

The Palapa Ring project in Indonesia, initiated in 1976, aimed at connecting all the islands in the country. The project attempted to provide internet access to all provinces in the country by 2019. Still, the evaluation of the project shows that internet access provided under the project has led to an increase only in personal computing consumption. In contrast, the processes at workplaces or educational institutions have not benefited much from it (Gupta, n.d.). The internet access under the project has reached the villages, but the information being provided to villagers needs to be more specific to their needs to reap maximum benefit from using ICTs in development projects.

The Rural Communication Services Project (RCSP) was launched in Peru to integrate satellite communication into rural development. The project was based on the premise that connecting villages through telecommunications would enable them to overcome infrastructure and other resource limitations. The project introduced telephony in many rural areas of Peru, but solid institutional support, sound management, and dynamic leadership were needed to fully benefit the users (Tietjen et al., 1987).

Another popular project launched in India, which was among the pioneers in e-governance projects, was Gyandoot. Gyandoot, which means "Purveyor of Knowledge" in Hindi, was an intranet-based service portal implemented in India's Dhar district of Madhya Pradesh in 2000 (Bhatnagar et al., 2003). This portal was made available to villagers through information kiosks, which were set up in different villages. Villagers, with the help of a person who was managing the kiosk, could register their complaints or grievances to government officials sitting in their villages and access information related to different fields, including crop prices or details of land. The project evaluation showed that people felt they could approach government officials much quicker through these kiosks (Bhatnagar et al., 2003).

In e-governance, governments of many countries have started web portals to provide information on all government services and schemes on one platform. The National Portal of India was one such initiative taken up by the Indian government in 2005 and continues to provide information related to varied fields like agriculture, social development, law and justice, environment, and youth and sports.

With the increasing penetration of digital technologies, including mobile phones, computers, and the Internet, after the 2000s, many governmental and non-governmental organisations have introduced projects related to these digital technologies where various services were provided to users on their mobile phone handsets. Many people belonging to marginalised sections, especially in rural areas, were provided with digital devices like mobile phones and laptops to access the benefits of ICTs in the development process. However, again, challenges like lack of maintenance facilities and lack of digital skills have slowed down the progress of these projects to some extent. However, after evaluating these projects, more sustainable strategies have been adopted where community members have been involved in ICT4D right from the decision-making to implementation and, finally, evaluation of projects.

Activity: 1

Identify any ICT4D in your nearby area and analyse its implementation.

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2.5 CHALLENGES IN ICT4D IMPLEMENTATION

Implementation of ICT4D has not been without challenges. Two challenges, the digital divide, and socio-cultural differences, have remained primary in using ICTs for Development.

2.5.1 Digital Divide: Analysing Disparities in Access to Technology and Information

Digital Divide, as the name suggests, refers to the gap that has developed due to the lack of access to and use of digital technologies in some countries. The developing world lacked access to and use of digital technologies, hence adding one more parameter: lagging behind the developed world or the Global North. A report by ITU (2017) found that European countries continue to lead in developing ICTs. In contrast, countries in the continent of Africa have still seen the least development of ICTs. It should be noted here that not only the reach and access that have created disparities in the use of ICTs but also the skill level of users has led to the digital divide. Most of the time, the focus remains on making digital technology accessible among community members through government and non-governmental organisations while not making the community members capable of using the technology. Rather, in the early initiatives, organisations introduced the technology used to bring in their expert personnel to operate the technologies, making the community members dependent on this person. However, with the coming up of personal digital devices like mobile phones, digital literacy has become an important part of implementing ICT4D.

A closer look would reveal that this digital divide not only exists in terms of countries, but many other sections of society face this digital divide. For instance, the gender digital divide has also become apparent as fewer women than men would usually be able to access and use digital technologies. A report by ITU (2017) mentions that the digital gender divide is relatively small in developed countries and more pronounced in developing countries. In contrast, it is substantial in Least Developed Countries (LDCs). Similarly, compared to urban areas, rural areas would face many barriers to accessing digital technologies, keeping rural areas or villages at a disadvantage. ITU (2023) states that only 50% of people in rural areas, compared to 81% in urban areas, can access the Internet. Even in the case of age groups, we see that generally, youth have both access and skills to use ICTs, whereas older people remain aloof from the digital world. A report by ITU (2017) states that the proportion of the population aged 15-24 years who are online is estimated to be over 70% compared to 48 % of the overall population, adding that older adults are less likely to be online.

2.5.2 Cultural and Societal Factors: Discussing how Cultural Nuances Affect the Acceptance and Success of ICT4D Initiatives

Socio-cultural factors have remained another big challenge in the implementation of ICTs. As we have seen in the evolution of ICT4D, most digital initiatives have been taken up originally in the developed world of Western countries and replicated in the developing world of Eastern countries. Under modernisation or the dominant paradigm of development, when technology adoption was considered one of the major paths for development in developing countries, these digital initiatives were implemented in developing countries without considering socio-cultural factors. Rather, in the 1950s and 1960s, a clear distinction was made regarding the characteristics of traditional and modern societies. Along with more use of technology in modern societies than in traditional societies, traditional societies were also termed as having less empathy, close-knit communities, limited view of the world, and less openness to innovation and experimentation. Hence, all these factors have played a role in hindering the adoption of digital technologies and continue to slow down the rate of adoption of ICTs in developing countries. For instance, community members in developing countries believe in subsistence production. This production can fulfil their own needs, and they think that if they aspire for more, they might interfere with the share of others. Therefore, they still do not appreciate the technologies that encourage mass production. Along similar lines, religion has always remained a very important part of their lives, and hence, the use of many technologies sometimes does not go by their beliefs and norms. Gender, too, plays an important role in many countries. Women are still not considered to be capable enough to use ICTs independently. ITU (2023) states that there is only a 5% difference in internet usage among men and women at the world level, but it increases to 10% in the case of Africa. Hence, the socio-cultural factors of every community need to be kept in mind before introducing technology so that the technology can be used efficiently and effectively by the community members.

Figure 2 depicts the changing issues and concerns regarding the use of ICT4D over time. It shows that the implementation of ICT4D starts with the reach and accessibility of ICTs in a particular community and ends with the culmination of evaluating the community's goals.

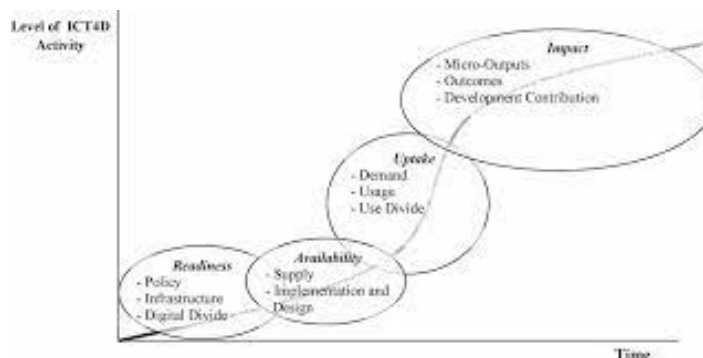


Figure 2: Changing ICT4D Issues Over Time (Source: Heeks (2008))

Check Your Progress: 3

- Note:** 1) Use the space below for your answer.
2) Compare your answers with those given at the end of this Unit.

