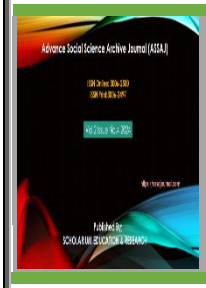

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THE DIGITAL DIVIDE IN PAKISTAN: ACCESS TO TECHNOLOGY AND ITS SOCIO-ECONOMIC IMPLICATIONS

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ABSTRACT

The digital divide in Pakistan represents a significant socio-economic challenge, characterized by disparities in access to technology, digital literacy, and internet connectivity between urban and rural populations. This study explores the multifaceted dimensions of the digital divide, including access to devices, infrastructure limitations, and the socio-economic implications of unequal technology distribution. While urban areas benefit from better connectivity and access to digital tools, rural regions face severe barriers, including inadequate infrastructure, low digital literacy, and affordability issues. The paper highlights the impact of these disparities on education, healthcare, employment, and economic opportunities, emphasizing how marginalized communities are further disadvantaged in a rapidly digitizing world. Government initiatives, such as broadband expansion and public-private partnerships, are discussed, alongside the role of non-governmental organizations in promoting digital inclusion. However, challenges such as funding, outdated policies, and socio-cultural norms continue to hinder progress. The study concludes that bridging the digital divide requires a multi-stakeholder approach, involving government, private sector, and civil society, to ensure equitable access to technology and digital literacy programs. By addressing these gaps, Pakistan can harness the potential of digital technologies to drive inclusive socio-economic development and reduce inequalities.

Keywords: Digital divide, Pakistan, technology access, digital literacy, socio-economic disparities, rural-urban divide, infrastructure, government initiatives, digital inclusion, ICT

Introduction

Digital Divide is one of the most critical issues being faced by nations and populations across the globe and in various socio-economic contexts, within and among countries. Though access to the digital divides is important within Third World countries like Pakistan, other dimensions of the concept are equally important, including the knowledge divide, the capability divide, the social divide, and the policy divide. The growing gap in access and use of digital technologies between the 'information rich' and 'information poor' has given rise to the issue of the digital divide (Ahmed Soomro, 2015). Individuals who are well off economically and socially can afford to invest in digital technologies, thus enhancing their efficiency and capabilities, while those

deprived of such resources are unable to invest in digital technologies, thus exacerbating their efficiency and capabilities.

The scale of the global digital divide is indeed vast and alarming: more than 50% of the world's population has never made even a single phone call in their lives, and it is particularly shocking to note that the 45 countries with the lowest telecommunications capacity in the entire world are all located in Africa (Gourlay et al., 2021). Although the situation is somewhat better in the Asia-Pacific region, significant and concerning disparities continue to exist between countries. For example, in Japan, an impressive over 50% of households own at least one computer, and a remarkable 39% have access to an internet connection, reflecting a strong integration of technology into daily life. In sharp contrast, there are countries like Nepal where only a mere 1.85% of the population currently possesses a telephone, highlighting a glaring lack of basic telecommunications infrastructure. There is an urgent need to deeply comprehend how new information and communication technologies (ICTs) function and how they can be effectively integrated into community structures and networks particularly in the southern regions of the world. It is crucial that these technologies are adapted to lead to sustainable economic development, enabling communities to thrive. In conclusion, while the spread of new information technology across the globe presents them with new and exciting opportunities for growth and connection, there are also significant and serious challenges that must be faced. This situation can enhance the widening gap between the industrialized north and the developing southern regions, which are home to billions of people, highlighting the urgent necessity for targeted solutions.

Conceptual Framework

The digital divide is widely recognized as the socio-economic difference that exists in terms of access, skills, and usage concerning Information Communication Technologies (ICTs) both within and among different populations. This issue particularly affects individuals or communities, including businesses and varying policy areas. There are numerous dimensions associated with the digital divide, which can be broadly categorized into access, skills, and usage. Access fundamentally refers to the physical connectivity to the Internet and technological devices, while skills or human capital signify the capability needed to effectively access and utilize that technology (Adam and Dzang2021). Usage encompasses the overall quality of digital engagement and interaction, as it assimilates the previously mentioned dimensions into both market-driven and non-market socio-economic activities, which ultimately influences potential structural changes within society. The ramifications of the digital divide can extend beyond mere access to technology and can lead to greater disparities across the well-defined sectors of society. In response to these pressing challenges, a robust conceptual framework of the digital divide has been developed (Helsper, 2021).

