectors. Internet service providers, for example, can collaborate with the government to provide more affordable networks in remote areas, while non-governmental organizations can play a role in providing technology skills training to communities. This collaboration will ensure that technology does not only benefit the few who have access, but can also be utilized by all levels of society. In this way, technology can be an effective tool to reduce social and economic inequality in society.

CONCLUSION

Equitable access to technology plays a very important role in creating economic justice in society. While technology has great potential to improve economic welfare, the access gap between different social and economic strata is still a major obstacle to achieving such equity. Inequalities in infrastructure, digital skills and technology costs pose significant challenges. Moreover, certain sectors of the economy, such as agriculture and the informal sector, often lag behind in technology adoption, which hampers their potential to expand and reduce economic inequality. Without more focused efforts to address these gaps, technology may exacerbate existing inequalities rather than solve them.

Addressing these issues requires closer collaboration between the government, private sector and civil society. The government needs to take a greater role in providing basic infrastructure, such as affordable internet access in remote areas, as well as implementing policies that support digital skills training for disadvantaged communities. The private sector, on the other hand, can contribute by offering more affordable devices and technology-based services that are accessible to low-income groups. Furthermore, civil society has an important role to play in ensuring the success of technology training and empowerment programs, by involving local communities in such initiatives. Equitable access to technology is not just the responsibility of a particular sector, but a collaboration that can ensure that technology can be an effective tool to reduce existing economic and social inequalities.

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