1. How do you think the digital divide hinders ICT4D?

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Activity: 2

1. Look for a project related to ICT4D in your nearby area and analyse if the implementing agency faced any challenges in implementing it.

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2. Identify if there is any group of community members who have not been able to access (digital divide) the ICT4D.

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2.6 ETHICAL CONSIDERATIONS IN ICT4D

Despite challenges in most countries, ICTs have been much appreciated and accommodated, as the digital world is the only way forward. However, some ethical issues regarding using ICTs in development are still being discussed. Invasion of privacy and ensuring inclusivity are considered concerns from an ethical point of view in implementing ICT4D. Both the concerns are discussed below: -

2.6.1 Privacy Issues: Ethical Implications of Data Collection and Usage in Development Projects

ICTs are being seen as invasive as most technologies are individualistic. To make these technologies more effective and custom-made, they collect a lot of personal information about the people they intend to benefit from. However, since people, especially in developing countries, are not used to sharing personal details like age and income, people in these countries have become even more scared of using these technologies. Furthermore, since many of the projects related to ICT4D, especially in the initial period, were handled by Multinational Corporations (MNCs) and many trace the origin of technology-driven initiatives to the Western capitalistic world, thinkers in the field of ICT4D and users themselves remain wary of the motives of implementing agencies of ICT4D. MNCs have often used the data collected

to implement ICT4D and further their commercial interests. Rather, some studies have pointed out that this data is also being used for political purposes as it is vast. A term has also been devised for this kind of data: Big data. Big data is a large dataset generated with the help of ICTs. It can be used to reach many people with specific aims and may also be used to analyse the attributes of the public.

2.6.2 Ensuring Inclusivity: Strategies to Prevent Exclusion and Ensure the Benefits of ICT4D Reach all Segments of Society

As discussed above in the challenges to implementing ICT4D, the digital divide has remained an important concern; ensuring inclusivity has also emerged as an ethical concern due to the diversity in different societies and communities. In fact, 'inclusive development' has become an important term in development studies. It refers to all development, irrespective of gender, caste, class, religion, or race. It aims to develop every member of the society or community rather than benefiting some community members. The debate around inclusivity started immediately after the modernisation or dominant paradigm as the steps taken under this paradigm had led to the development of only a few sections of the society, leaving many behind and, hence, creating a further gap between 'haves' and 'have-nots'. Lately, however, it has been realised that the strategies adopted in the early stages of development need to be revised to take everyone along. Taking everyone along would make the development inclusive and sustainable, where we do not need to care about future resources or generations, as inclusive development would ensure stability. To unite all the stakeholders, various strategies are being deployed by the government and NGOs. A horizontal approach to development and communication is encouraged to ensure inclusivity instead of a vertical approach. Rather, in the present times, both approaches are combined to elicit maximum benefit. The horizontal approach to development and communication refers to bringing in all the stakeholders of the development process in one place, holding discussions and devising the development plan instead of implementing the plans made by central-level experts in a far-off community, paying less attention to the community's specific needs. The vertical approach emphasises a top-down approach, whereas the horizontal approach encourages a bottom-up strategy in which community members are encouraged to identify their problems and devise their development path. Horizontal development also encourages self-development, which produces more. When people own and take responsibility for their development, they work more passionately for it, maximising the benefit for all. Similarly, Participatory approaches have also been encouraged for undertaking development where community members participate in every step of development, from decision-making to generating resources for the project to executing the project on the ground level and then evaluating the project. This evaluation of the project provides a road map for future development projects.

Check Your Progress: 4

Note: 1) Use the space below for your answer.

2) Compare your answers with those given at the end of this Unit.

1. What strategies are being incorporated in ICT4D projects to ensure inclusivity?

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2.7 LET US SUM UP

ICT4D has become an integral part of the development process as ICTs have become intrinsic to all aspects of our lives. Having been initiated into the development process in the early 1990s as one of the tools, today, ICTs have become important as the reach and access of ICTs have increased multi-fold. Many initiatives are being taken to keep ICTs at the centre, both by government and non-government organisations. However, the implementation of ICT4D has not been without challenges and concerns. Establishing digital infrastructure and building human capacities are still posing challenges in the path of ICT4D. Also, sometimes, intrusive use of ICTs and ensuring inclusivity become ethical concerns due to stakeholders' diversity in the development process. However, despite all these challenges and concerns, initiatives in ICT4D are being taken up by development agencies, and transversing on the development path by these agencies is also taking place with the active participation of community members.

2.8 KEYWORDS

Digital Divide- The gap exists between those who can access and use digital technologies and those who cannot.

Digital Literacy is the ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital technologies.

Sustainable development is the kind of development in which the needs of the present generation are met without compromising on the needs of future generations.

Inclusive development refers to all development, irrespective of gender, caste, class, religion, or race.

Big Data- Big data is the large datasets which are being generated with the help of ICTs and can be used or analysed to reach many people with the specific aim.

2.9 FURTHER READINGS

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2.10 CHECK YOUR PROGRESS: POSSIBLE ANSWER

Check Your Progress: 1

1. ICT4D uses Information, Communication, and Technology (ICT) for development. This term became popular with the increasing use of ICTs in different sectors for development worldwide.

Check Your Progress: 2

1. The following are the key components of ICT4D: -
 - i. Establishment of Digital Infrastructure
 - ii. Building of Human Capacity

Check Your Progress: 3

1. By creating a gap between the people with access to ICTs and those without access, the digital divide has given rise to another divide between 'haves' and 'have-nots'. It has created a section of people who cannot reap the benefits of ICT4D as they neither have access to digital infrastructure nor the digital skills to access the technologies.

Check Your Progress: 4

1. Participatory approaches to development are encouraged to ensure inclusivity in ICT4D so that community members can participate in every step of development, from decision-making to generating resources for the project to executing the project on the ground level and then also evaluating the project. Similarly, attention is paid to horizontal approaches instead of solely relying on vertical or top-down approaches.



UNIT 3 ICT AND DIGITAL DIVIDE

Structure

- 3.0 Introduction
- 3.1 Learning Outcomes
- 3.2 What is the Digital Divide?
- 3.3 What is Development?
- 3.4 How are Development and the Digital Divide interlinked?
- 3.5 ICT in India
 - 3.5.1 Role of ICT in Development
 - 3.5.2 ICT and Governance in India
- 3.6 Prerequisites for Proper Functioning of ICT
- 3.7 Let Us Sum Up
- 3.8 Further Readings
- 3.9 Check Your Progress: Possible Answers

3.0 INTRODUCTION

Digital Divide means the gap in access and usage of Information and Communication Technology (ICT). Initially, the Digital Divide indicated the division between those with and without telephone access. However, since the late 1990s, the term has been used mainly to refer to the divide between people with access to the Internet (particularly broadband) and people without access to the Internet. Over the years, the term Digital Divide has achieved numerous connotations and can be found to manifest at multiple levels. It may manifest as a divide between rural and urban areas, rich and poor, literate, and illiterate, socio-economic groups, or more developed and less industrially developed nations. It may also exist due to a technological divide in the form of low-performing computers, low-speed wireless connections, or an economic divide in the form of broadband or internet services pricing. In developed economies where the service sector plays a vital role in GDP, a higher digital divide can prove counterproductive to Development since Information and Communication Technology (ICT) plays a vital role in such economies, and a higher digital divide is indicative of the fact that access to ICT is not uniform across the social and economic strata.