This framework aims to facilitate a deeper, more empirical understanding of the varied and interactive pluralism that is inherent to the continually evolving landscape of digital technology. Within this context, some foundational terminologies concerning equity and access to technology are defined clearly, and the various components of

the digital divide framework are thoroughly outlined. These definitions yield significant a priori predictions about how the digital divide may impact individuals and society at large. This impact is substantial and is established even before taking into account the various evidential prisms that are available for examination and analysis. The framework outlined herein has real-world implications, particularly regarding the nature and direction of policy focused on promoting technology equity and access for all, regardless of social or economic background. In conclusion, this section powerfully argues that there is an urgent necessity for adopting a more inclusive paradigm when it comes to policymaking and empirical research related to digital access. Such an approach must not only acknowledge but also fully comprehend the multi-dimensional aspects of the digital divide and it's mutually reinforcing characteristics along various socio-economic axes. This will ultimately foster an environment where equitable access to digital resources and opportunities is a reality for everyone in society.

Digital divide amongst Pakistani faculty is commonly examined when it comes to faculty's email usage, mobile usage, Internet usage, and search engine usage (Ahmed Soomro, 2015). This analysis examines the digital divide amongst higher education faculty in Pakistan based on their access to ICT at four different access levels: motivational access, physical access, skills access, and usage access. Results reveal that a digital divide does exist amongst Pakistani faculty in higher education in terms of their access to ICT. Among the various access types, the highest digital divide was found in physical access, followed by usage access, motivational access, and skills access. Faculty's gender, age, institution type, and academic rank were significantly associated with their access to ICT (Asher, 2021). Over the last decade, Pakistan has seen a huge diffusion of ICTs in all walks of life. The number of Internet users has increased elevenfold since 2000, and the average growth of Internet users is 1,249% from 2000 to 2011. The access to Internet facilitates the users to take benefit of many services and welfare programs; it also increases the individuals and community's overall life standards. Broadly, Internet access offered by LHEs in Pakistan consists of wired, wireless, and mobile based. The majority of Pakistani populace, approximately 95%, are living in cities, towns or rural areas in less developed infrastructures in terms of electricity, communication facilities, and Internet connectivity. A growing number of faculties at public sector LHEs in Pakistan believe that this disparity has been increased because of the lack of Internet support, which is fundamental for any sort of research work. Hence, public LHEs in Pakistan have taken steps to make the Internet available on LHEs premises. However, the efforts in this regard are still at preliminary levels due to the unavailability of appropriate infrastructures.

Historical Context of Technology Adoption in Pakistan

This article thoroughly explores the digital divide and its extensive socio-economic implications within the context of Pakistan by focusing on various aspects of access to digital technology and the Internet. As of the most recent accounting in 2016, a total of 43% of the population in Pakistan has access to the Internet, thereby leaving more than half of the population on the wrong side of the ever-growing digital divide. This

article specifically refers to the significant lack of access to digital technology as well as the Internet itself as a critical component of the digital divide. The socio-economic implications of this pressing phenomenon are illustrated with compelling evidence and insights, followed by a discussion of potential implications along with the challenges that Pakistan faces in bridging this divide (S et al., 2018)

In order to provide a coherent backdrop and thoroughly inform the ongoing discussion, this article traces the intricate historical adoption trend of digital and Internet technology across various contexts. The discussion recalls the historical enactment regarding the substantial economic dividend of telephone connection specifically within urban Malaysia. Once upon a time, telephones were regarded as a significant sign of wealth and luxury, creating a sharp division between the urban elite and the general public; simultaneously, they provided elite families with the ability to access superior economic returns from their various business dealings when compared to their non-urban counterparts. This pronounced divide, however, has become largely obsolete due to the extensive availability and accessibility of private and mobile phones that have permeated society. In today's rapidly evolving digital era, where communication is increasingly mediated by advanced digital and Internet technologies, a new form of divide emerges, reminiscent of the telephone divide experienced several decades ago (Cohen et al.2022). Before delving into the present scenario of the digital divide specifically in Pakistan, this article will provide a comprehensive replay of the historical adoption trend of digital and Internet technology within this country to adequately inform readers of the critical historical context surrounding the matter at hand.