3.1 LEARNING OUTCOMES

After completing this Unit, you should be able to:

- Understand what the Digital Divide means;
- Explain the interlinkage between Digital Divide and Development;
- Understand the level of internet penetration in India;
- Explain the role of social media in driving internet access in India; and
- Enumerate influences of ICT in commerce.

3.2 WHAT IS THE DIGITAL DIVIDE?

The Digital Divide may refer to the gap between demographics and regions with access to ICT and those that do not have access to it or, at the most, have restricted access due to economic, technical, or social reasons, say lesser bandwidth (technical reason). The Digital Divide may also refer to the gap in access and usage between people of the same region due to inhibiting reasons of socio-economic disparity. A poor person who has to manage the daily bread for himself and his family hardly has the time and resources to access Information and Communication Technology (ICT), either for his leisurely or economic activities. A country like India, where 55% of the workforce is engaged in agriculture (Census 2011) with 118.7 million cultivators, hardly has access to ICT for the population living at the subsistence level. Coupled with this is the high cost of Internet access, which inhibits even the well-off from accessing ICT for leisure or economic activities.

Therefore, the Digital Divide essentially refers to the gap between people, households, and geographic areas at different socio-economic tiers concerning their opportunity to access ICTs and their Internet use for several chores. The term "Digital Divide" might have raised several doubts and questions in you, such as 'Where does it occur and why?', 'What are its causes?', 'How can it be measured?', 'What are the factors which affect it?', 'How can it be reduced?' etc.

Well, we will investigate each one by one. But first, let's understand the term 'Development'.

3.3 WHAT IS DEVELOPMENT?

There are various definitions of development, depending upon the perspective from which we are looking. Consequently, we have Economic Development, Social Development, Material development, Immaterial Development, Inclusive Development, etc. In its simplest sense, development can be understood as progress or growth towards a desired direction. This progress or growth can have an economic or social dimension, material or immaterial, inclusive, or exclusive. However, in most cases, the word development is often spoken with economic intent.

The term "development" in international usage implies the need and methods for providing better living conditions for people, especially those residing in poor countries. It includes not just economic growth, though that is crucial, but also human development—which implies providing for health, nutrition, sanitation, education, and a sustainable environment.

The United Nations Development Programme (UNDP) uses a more elaborate definition of development, which aims 'to enable people to lead long and healthy lives, to be knowledgeable, to have access to the resources which enable a decent standard of living and to participate in the life of the community.'

Development is, therefore, empowerment. It should be aimed at unshackling people from obstacles that constrain their abilities to advance their lives and

those of the communities. In 2000, the UN Millennium Declaration was adopted, which aimed to remove poverty, buttress human dignity and equality, and realise peace, democracy, and environmental sustainability. The eight goals enshrined in the declaration reflect the meaning and aim of development that the UN envisages. These eight goals are-

1. To ensure environmental sustainability.
2. To remove extreme poverty and hunger
3. To ensure gender equality and to empower women.
4. To improve maternal health
5. To achieve universal primary education
6. To tackle the menace of HIV/AIDS, malaria, and other diseases
7. To develop a global partnership for development
8. To reduce the child mortality rate

The role of ICT in pursuing the aforementioned objectives of the UN can be that of a facilitator.

3.4 HOW DEVELOPMENT AND DIGITAL DIVIDE ARE INTERLINKED?

If we chart the growth of the economy since early civilisation, we will come across three stages:

- i. Agricultural economy phase
- ii. Industrial economy phase, and finally
- iii. Service economy phase.

Agriculture played an important role in human civilisation. Civilisation develops only with settled agriculture. During the agricultural phase, man uses his skills upon nature to produce and fulfil his material needs. He lived in this phase for centuries, where he carved out glorious empires and built magnificent buildings. However, a turning point occurred with the Industrial Revolution's advent in 18th C. AD. The whole process of production undergoes a drastic change. The earlier manual mode of production gave way to the machine mode of production, drastically reducing the time required for production and increasing the quality of goods produced. Technology played an important role in this phase, and the growth or development of the economy became contingent upon technology.

However, the third phase, i.e., the emergence of the service economy, played (and continues to play) a dominant role in a country's economy and, consequently, its development. It must be noted that the emergence of this sector coincided with the emergence of Information and Communication Technology. ICT prepared the ground for the emergence and proliferation of the service sector. It is here that ICT (and its demographic corollary- digital divide) plays an important role in development. Given the role ICT has attained in the service sector, the transition of any country from a developing to a developed economy without it is considered unimaginable.

Since there is no unanimity upon the definition of a developed and developing economy (or country), the basic difference, as far as our study is concerned, can be presumed to be the relative share of the primary and tertiary sectors in the economy of the country. While developed economies usually have a larger tertiary sector and most of the workforce is engaged in its service industries, agriculture (primary sector) is the major contributor to the country's GDP in less developed economies.

Therefore, ICT becomes pivotal in a developed economy since the service industry is existentially dependent on it.

Check Your Progress: 1

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this Unit.

1. How would you define the Digital Divide, and what factors contribute to its existence in today's society?

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2. Explore various dimensions of development beyond economic growth and discuss how they relate to societal progress and well-being.

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3. Discuss the interconnectedness between the Digital Divide and Development.

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3.5 ICT IN INDIA

It becomes pertinent to peek into the role and reach of ICT in India. Before we proceed, let us have a statistical look at the level of internet penetration in India. Though India has 460 million Internet users and is ranked as the second largest online market after China, its Internet penetration is dismal when counted in terms of the percentage of people accessing the Internet. Nevertheless, ICT has stimulated progress across various dimensions of society, from connecting individuals to spreading across businesses and governments. Unfortunately, a digital divide exists in accessibility between higher-income and lower-income nations. High-income countries will inevitably show greater penetration of information communication technology than less developed countries. What is needed is that to be able to uphold greater social development in the world, it is vital to escalate access to digital technology universally.

There has been exponential growth in internet users in the past two decades. The increasing penetration of information communication technology by bridging the existing digital divide is directly related to any nation's greater social growth. It is also important to build up the consistent human capital required to use the technology optimally. ICT can benefit the economy by increasing output, but only if people with access to the technology have the necessary potential to make the best use of it.

We can state here that to bring greater diffusion of information communication technology to society, we must make it more affordable so that people of every class can afford it. This is possible through support from multilateral organisations to the developing nations by assisting them in building their communication infrastructure. Moreover, promoting healthy market competition in Internet provision and reassuring public-private partnerships in building digital infrastructure could increase the affordability of ICT and thus improve access to it. Further, digital divides can also be lessened by bringing greater awareness among citizens about the use of digital technology, which could help decrease information inequality in society.

Retail e-commerce sales in India stood at 16.08 billion US dollars in 2016, making it the second-largest online market after China. It is expected to surpass 45 billion USD in 2021. From the above figures, it is evident that most Indians use the Internet for socialising and purchasing. Though the former may be discarded as a leisurely activity, the latter can be an index of economic development since the volume of online trade that is taking place in India, as is evident from the figures above, is indicative of the country's economic robustness. After looking into facts, figures, and statistics, let us revert to the basic question: What role does ICT play in development, and how is the digital divide an impediment in its pursuance?

3.5.1 Role of ICT in Development

You are already aware that the scopes of ICT in Development are numerous and can be summarised in the following points as per a United Nations report-

- The ICT sector's output directly contributes to the economy.
- Advancement in public administration through ICT in governance by bringing administration closer to people through e-portals of the government departments. In this way, transparency in the procurement process for public service contracts can be ensured, thereby reducing corruptive practices.
- ICT can be used to improve education, including distance learning and training.
- ICT can be used to improve the delivery of healthcare services, including the application of telemedicine.
- ICT can be used to monitor ecological situations and maintain environmental stability.

The benefits of ICT can be used to tackle the problems of poverty, illiteracy, and universal healthcare, as well as to bring governance closer to people and make it more citizens centric. As said before, a country's transition from a developing to a developed economy is contingent upon the spread and use of ICT in its service industry.

An economy evolves in a dialectical fashion. On one hand, it opens up newer opportunities and professions, thereby playing a pivotal role in employment generation; on the other hand, it throws up the complexities of managing and governing vast urban expanses which face a shortage of amenities and services. Consequently, cities today face the problem of urban implosion, whereby the services and basic amenities required are falling short of demand, nullifying the very reason for the migration of people from rural to urban areas. The above problem can be addressed by employing ICT in governance and in the provisioning of services.

3.5.2 ICT and Governance in India

The majority of Indians reside in rural areas. As per the Census 2011, 69% of the population resides in rural areas (in the previous Census, this figure stood at 72%), and 55% of its workforce is in the primary sector. To enhance and sustain the overall prosperity, economic growth and social development in the global competitive regime, the Government of India initiated a National E-Governance Plan (NeGP), which is an initiative of the Government to make all its services available to the citizens of India via electronic media. The rural e-Governance projects implemented in the recent few years have aptly demonstrated the importance of ICT in the areas of rural development that are in question. Some of the schemes introduced in rural India have improved government services immensely. Instances like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Online Income Tax, Online Central Excise, Unique ID (Aadhaar), e-Stamp, E-office, online payment of bills, online booking (of goods and services), e-Choupal, e-Krishi, online FIR etc has not just accelerated the growth of respective areas and contributed to country's economic development, but also brought governance to every doorstep. The ambitious Aadhaar project is linking every citizen digitally and curbing the malpractices of bribery, red-tapism, tax evasion, etc, by bringing more transparency into governance.

ICT not only impacts citizen service delivery but also provides the much-needed stimulus to economic growth due to its focus on crucial social and industry sectors. The extensive use of ICT in governance not only provides better citizen service but also enhances the efficiency, transparency, and accountability of various government departments and agencies.

3.6 PREREQUISITES FOR PROPER FUNCTIONING OF ICT

However, the objectives mentioned above can only be achieved if a proper ICT infrastructure exists in the country. Infrastructure does not imply only the physical infrastructure (the availability of cheap internet services being a prime reason) but the social infrastructure as well, which means the

acceptability, readiness, and digital literacy of the citizens to use ICT to meet the demands of their service. It is here that the digital divide plays a role. With just one-fourth of the population having access to the Internet, the benefits of ICT in governance and development are constrained.

The digital divide does not exist merely at the level of availability of ICT, but also (and more importantly) at the level of adaptability and ability to use ICT for furthering one's development and that of the society in particular and the nation as a whole. Thus, there exists a digital divide between people living in urban areas and the ones living in rural areas, between rich and poor, between the young (who are more capable of using ICT for their own needs and desires) and the old generation (who find technology a bit difficult to comprehend). The digital divide also exists between men and women, as data suggests above. Men dominate internet usage in India with 71% compared to 29% of women. Thus, it is evident that the digital divide manifests itself at multiple levels and is not concentrated in a particular section or strata. This digital divide acts as an impediment towards growth and development.

Check Your Progress: 2

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this Unit.

1. What factors have influenced India's growth in internet usage, and what challenges persist in bridging the digital gap across different regions and demographics?

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2. Explore the role of social media in driving internet access in India. How has the widespread adoption of social networking platforms contributed to increased connectivity and digital inclusion?

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3. Investigate the impact of Information and Communication Technology (ICT) on commerce and economic development.

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3.7 LET US SUM UP

With a global shift towards a service economy, ICT's role in any country's development has become inevitable. It is not just development that also plays an important role in governance. Apart from providing better citizen service, ICT has also ushered in transparency and accountability in government

departments and agencies. It has brought administration closer to people, has radically transformed the way education used to be imparted, has ushered a revolution in healthcare through telemedicine or medical transcription, improved monitoring of welfare policies, improved management of ecology and maintenance of environmental stability, etc. ICT has no doubt brought about a revolutionary transformation in the economy as well as in the society. However, its benefits cannot be inclusive unless a large digital divide incapacitates three-fourths of the population and puts them outside the domain of ICT. Consequently, if this digital divide is not bridged or addressed on time, it will again give rise to socio-economic disparity, with the disparity not being centred on literacy but on digital literacy.

3.8 FURTHER READINGS

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3.9 CHECK YOUR PROGRESS: POSSIBLE ANSWER

Check Your Progress 1

1. The Digital Divide refers to the gap between those who have access to modern information and communication technologies (ICTs) and those who do not, exacerbating social and economic inequalities. Factors contributing to its existence include economic disparities, infrastructure limitations, educational barriers, and socio-cultural factors. Additionally, disparities in digital literacy and skills, as well as issues of affordability and accessibility, play crucial roles. Discrimination based on gender, age, ethnicity, and geographic location further widens the divide, hindering marginalised communities from benefiting from digital advancements.
2. Development encompasses various dimensions beyond economic growth, including social, environmental, and political aspects. Societal progress and well-being hinge on factors such as healthcare, education, environmental sustainability, equality, and political stability. Quality of life indicators, like life expectancy, education levels, and access to basic amenities, reflect a society's holistic development. Addressing social inequalities, promoting environmental sustainability, ensuring political inclusivity, and fostering cultural preservation are integral to achieving comprehensive development and enhancing overall well-being.
3. The Digital Divide and Development are intricately linked, with access to digital technologies playing a significant role in socio-economic progress. Bridging the divide can enhance education, healthcare, employment opportunities, and access to information, thereby fostering overall development. Conversely, unequal access to digital resources can exacerbate existing inequalities, hindering socio-economic advancement. Development efforts must prioritise closing the digital gap to ensure inclusive growth and empower marginalised communities. Additionally, digital literacy and skill-building initiatives are essential to maximise the benefits of technology and promote sustainable development.

Check Your Progress 2:

1. India's growth in internet usage has been influenced by factors such as technological advancements, government initiatives, and increased mobile penetration. Initiatives like Digital India aim to expand digital infrastructure and promote digital literacy, driving internet adoption across the country. However, challenges persist in bridging the digital gap, including inadequate infrastructure in rural areas, affordability constraints, linguistic diversity, and disparities in educational attainment. Additionally, cultural barriers and gender disparities contribute to unequal access to technology. Efforts to address these challenges require holistic approaches, including infrastructure development, affordability measures, and targeted interventions to empower marginalised communities.
2. Social media has played a pivotal role in driving internet access in India,

facilitating connectivity and digital inclusion. Platforms like Facebook, Twitter, and Instagram have provided avenues for communication, networking, and information sharing, particularly in rural and underserved communities. Social media's popularity has spurred internet adoption, especially among youth and urban populations. Furthermore, initiatives like Facebook's Free Basics have aimed to provide free access to essential online services, further promoting connectivity. However, challenges such as misinformation, privacy concerns, and digital divides based on socio-economic factors persist. Leveraging social media for digital literacy efforts and community engagement can enhance its role in promoting inclusive connectivity and bridging the digital gap.