Current State of Digital Access in Pakistan

The current situation and status of technology in access to its availability, preferred devices and usage pattern have been evaluated in this section. The results disclose that enabling drastic improvements, much of the population particularly in the remote areas. While owning devices continue to face efficiency usage related multifaceted differences with strong distinctions along regional lines. In particular, urban areas tend to have better infrastructure and connectivity compared to rural regions. This discrepancy not only affects the quality of access but also influences the ability of individuals to utilize technology effectively for educational and economic opportunities. As a result, many individuals from underprivileged backgrounds face significant barriers in accessing online resources, which further exacerbates the socio-economic disparities in the country. Consequently, the lack of digital literacy programs and inadequate infrastructure has left a substantial portion of the population without the essential skills needed to compete in a rapidly evolving job market.

Six decades in the independence Pakistan has progressed made significant advances as far as its telecommunication infrastructure is concerned. It started with the telegraph system in the colonial time that then shift gradually to the digital technology. There are main two facilitations that had chosen to translate the electronic communication i.e. (a) the mail and postal service of the British rule and (b) the telephone system of the missionization era. At the point of independence, Pakistan had inherited few set of

post offices and established cities, towns and villages of the country, but during recent years it has undergone noticeable improvements. Since its foundation the telecommunication department was launched as a separate division had invested into the building infrastructure and enhance its connectivity. However, these changes very slowly to be realized to the citizens particularly those are residing in the far flung hilly and mountainous areas. The late 90, a few cell phone companies are allowed to operate and must have extensive impacts on the telecommunication scenario of the country. This allowed companies to comprise themselves in the race of the technologies see to it that the extensive expand coverage over the rural and the northern areas of the country as well. Recently, still more projects such as promoting the broadband services and encouraging the building infrastructure are also set out to address the issue of the underserved areas (Ahmed Soomro, 2015). Now, the raging out optic fart up to the union council has also been completed and fixed lines have been increased across the country. This coverage is now almost has been translated to the urban level setup standard. Although 2/3G system has been marketed rural areas on the other than cities. But still the existence this inequality seen sown in the province compare that to the district areas. With regards to the availability of technology output based question devised this category showed that TV covers occupy highest percentages of around 62.05% being follows by the mobile ownership that is around 24.73%. Even in the city areas were the availability of all kind of the digital technologies seems to be more wide spread has the highest and the lowest percentage are found to be 33.79% and 1.03% respectively been.

On the other hand interestingly here in the cities the availability of radio or cassette has found to be four times greater than that of the villages. Besides these newspapers are the only media technology which is found not to have sharp difference between both the cities and villages. Accessories of preference gadgets also pose significance differences with profound consequences on stigma making on preferred device. The taken test shows that respondents with having devices will never share with others as opposed to weak users also use Ultra Advise to retain and exchange on their own device. Even devices such a computer landline phoned printer, scanner etc, which are vita; for the technologies users such as students and the lecture are still rare compare to the common devices like mobile telephones radio TV DVD, and VCRs. Such kind of difference can attribute on the self-making on the usage of the framework for which occasion of the device us and intimidate to have the intended device. Booking exact times and extending the permission kayo also have detained use by the device user (Khan, 2023). Device share and the accident use is virtually non-existent in the preferred device. On the other hand despite sharing a device with others considerably share and important users do not share the device with others.

Infrastructure and Connectivity

In the rapidly globalizing world we live in today, with the swift advancement of technology that seems to pervade every aspect of our lives, the gulf between the technology “haves” and “have-nots” is increasingly widening. This disparity emphasizes a crucial issue known as the “digital divide,” which is viewed as the significant and

hobbling gap that exists between those who have access to information technology and those who do not, particularly in terms of computing capabilities and internet accessibility. Therefore, it is fundamental and essential for each country, regardless of its current circumstances, to gear up itself and actively work towards beefing up the deployment of information technology resources while promoting equality across various sectors of society. This effort is vital so that the existing gap between the haves and have-nots could be effectively narrowed down, fostering a more inclusive digital landscape. However, in Pakistan, the realm of information technology is still constrained by various factors, and its deployment outcomes do not appear particularly encouraging or promising. It is a common observation that access to information technology in Pakistan is limited not only geographically but also socio-economically, affecting certain segments of the populace disproportionately (Ahmed Soomro, 2015)

From the outset, the underlay to the scope is analyzed in terms of infrastructural ingredients substantiating the foundation of the IT. After that, ahead leaps are undertaken to measure access indicative of the internet service provision, particularly at the domestic edifices in the country. From the outcomes procured, it can be inferred that the economic effects of such access deficit are not pivotal. Given the endeavor to tackle this undermining access situation, the stress is laid upon new penetration enhancement initiatives. Partnered by the private sector, such initiations have produced promising upshots. Despite all these commendable undertakings, access to this fundamental technology depends on the geographical premises and the economic status. Advanced connectivity and infrastructure remain the preeminent vital scaling blocks. Flaws in infrastructure bark other enablers, particularly the petty and intermediate enterprises, to fabricate the revolutionary benefits of information technology, with productivity and labor gains marginalized. Subsequent steps toward up gradation of the requisite environment are fruitless as these steps of evolution foster the access scenarios and receptivity. The access to technology in general, and the internet and computing facilities in particular, has become a basic necessity for modern social and economic activities.

Device Ownership and Usage Patterns

Given the ever-increasing accessibility and affordability of digital devices, it is absolutely fundamental to thoroughly explore the various different socio-economic dimensions of device access, as well as ownership trends among the diverse Pakistani population. The adoption of smartphones in Pakistan is witnessing a significant rise, and it is projected that the number of smartphone connections will reach an impressive 67 million by the year 2020 (Ejaz et al., 2023). Such developments are indeed key to understanding how technology, particularly when focusing on the Internet, is accessed and utilized, and they also have the potential to deepen existing socioeconomic inequalities within the society. The concept of the digital divide in Pakistan is analyzed in great detail through examining the diverse patterns of device ownership, which includes smartphones, computers, and tablets, along with usage metrics that encompass smartphone data and Wi-Fi data across a range of different demographic

and socio-economic groups. Furthermore, valuable insights into the ongoing trends of device ownership are provided, highlighting the critical importance of digital literacy for ensuring effective and beneficial digital device usage, as well as addressing the continuing nature of disparities in digital engagement that persist within different segments of the population.

Smartphone ownership is widespread, even among the economically marginalized, while computers and tablets remain less common, primarily among privileged and educated groups. The rise of smartphones has enabled many to access the Internet for the first time. However, internet subscription and ownership rates are only 13.5% and 76%, respectively, indicating that while smartphones are prevalent, internet connectivity remains low (Ogutu & Oughton, 2021). This raises questions about smartphone usage, whether as substitutes for computers or in differing patterns for online activities. Recognizing the relationship between accessibility and usage is key to understanding the potential of smartphones to bridge digital divides. A study of the Pakistani population reveals disparities in device access and usage patterns based on socio-economic status (SES) and education. It also identifies barriers to access, such as availability and affordability. Significant disparities in device ownership highlight the influence of personal characteristics, particularly education and tech literacy. The findings underscore the complex interplay of factors affecting effective device usage. Notably, the absence of urban-rural disparities in certain aspects suggests the importance of district-level analysis for understanding device accessibility. By examining device ownership trends, the significance of digital literacy, and ongoing disparities in digital engagement, the results inform potential policy interventions.

Socio-Economic Implications of the Digital Divide

Digital technology availability is felt at every doorstep in developed countries and this global digital technology access is felt nowhere in Pakistan. The rapid growth of digital technology in the globe has formed a digital division of people technology accessibility rich division have access to digital technology and digitally educated. They acquire advantages because of digital technologies, and a digital division of low earnings people is shaping up because in developing countries like Pakistan people are not able to get approach to digital technologies and they have no digital education so they are disadvantaged. Pakistan is facing a problem in global digital technology which is more considerable because the new world order is the world of digital technology and those nations are strong in digital technology and they can work out their matters successfully. So, abuse of information and digital technology lacks in people is a cause for economic and social losses (Ahmed Soomro, 2015).

All individuals have a fundamental desire to enjoy a comfortable and fulfilling way of life, yet the situation is quite different for the people living in Pakistan, particularly those individuals residing in rural areas. These rural populations often find themselves lacking the necessary facilities and resources required to meet the demands and challenges of the modern era. As a result, these individuals strongly believe that the effective exploitation and application of digital technology could significantly assist them in managing their future affairs more efficiently. Digital technologies encompass

a wide variety of tools and services, including means of connectivity, real-time communication, broadband internet access, high-speed telecommunications, and advancements in healthcare. Recognizing the critical importance of digital technology in enhancing their quality of life, an initiative has been launched by a lower IQ village in Pakistan to harness these advancements (Yar & Yasouri, 2024). This project includes the establishment of a real-time communication state reliance telemedicine network along with a comprehensive healthcare investigation facility. With the implementation of such essential services, this village stands to gain immense benefits, as it will not only facilitate the residents but also allow individuals from the adjoining hamlets to receive critical assistance and support from this important digital installment.