3. Information and Communication Technology (ICT) has significantly impacted commerce and economic development, transforming business models, markets, and trade practices. ICT facilitates global connectivity, enabling businesses to reach wider markets, streamline operations, and enhance productivity. E-commerce platforms have revolutionised retail, providing convenience and accessibility to consumers while promoting entrepreneurship and market competitiveness. Moreover, ICT-driven innovations like mobile banking and digital payment systems have expanded financial inclusion, empowering individuals, and businesses. However, challenges such as digital security, infrastructure limitations, and skill gaps need to be addressed to maximise the socio-economic benefits of ICT. Overall, embracing ICT can foster economic growth, create employment opportunities, and drive sustainable development.

UNIT 4 ISSUES OF DIGITAL INEQUALITY

Structure

- 4.0 Introduction
- 4.1 Learning Outcomes
- 4.2 Digital Inequality: A Social Problem
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 - 4.3.1 Shift from Divide to Inequality
 - 4.3.2 Dimensions of Digital Inequality
 - 4.3.3 Concept of Digital Inequality
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4.0 INTRODUCTION

The proliferation of information and communications technology (ICT) has given prominence to the digital divide discourse, which has become a subject of global concern. With the rise of new ICTs in the second half of the 1990s, the notion of the digital divide emerged in the policy context to address unequal access to digital technologies. Not all countries have the same ICT penetration or growth rate. Developing countries, particularly in Africa, Asia, and Latin America, often face significant challenges regarding access to digital infrastructure, affordability of digital devices, and availability of digital skills and knowledge. Although it has become hard to imagine life without the Internet and other forms of ICT, only some have the same access to devices such as phones, tablets, laptops, and desktop computers. Thus, the discussion over access to digital technologies has given rise to a debate over their usage from the standpoint of equality.

Simply put, digital inequality results from unequal access, skill, and use of the Internet and other ICTs. The conceptual framework for understanding digital inequality deals with the causes and consequences of digital inequality concerning ICTs, considering those as empowerment tools. Several disciplines contribute elements to the framework of digital inequality. Sociology emphasises social inequality regarding access to resources, control over different types of capital, and social involvement. Psychology examines problems as well as attitudes and reasons for using technology. Economics emphasises the spread of relevant innovations. Education deals with digital literacy, skills, and competence. Above all, communication studies deal with the tangents of mediated communication by constructing a connection between elements. Therefore, addressing the concept through the lens of communication studies requires a multi-faceted approach that involves sociological and technological perspectives intertwined with psychological, educational, and economic dimensions.

This Unit describes conceptual and theoretical patterns for identifying and understanding digital inequality using socio- and techno-centric accounts. Although only a small amount of theoretical study has been done on digital inequality so far, the Unit sheds light on traditional and emerging concepts and frameworks that revolve around the rise of the digital divide, the manifestation of digital inequality, multiple concepts related to its components, and new forms of digital inequality.

4.1 LEARNING OUTCOMES

After completing this Unit, you should be able to:

- Understand the multidimensionality of digital inequality;
- Explain the nuanced conceptual and theoretical approaches in the field of digital inequality;
- Discuss the digital inequality from a Sociological Perspective; and
- Understand the technological approach to digital inequality.

4.2 DIGITAL INEQUALITY: A SOCIAL PROBLEM

Neither the essences of individuals nor the essences of specific collectives or systems (such as capitalism or patriarchy) serve as the starting point for this idea of inequality (van Dijk, 2005). Instead, inequality is based on the connections, relationships, interactions, and transactions between people. Therefore, digital inequality is a societal rather than a technical issue.

Access to digital technologies is necessary for participation in many aspects of life, including education, employment, healthcare, and social interaction. Individuals with limited access to digital technologies may find it difficult to fill out online job applications, communicate with potential employers, access online training resources, etc. Digital inequality is a social issue because it creates and expands social inequalities in education, employment, and information access. Those with limited access to digital technologies and

skills may experience significant disadvantages in these areas, affecting their social and economic well-being.

Digital inequality can exacerbate other forms of social inequality, such as those based on race, gender, and socioeconomic standing. Those already marginalised in these areas may experience even more difficulty gaining access to and utilising digital technologies, which can exacerbate existing social disparities. As an example, in India, the digital gender gap encourages gender inequity. With internet connectivity, women may be included in employment opportunities, educational opportunities, and social networks, restricting their social mobility and economic desires. Digital inequality is a social concern because it creates and reinforces social inequalities, which can have long-term repercussions for individuals and society.

4.3 UNDERSTANDING THE CONCEPTUAL DEVELOPMENT

The term "digital divide" was not coined by any theorist; instead, it was first used in an official publication by the National Telecommunications and Information Administration (NTIA, 1999) in North America. In the earliest accounts of the phenomenon, the "digital divide" meant a disparity in the likelihood of having access to information and communication technologies (ICT) based on demographic characteristics such as race, gender, age, socioeconomic status, level of education, and the composition of the household. As the prevalence of computers and the Internet increased in developed nations, the discourse began to evolve, and more intricate conceptualisations were devised. In a short period, research on the digital divide has gained importance as an academic field; as a result, the concept of the "digital divide" has become more comprehensive with the emergence of "digital inequality".

4.3.1 Shift From Divide to Inequality

The term "digital divide" originally referred to the disparity between people with access to modern technologies and those without access (Van Dijk, 2005). This definition of the digital divide has been observed in terms of physical access to telephones, personal computers, cellular devices, etc. Later on, the definition became discordant with understanding the multidimensionality of communication beyond physical access to technologies. Moreover, it has become clear to social scientists that the digital divide is not related to a single binary gap but is intertwined with various social, economic, and technological issues. As social scientists observed the nuances of digital access's social causes and consequences, the term got another social dimension called "inequality". According to this concept, the differences in access and usage of digital technologies are directly or indirectly related to social, cultural, political, and economic inequalities.

4.3.2 Dimensions of Digital Inequality

The digital divide laid the foundation for the concept of digital inequality. To understand the concept of digital inequality, one needs to understand the

levels of the digital divide. Three levels of the digital divide correspond to multiple dimensions of digital inequality.

Table 1. The three levels of the digital divide

Levels	Deals With
First level	Binary access to ICTs (have or have not)
Second level	Digital skills
Third level	The tangible outcome of digital usage

Source: Author's compilation

The first level: The first level of the digital divide describes the unequal distribution of access to digital technologies. Low-income persons, those living in rural regions, people with impairments, and members of racial and ethnic minorities are disproportionately impacted by this divide.

Second level: The second level of the digital divide refers to the unequal distribution of digital skills and competence among people with access to digital technologies. This divide affects those with access to digital technologies but lack the skills and competence to use them effectively. Individuals from low-income or marginalised communities may lack access to education or training in digital skills, resulting in the second level of the digital divide.

Third level: Access to digital devices and acquiring digital skills often fail to predict evenly distributed digital participation (meaningfully participating in the digital sphere). The third level of divide refers to the disparities in abilities to use digital technologies to achieve tangible outcomes of technology usage, such as online learning, remote work, e-commerce, and civic engagement.