Education and Digital Literacy

This subsection is specifically focused on education especially digital literacy regarding digital divide. Education and digital literacy has emerged as a priority focus area in the context of the digital divide, especially in Pakistan. There is a general acknowledgment that access to technology can enhance learning outcomes across different ages. However, students and educators face multiple challenges in effectively utilizing digital tools which are ranging from a lack of training and relevant software to device unavailability, network constraints, and unreliable electricity. The limits of these barriers in the education category are also touching the literacy base. That is, the lack of digital literacy skills is a substantial obstacle to performing basic tasks and accessing educational resources. One study found that faculty members in Pakistan experience pronounced motivational, physical, skills, and usage gaps as compared to the overall access to information and communication technology (ICT) (Ahmed Soomro, 2015). In contrast, some educational interventions that strive to mainstream these skills have been demonstrated to enhance digital literacy performance, especially amongst marginalized groups.

As the educational marketplace is increasingly digital, these disparities take on greater saliency. High-income households tend to have more technology and network equipment, which allows children to leverage it for educational purposes. Specifically, costs are becoming a growing barrier given mandatory digital textbooks and At-Home Learning (AHL). It is undeniable that technology has the potential to greatly enrich the educational experience, from using virtual simulations to encourage student or engaging with public data streams. Use of these tools can increase the diversity of learning strategies at a student's disposal, thereby fostering interest in different fields of study. Given the rapidly shifting work landscape, investments in education must be maintained. However, even in the digital marketplace, the principles of inclusive learning must be maintained. There is a need for an educational policy that promotes access for all while fostering the idea of lifelong learning. Ultimately, education is essential for fostering the human capital that underpins broader socio-economic development.

Employment and Economic Opportunities

This paper examines the digital divide in PC ownership in Pakistan using the most recent data collected in 2014. In particular, I utilize the Pakistan Social and Living

Standards Measurement survey collected by the Pakistan Bureau of Statistics to provide a comprehensive picture of the digital divide in Pakistan with a focus on gender differences at both the individual and geographic levels. I decompose the digital divide into rural-urban and national inequality components via the Theil T statistic. In addition, the results from the Gini decomposition suggest that national inequality plays a more important role in explaining the overall PC ownership gap. This is consistent with existing research showing high nationwide inequality in Pakistan. Moreover, the findings from the Oaxaca-Blinder decomposition of rural-urban and national inequalities show that the determinants of PC ownership, particularly education and household size, more favor men compared to women as well as urban dwellers compared to rural dwellers.

No aspect of social life today is untouched by the advent of technology. The rise of digital platforms has had an enormous impact on a number of industries, creating new forms of work and challenging traditional labor market expectations. Though technology might have helped mediate various sectors in terms of faster functioning and efficient performance, the gap in availing its advantages have created economic and social disparities. Employment is widely known as a crucial factor in the lives of most of mankind, but unfortunately the technological progress in Pakistan has worked as barrier and disadvantaged tool against it in a broader way and therefore, made quite of few peoples jobless or earn below standards (Ahmed Soomro, 2015). All these factors have endorsed and propelled to investigate the continue increasing rate of unemployment and the failure of finding decent jobs, especially in the developing countries. This inspiration is the basis on which we have perused this presentation of a researched assignment concerning the employment problems technology and its latest digital boom.

Healthcare and Telemedicine

The digital divide disproportionately affects the urban-poor in developing countries. The digital divide in Pakistan follows the same pattern, where individuals from low-income households in the rural areas have extremely limited access to devices and broadband internet networks (Irfan & Yaqoob, 2024). There is a strong need to utilize the consumer market to keep electronic devices affordable for consumers. Affordably priced 4G internet must also become more prevalent in the rural regions. The Government of Pakistan, telecommunication companies, and internet service providers should enter into a public-private partnership to ensure that both essential requirements are met simultaneously throughout the country. The Civil Aviation Authority (CAA) is also a powerful and tactful player. CAA already imposes a Wireless Broadband Licensing Tax; if the tax is waived on mounting wireless broadband towers in underdeveloped rural constituencies, the installation of towers in these regions will also increase. The central concern is that a lack of affordable devices and broadband internet for the rural populace accelerates the digital inequality in Pakistan.