4.3.3 Concept of Digital Inequality

The term "digital inequality" reflects a broader conception of the digital divide and incorporates a variety of factors beyond access to technology, including skills, usage patterns, and stakeholders involved in the acquisition of empowerment through technology. It acknowledges that more than merely providing access (binary access to digital technologies) to technology is required to ensure equal benefits from its opportunities. Unequal access to economic, social, cultural, and personal resources impacts digital engagement (Helsper, 2012). Inequality may limit or boost citizens' social, economic, political, personal, and cultural capital, affecting their access to essential knowledge and ability to engage in society (Van Dijk, 2005). A range of determinants contribute to disparities in access to and use digital technologies.

Table 2. Determinants of digital inequality

Socio-demographic	Age, gender, marital status, residency, living area
Economic	Income, employment status, employment type, occupational status, educational level

Social	Online social interaction, social networking, types of social activities
Cultural	Religion, ethnicity, internet use, language
Personal	Type of online activity language skills, English skills, cognitive function
Material	Internet access, access locations, number of electronic devices
Motivational	Attitude towards ICTs, internet motivation, frequency of internet use, time spent online

Source: Adapted from Scheerder, Deursen, & Dijk (2017)

4.4 DIGITAL INEQUALITY AND CONTEMPORARY SOCIETY

The information and network society context best describes high-tech cultures of particular interest that cater to the digital environment. Scholars, including Manuel Castells and Jan van Dijk, used information and/or network societies to discuss disparities in ICTs. Although developed civilisations often display more information and network society features, discussing these concepts must be addressed in pursuing digital inequality, even in other world sections.

4.4.1 Inequality in Information Society

The idea of an information society broadly describes cultures in which information increasingly serves as both the primary input and output for all processes. Manuel Castells (2011) says that an information society is a social organisation where information creation, processing, and transmission become the primary sources of productivity and power. Knowledge, information, and data continually expand and advance quickly in the information society. Inequality in the information society appears at the most fundamental level of information need, which leads to a widening gap in the capacity for association and knowledge transfer and in the capacity to judge the quality of information and make other related decisions. In modern times, there is a considerable disparity in the distribution of information abilities among different groups of people.

4.4.2 Inequality in the Network Society

The concept of network society is not synonymous with the concept of information society; instead, it is an extension of it. The notion of an information society emphasises the changing nature of activities and processes in modern developed nations. According to Castells (2011), the network society is an informational society in which networks serve as the core organisational structure and pervade all areas. Van Dijk (2006) characterised the network society as an information society shaped by a nervous system of social and media networks. Networks are formed when specific actors select others to join them. As a result, individuals or organisations are either included or removed. Being unable to connect to

these networks entails complete exclusion and digital marginalisation.

Check Your Progress: 1

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this Unit.

1. Explain the concept of “digital inequality”.

.....
.....
.....

2. What are the levels of digital inequality?

.....
.....
.....

3. Mention any three essential determinants of digital inequality.

.....
.....
.....

4. How does inequality affect the information society?

.....
.....
.....

4.5 TECHNOLOGICAL APPROACH TO DIGITAL INEQUALITIES

Research-based theories and models help us make sense of complex ideas. Digital inequality, an interconnected and complex phenomenon, can be observed through various theoretical frameworks. Over the past decades, several theories regarding the unequal distribution of ICTs have emerged from studying their introduction, diffusion, and use. Theoretical frameworks for comprehending inequalities regarding how people adopt and integrate new technologies to be discussed include the Diffusion of Innovation Theory, the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Resources and Appropriation Theory (RAT).

4.5.1 Diffusion of Innovation Theory

The diffusion of innovation theory was developed by E.M. Rogers in 1962 to describe how a community of potential customers adopts and spreads an innovation. This theory constructs the pattern by which new ideas, practices or products spread through a population. In this process of innovation and diffusion, diffusion occurs when individuals go through the steps of being aware of the need for an invention, deciding to adopt or reject the innovation, trying out the innovation for the first time, and then using the innovation

regularly. Rogers divided adopters into five groups according to how long it took them to decide to adopt. The categories are innovators, early adopters, early majority, late majority, and laggards.

Innovators: People willing to take risks are the first to try new ideas.

Early adopters: Those eager to test the latest innovations and determine their application for everyone.

Early majority: People from the general population who are the first to adopt new technology in the mainstream.

Late majority: People from another part of the general population who follow the early majority and start using the new things in their everyday lives.

Laggards: People who are slower to adopt new products and ideas. They are risk-averse and inflexible.

Each of the five types of adopters is affected by the five primary elements that influence innovation adoption, although to varying degrees: relative advantage, compatibility, complexity, trialability, and observability.

Relative advantage is the extent to which an innovation is perceived as superior to the concept, product, or item it replaces.

Compatibility is the degree to which the innovation is consistent with the prospective adopters' values, experiences, and requirements.

Complexity: The difficulty in comprehending and/or implementing the innovation.

Trialability: The extent to which an innovation can be evaluated or experimented with prior to adoption.

Observability: The degree to which the innovation yields measurable outcomes.

Relevance in the pursuit of digital inequality: The theory may lack some ICT-specific modifications of components, but it is more robust to the diverse and constantly shifting complexities of technologies. Thus, it provides an understanding of the adoption of ICT over time or the diffusion of the Internet.

4.5.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

In 2003, V. Venkatesh, M.G. Morris, G.B. Davis, and F.D. Davis proposed UTAUT by utilising popular models in the field of technology adoption. UTAUT is a popular framework for understanding how people adopt and use new technologies. It suggests that actual technology use is determined by behavioural intent. According to this theory, the perceived likelihood of adopting technology is directly influenced by four critical constructs: performance expectation, effort expectation, social influence, and enabling conditions. Age, gender, experience, and voluntariness moderate the effect of these indicators.

Components of the UTAUT include -

Performance expectation: This refers to the degree to which individuals perceive that a specific technology will assist them in performing their tasks more effectively or efficiently.

Effort expectation refers to the degree to which individuals assume that using a specific technology will be simple and require minimal effort.

Social influence: This refers to the extent to which individuals are influenced by the opinions and attitudes of others in their social networks, such as family, friends, and colleagues.

Enabling conditions refer to the extent to which individuals have access to the required resources and infrastructure to use a specific technology, such as computers, internet connectivity, and technical support.

Relevance in the pursuit of digital inequality: Researchers have used the UTAUT to examine the factors that influence the adoption and use of digital technologies in communities with limited access in the context of the digital divide. Although the UTAUT has been widely used to characterise the digital gap, it and its components have been limited in characterising recent patterns of digital inequality.

4.5.3 Resources and Appropriation Theory

Jan van Dijk (2005) explained the resources and appropriation theory, addressing the social, cultural, and technological factors contributing to digital inequality.

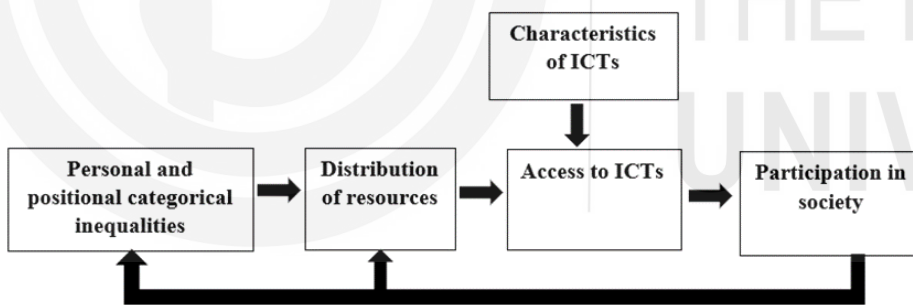


Figure 1. A Casual Model of Core Arguments

Source: Jan van Dijk (2005), The Deepening Divide

The core arguments of the theory are as follows:

- The unequal distribution of resources results from categorical inequalities in society.
- Unequal access to digital technologies results from an unequal distribution of resources.
- Unequal access to digital technologies is also influenced by the features associated with the technology.
- Unequal participation in society results from unequal access to digital technologies.
- Unequal distribution of resources and categorical inequalities are reinforced by unequal participation in society.

The components of the core arguments have been narrated as follows:

- i) **Categorical inequalities:** Various personal and positional categories are accountable for the unequal distribution of resources required to access digital technologies. Personal categories comprise individual traits such as age, sex, race, intelligence (cognitive, emotional, and social), and personality (introvert, extrovert, and others). Positional categories include stratifications in the following areas: household (parent-child, husband-wife), management-executive, developing-developed, urban-rural, citizen-migrant, and high-low education.
- ii) **Resources and mechanisms of distribution:** An uneven access to digital technologies results from an unequal distribution of resources, where a few mechanisms (social exclusion, exploitation, and control) work throughout the process. The resources identified in theory are temporal (time to spend on different activities in life); material resources (income and all kinds of monetary properties); mental resources (knowledge, social, and technical skills, excluding digital skills); social resources (social network positions and relationships); and cultural resources (cultural status and all kinds of credentials).
- iii) **Successive kinds of access:** The fundamentals of resources and appropriation theory explain the stages of digital appropriation, with motivation access being the first, material access being the second, and usage access following after skill access.
 - **Motivational access:** Motivation refers to the factors, such as perceived utility and relevance, that influence people's interest in and engagement with digital technologies. Motivations vary from an attitude towards a particular digital medium to financial factors.
 - **Material or physical access:** Material or physical access refers to the physical accessibility of digital technologies such as computers and the Internet. Time (whether one has time or not) and places (home, school, public places, etc.) to use digital tools and technologies all come under physical access.
 - **Skills access:** Skill access refers to the digital literacy and skills required to effectively utilise digital technologies and the Internet. Skills that account for the usage of digital media encompass operational (the skills needed to operate computers and internet connections), informational (skills used to search, select, and process information from computer and network sources), and strategic (skills to achieve personal or professional goals).
 - **Usage access** describes how individuals utilise digital technologies and the Internet, precisely the intensity of usage time and diversity of applications.
- iv) **Properties of ICT (Hardware, Software, and Content):** The degree to which a person accesses a particular ICT depends on its technological characteristics. Some of the properties of an ICT tool facilitate access, while others limit it. Complexity and expense limit access, while

multifunctionality and network effects expand it. The formats of new media content are an essential characteristic that has a more significant impact on accessibility.

- v) **Fields of participation in society:** In many parts of society, access to new media can mean the difference between being included and excluded. The umbrella term for these repercussions is participation in society. People with less exposure to digital media have steadily decreasing opportunities to participate in arenas such as citizenship, education, politics, culture, social interactions, and health care.

Relevance in the pursuit of digital inequality: Researchers have used resources and appropriation theory to comprehend digital inequality by analysing the distribution of resources and how individuals and groups appropriate and utilise them in the digital domain.

4.6 CONCEPTUAL DIMENSIONS FROM A SOCIOLOGICAL PERSPECTIVE

Several traditional social theories serve as a background to the conceptual understanding of sociological approaches to digital inequality that can be used to probe its many facets and depths. Bourdieu's conceptions of capital and Weber's social stratification delve into the humanistic and social influences residing in digital inequality.

4.6.1 Bourdieusian Approach

Bourdieu (1986) defines capital as any resource that gives an individual an advantage that can be accumulated over time. Capital enables agents to replicate their positions within the social field and can take one of three fundamental forms: economic, cultural, or social capital, based on the arena in which it operates. In turn, each person's capital supports social inequality and social hierarchy. The conceptualisation of capital by Bourdieu has laid a foundation for a deeper understanding of digital inequality (Ragnedda & Ruiu, 2020).

In other words, people use and invest their social, cultural, and economic assets to strengthen their social status (symbolic capital). The capital of an individual not only creates the first level of the digital divide between those who can and cannot access the Internet but also the second level of the digital divide in terms of skill and capacity to use the Internet and the third level of the digital divide in terms of the social, economic, cultural, political, and personal advantages of being an internet user.

Bourdieu introduced the concept of social fields, structured spaces where individuals and groups compete for resources and power. In digital inequality, the digital realm can be considered a social field where individuals' engagement is influenced by their habits—the internalised set of dispositions, behaviours, and preferences shaped by their social and cultural background. Digital inequality through the lens of social fields and habits allows an understanding of how individuals' social positioning and cultural capital influence their access to and use of digital technologies.

4.6.2 Weberian Approach

The Weberian approach, rooted in the sociological theories of Max Weber, can provide valuable insights into the intertwined processes between social and digital inequalities. Social inequalities as a potential topic of discussion in the discipline of digital inequality have been examined through the lens of Weber's social stratification and power dynamics. The Weberian approach to digital inequality uncovers the structural and systemic factors that contribute to digital inequality and guides efforts to mitigate disparities in access, skills, and resources in the digital realm.

Weber emphasised social stratification based on various dimensions, such as class, status, and power. Social stratification illuminates the manifested and circulated uneven distribution of resources. As per the concept, a group of people, being in a privileged position in society, take more advantage of ICTs and put them to use in achieving a tangible outcome (enhancement of life chances), such as job search, purchase, access to health care, political engagement, learning, socialisation, cybersecurity, leisure, and relationships with bureaucracy. As a result, different social groups, such as economically disadvantaged or marginalised communities, experience different levels (high to low) of access and benefits in the digital realm.

According to this approach, digital stratification intensifies on the following grounds:

Class: A class with limited capacity to use ICTs lacks the economic opportunities they offer.

Status group: A status group with limited capacities to use ICTs cannot benefit from usage in status building, enhancement, and improvement.

Power: Limited capacities to use ICTs delimit personal interests, political power, and influence.

4.7 DIGITAL CAPITAL

Digital capital is the Bourdieusian approach to the digital realm. Following Bourdieu's concept of capital, digital capital is defined as the accumulation of both digital competence (internal skills and attitudes) and digital devices (external resources). It improves the tangible outcome of digital technologies by turning them into other forms of capital, such as social, economic, and cultural.

The core arguments for the concept are as follows:

- Digital capital is closely connected with economic, social, and cultural capital. A person needs these three capitals to build a good attitude and the right skills to use technology well.
- Digital capital is distributed unequally in society. Individuals with higher traditional forms of capital (such as education and social prestige) tend to have higher levels of digital capital. This indicates that people from more privileged backgrounds are more likely to have the skills, resources, and

social connections necessary to flourish in the digital world. In contrast, less privileged people may struggle to access and use digital resources effectively.