On average, 4G users will have downloaded 10 GB of data each by 2024. The rural-urban digital telecommunication divide in Pakistan is measured by teledensity and per-capita mobile data downloaded at the union council level. National government

policies and telecommunication corporations should aim to provide much better 4G telecom services and 4G coverage to rural areas with bad telecommunication infrastructure. The consumer market must set handsets as affordable as possible. The maximum earning opportunities from social media applications using 4G wireless broadband internet should be facilitated by making 4G access available to everyone. The country should enhance the 'Telecommunications Policy' by accommodating the new digital reality and align it with Pakistan's Vision 2025 focusing on the enhancement of human and institutional capacity (Sandhu, 2023). The needed projects such as deployment of a broadband network, development of digital solutions for all sectors of the economy, and enhancement of digital skills will be made possible through regular resource allocation as per the requirements of the Ministry of Information Technology and Telecommunication. Additional resources should be allocated by federal departments and subsidiaries to make the telecommunication infrastructure sustainable and resilient to meet the needs of digital Bihar. Roughly 60,000 people have downloaded 100 terabytes of data in union councils with good telecommunication infrastructure. Upcoming research requires the most prevalent topics of interest in the data downloaded.

Government Initiatives and Policies to Bridge the Divide

The COVID-19 pandemic acted as a wake-up call for e-services and digitalization in Pakistan as it exposed the frailty and unreadiness of the public service sector to meet the emergent social, medical, and individual needs. With the notion of embracing an advanced e-governance model, Information and Communication Technology (ICT) utilization has become essential in the wake of this global emergency. The Government of Pakistan has been keenly focusing on ICT through its various public and private organizations to catch up on the global trend in digitalization. The argument is put forward that Pakistan should learn from China's e-governance model to promote effective public e-services and public complaints systems. Moreover, it is argued that this model will help to penetrate seamlessly and uniformly throughout the country as both countries share similar socio-economic issues. The digital divide, concerning internet infrastructure facilities and knowledge, was accelerated by the pandemic (Atique et al., 2024).

The main population of Pakistan is believed to be deficient in deploying ICT for their socio-economic benefit. The Government of Pakistan has realized the importance of digitalization all over the nation and across the globe. The country is successfully using private telecommunication companies, digital TV cable, and direct home internet Wi-Fi facilities to enhance the flourish of ICT in the country. In order to keep Pakistan at the pinnacle of artificial intelligence and ICT, various technologies have been, and are being, utilized. The IT sector is persistently growing in the country with the help of a developing telecommunication sector, growing human capital of IT professionals, digital, and technical institutes (Ahmad et al.2025). Following the instructions of the Prime Minister of Pakistan, in order to enhance the quality life of the people, WTO conference and digital export policies are being interrogated in respect to the

privatization of the public sector and enhancing the compatibility of local IT professional standards with the global market.

Role of Non-Governmental Organizations and Civil Society

Non-governmental organizations (NGOs) and civil society play a vital role in mitigating the digital divide, creating awareness, and advocating for social and policy changes. In Pakistan, NGOs and civil society organizations have undertaken various programs to enhance the access to technology and train marginalized communities in digital literacy (Ahmed Soomro, 2015). Furthermore, Digital Empowerment Trust has been initiated, aiming to bridge the digital gap between rural and urban areas and increase the usage of information technology in all walks of life. Advocacy and awareness campaigns have also been launched on promoting information and communication technologies and its incentives for industrial development and on enhancing contacts and collaboration with various international entities.

Collaborations between NGOs and governmental entities have been established to educate the public on digital matters, such as the free computer classes jointly arranged by the Federal Department of Computer and Emerging Sciences and the Pakistan Software Export Board. In Pakistan, civil society is heavily involved in issues relating to information technology, advocating for technology access for all, and especially for those in marginalized and under-served areas of the country. With local networks in every province of Pakistan, the civil society is well-placed to mobilize local communities to raise awareness about the digital divide. Existing campaigns focus on pressuring government and business on the issue, as well as providing training to those most adversely affected by a lack of access. A primary challenge for most NGOs combating the digital divide is funding. Grants obtained for IT projects often come from international donors, and once a grant has been spent, the projects initiated normally cease, emphasizing a lack of sustainability in addressing the digital divide. This is particularly problematic in nations such as Pakistan, where the shortfall in terms of access to technology and the internet is so vast. NGOs consequently play a vital role in this field while acting as intermediaries between the government, the private sector, and local communities, facilitating access to IT resources and bridging the digital gap.

Challenges and Barriers to Bridging the Digital Divide

The digital divide is typically described as the gulf between those who have ready access to and the capability to use information and communication technologies (ICT), especially internet services, and those who do not have such access or capability. Internet and other ICTs are considered of grave importance in enhancing socio-economic growth, literacy, education, healthcare, and problem-solving capacity in the contemporary world. In developing countries, however, internet availability is scarce. The use of ICTs by ordinary citizens is still in its infancy compared to developed countries (Ahmed Soomro, 2015). In the case of Pakistan, there are two kinds of digital divides. One kind of digital divide is related to the gulf between urban and rural ownership and ICTs' effective use. The rural populace is far less privileged in terms of such ownership and use. Because of its semi nomadic existence, the gulf between the possession and use of ICTs is again exacerbated by traditionalistic, social, and

patriarchal culture. Accordingly, males maintain control over resources, and consequently ICTs are used by them alone. A common gender norm is for women to take care of their homes and be answerable to the needs and whims of their husbands. Women's use of ICTs is further dissuaded by the societal idealism of a physically sheltered and homebound woman.

Eight challenges to bridging the digital divide in Pakistan are multifaceted. These include a lack of infrastructure especially in the provision of reliable electricity and an internet connection to inadequate ICT financing and outdated policies resulting in the persistent digital gap. Socio-economic factors such as poverty, low levels of education, and health problems also play a significant role in exacerbating the Pakistan digital divide. Another challenge is the traditionalist, male-dominated culture permeating throughout the country that marginalizes women (Tang et al.2024). Governmental and institutional maladministration in implementing technology-related initiatives and skills development also hinder progress. Most marginalized communities in Pakistan still depend on agriculture as their main resource. Extreme scarcity, lack of governance, and poor internet connectivity result in reduced farmers' ability to improve their agriculture production through modern and progressive tools, severely limiting their engagement with the Ministry of Agriculture, the Pakistan Agriculture Research Council, Electronic and Print media. In order to address this issue, there is a need for community participation, collaboration with all stakeholders, the introduction of new business systems to support farmers by offering them the chance to purchase essential fertilizer and seeds online with free home delivery. Offering mobile services, along with popularizing agriculture awareness and education, can help abridge this divide.

Future Trends and Technologies Impacting the Digital Divide

There is great enthusiasm about emerging technologies such as block chain, artificial intelligence, and the Internet of Things and their future impact on addressing the ubiquitous digital divide in the long run for economic efficiency and connectivity. However, at the same time, the inability to adopt these technologies for a large number of Pakistanis is fearful of enhancing the digital divide. Since access to and betterment via emerging technologies will be linked with improved income generating prospects in the future, there is an urgent need for policies to promote efficient diffusion and equitable access across demographics that could help bridge knowledge gaps and increase the potential livelihood enhancing capacity of new technologies (Ahmed Soomro, 2015). In the following paragraphs, these issues are further developed, bearing in mind the growing importance of increasing future trends in mobile technologies and Internet access patterns.

It is often said that only further need from the Internet becomes the Internet available. In addition, as smartphone technology is being more widely used in new technological applications, people have largely and more conveniently accessed knowledge and market-related information through their mobile phones. Since 2013, through the exponential rise in 3G/4G smartphones, mobile broadband usage in Pakistan has significantly increased and these usage trends are expected to evolve further in the future when 3G/4G will be more affordable and widely accessible in rural areas,

increasing the importance of Internet access in numerous ways (Khan et al.2022). In this on-going process, however, policy frameworks are needed to address future challenges, including the development of the necessary infrastructure, skills for the use of new technologies, the creation of a knowledge-friendly environment, and the formulation of regulatory arrangements to limit abuse and the use of monopoly control. In this context, the ability of the well-to-do people (with greater access to resources) to better take advantage of emerging new technologies will further widen the digital gap with the less secure, vulnerable and poor at the breaking point. This is especially important since digital literacy (i.e., affecting the ability to access, understand, and motivate the creation and sharing of digital content) will be crucial in leveraging new technological advancements.

Conclusion

Digital Divide is often referred to as an unthinkable or unwanted gulf between those people or communities who have access to up-to-date and most sophisticated ICT, and those who do not have. In Pakistan, although digital technologies are progressing at an outstanding speed, access is still uncertain, especially in rural areas. Socioeconomic implications of the digital gap in Pakistan are as much intense, as consequences could thunderbolt national growth and development prospects. It means digital technologies may henceforth be viewed as compulsory and significant facilitators in economic and social developments. Thus, there emerges an urgent need for enactment of workable and practical policies regarding this issue. This essay explores the current status of Internet access in Pakistan and discusses various immediate socio-economic implications. It begins by providing the reader a thorough understanding of the concept of the digital divide, followed by a brief review of the literature that exists on the topic at present scenario.

The essay then gauges the most recent and available statistics of Internet access in Pakistan. Various significant socio-economic implications of the digital divide in Pakistan are highlighted in different scenarios. Considering the outreach and uses of the internet, the essay indicates the importance of long-term development strategies to enhance the access in the rural areas and under-privileged segments. The essay recommends the need for a well-coordinated policy and strives the role of multi-stakeholders with a look for the success stories across the globe. It supports the idea of effective government policies at a high level coupled with the community-driven initiatives at the low. The necessity for regular monitoring and evaluating of the resultant policies and procedures are also highlighted. To improve the Internet access, the essay advocates for the importance of enhancing digital literacy together with expanding the outreach of the cellular broadband services. Both are viewed as fundamental stepping stones in reducing the digital divide. But above all, a multi-stakeholder engagement at all levels; government, NGOs, civil society, academia among others that carries every share for facilitating any single means of access are viewed as most vital in moving forward with an inclusive digital ecosystem. In such a perspective, the internet access is further explored that how it could induce and be linked with unequal economic outcomes and what steps are needed to ensure that

one remains digitally unemployed. In conclusion, there is a recommendation for a collective endeavor at horizontal and disparate levels to advance the technology access, and ensuring that none is left behind in the digital age.

References:

Adam, I. O., & Dzang Alhassan, M. (2021). Bridging the global digital divide through digital inclusion: the role of ICT access and ICT use. Transforming Government: People, Process and Policy, 15(4), 580-596.

Ahmad, M., Ali, A., & Hussain, H. (2025). Spatial Data Infrastructure for Effective Information Management: A Case Study of Pakistan. In Essential Information Systems Service Management (pp. 251-278). IGI Global.

Ahmed Soomro, K. (2015). Digital Divide among Pakistani Faculty regarding their Information and Communication Technology (ICT) Access.

Asher, S. (2021). COVID-19, Distance Learning, and the Digital Divide: A Comparative Study of Higher Education Institutions in the US and Pakistan.. International Journal of Multicultural Education.

Atique, M., Su Htay, S., Mumtaz, M., Ullah Khan, N., & Altalbe, A. (2024). An analysis of E-governance in Pakistan from the lens of the Chinese governance model.

Cohen, S., Liu, H., Hanna, P., Hopkins, D., Higham, J., & Gössling, S. (2022). The rich kids of Instagram: Luxury travel, transport modes, and desire. Journal of Travel Research, 61(7), 1479-1494.

Ejaz, W., Altay, S., & Naeem, G. (2023). Smartphone use and well-being in Pakistan: Comparing the effect of self-reported and actual smartphone use. Digital health.

Gourlay, S., Kilic, T., Martuscelli, A., Wollburg, P., & Zezza, A. (2021). High-frequency phone surveys on COVID-19: good practices, open questions. Food policy.

Helsper, E. (2021). The digital disconnect: The social causes and consequences of digital inequalities.

Irfan, B. & Yaqoob, A. (2024). The Digital Lifeline: Telemedicine and Artificial Intelligence Synergy as a Catalyst for Healthcare Equity in Pakistan.

Khan, N., Ray, R. L., Zhang, S., Osabuohien, E., & Ihtisham, M. (2022). Influence of mobile phone and internet technology on income of rural farmers: Evidence from Khyber Pakhtunkhwa Province, Pakistan. Technology in Society, 68, 101866.

Khan, S. (2023). Issues, challenges and opportunities in the digitalization of rural markets. Human Systems Management.

Ogutu, O. B. & Oughton, E. J. (2021). A techno-economic cost framework for satellite networks applied to low earth orbit constellations: Assessing starlink, oneweb and kuiper. arXiv preprint arXiv:2108.10834.

S, R., U, C., K, W., & J, H. (2018). Revisiting the digital divide(s): Technology-enhanced English language practices at a university in Pakistan.

Sandhu, M. A. (2023). Covid-19 and e-government in Pakistan: Analysis of mobile phone apps. Pakistan Journal of International Affairs.

Tang, Q., Kamarudin, S., Rahman, S., & Zhang, X. (2024). Bridging Gaps in Online Learning: A Systematic Literature Review on the Digital Divide. Journal of Education and Learning, 14(1), p161.

Yar, F. G. M. & Yasouri, M. (2024). Rural Development Challenges in Addition to Effective Solutions to Overcome Obstacles. Zhongguo Kuangye Daxue Xuebao.