- People need a network of support (social capital), such as friends, family, and an online community, to build up their digital capital. At the same time, they need money (economic capital) to access ICTs and knowledge, skills, and abilities (cultural capital) to use ICTs effectively.

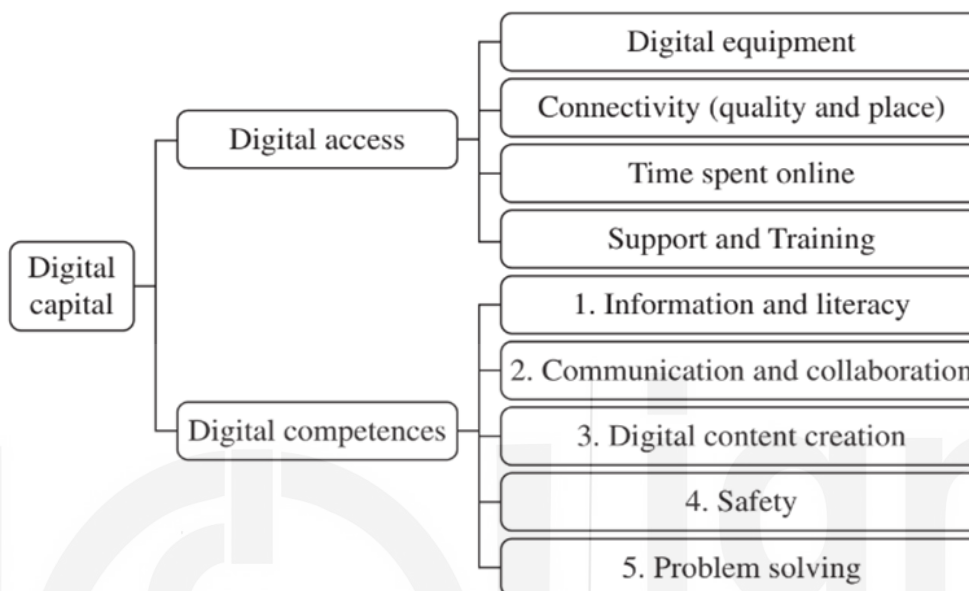


Figure 2. The Components of the Digital Capital Model

Source: Massimo Ragnedda and Maria Laura Ruiu (2020), Digital Capital: A Bourdieusian Perspective on the Digital Divide.

In 2020, Massimo Ragnedda and Maria Laura Ruiu proposed the digital capital model. Digital competence and access are two distinct components of digital capital that can be built up and transferred to improve life chances. According to the concept, in an Internet-based society, digital capital joins the Bourdieusian capitals as an essential factor in illuminating the causes and consequences of social stratification and differentiation.

An individual's digital capital can be accessed by cumulating all digital access and competence elements. This model helps comprehend the patterns of digital inequality concerning digital capital resourcefulness. In simple words, it identifies digital capital inequality.

The elements of the core components have been described below:

Digital Access

Four elements of digital access:

- Digital equipment:** Devices used to access the Internet, such as mobile phones or smartphones, laptops, and desktop computers.
- Connectivity:** Access quality depends on which setting is used to access the Internet.
- Time spent online:** Cumulative experience in using ICTs in terms of total time of internet usage (years of usage)

- iv) **Support:** Seeking help to support experiences related to digital technology

Digital competence

- i) Competence Area 1: Information and Literacy
- The activities of browsing, searching, filtering, data, information, and digital content
 - Evaluating data, information, and digital content
 - Managing data, information, and digital content
- ii) Competence Area 2: Communication and Collaboration
- Interacting through digital technologies
 - Engaging in citizenship
 - Sharing and collaborating through digital technologies
 - Managing digital identity
- iii) Competence Area 3: Digital Content Creation
- Developing, integrating, and re-elaborating digital content
 - Knowledge about copyright and licences
 - Programming
- iv) Competence Area 4: Safety
- Protecting devices, personal data and privacy
 - Protecting health and well-being and the environment
- v) Competence area 5: Problem-solving
- Solving technical problems, identifying needs and technological responses
 - Identifying digital competence gaps

4.8 DIGITAL INCLUSION - EXCLUSION AND PARTICIPATION

Digital inclusion refers to the efforts and initiatives aimed at ensuring that all individuals, regardless of socioeconomic background, geographic location, age, gender, or ability, have equal access to and opportunity to use digital technologies effectively. Digital inclusion efforts may involve:

- Increasing internet access
- Bridging the digital skills gap
- Access to digital devices
- Creating digital content
- Addressing affordability
- Empowering marginalised communities
- Policy and regulatory interventions

Digital exclusion is when individuals or groups are systematically excluded from accessing and utilising digital technologies and resources, resulting in a

lack of participation in the digital world.

The digital participation of individuals assures the digital inclusion of an individual and, on a larger scale, a specific group or community. In this context, participatory inequality, which may be defined as people's inability to use the Internet to produce and disseminate digital resources, is a potential barrier to the growth of a network society.

Table 3. Areas of participatory inequality

Area	Inequality
Economic participation	Inequalities regarding the usage of ICTs to participate in the labour market and business
Educational participation	Inequalities regarding educational usage of ICTs
Social participation	Inequality in the field of social capital building (e.g., building social networks)
Cultural participation	Inequality related to online cultural practices
Political participation	Inequality over the Online political discourse
Institutional participation	Inequality in achieving digital citizenship

Source: Adapted from Jan van Dijk (2005)

To eradicate digital exclusion, stakeholders (governments, organisations, and local groups) must work together. Efforts to close the digital gap include building internet infrastructure, making devices and connections more affordable, providing digital skills training and literacy programmes, and creating digital platforms open to all users and meeting their needs. These actions aim to ensure that everyone has the same chance to access and benefit from the digital world.

4.9 NEW FORMS OF DIGITAL INEQUALITY

The rapid advancement of technology has resulted in the emergence of new types of digital inequality, discussed as follows:

Privacy and digital inequality: Privacy concerns are more important than ever in the digital age. Those with more information, resources, and technological skills can protect their data by implementing privacy-enhancing methods and practices. On the other hand, people with little access to resources or digital literacy may be more at risk of privacy violations, data exploitation, or data hacking, which can increase inequality.

Algorithms and digital inequality: Everything from search engine results to automated decision-making systems depends heavily on algorithms. Internet users consciously or unconsciously deal with unseen infrastructure called algorithms, logical rules, and technical prescriptions developed by programmers, mathematicians, and data engineers. Algorithms are essential for creating favourable conditions for participation in digital life; therefore, digital inequality arises from a lack of understanding of algorithms. Lack of awareness could negatively affect democracy and public involvement on a

societal level.

Artificial intelligence (AI) and digital inequality: Automation and other emerging technologies like artificial intelligence (AI) have the potential to produce new types of inequality. Access to and proficiency with these technologies can lead to increased productivity, better career possibilities, and financial gains. However, those people and communities that do not have the digital literacy to adapt to these disruptive technologies may be excluded from these advantages, which would increase inequality.

Check Your Progress: 2

Note: 1) Use the space below for your answers.

2) Compare your answers with those given at the end of this Unit.

1. Explain the Weberian approach to digital inequality.

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2. What are the core arguments of “Resources and Appropriation Theory”?

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3. Write the definition of digital inclusion.

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4. What are the two components of the digital capital model?

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4.10 LET US SUM UP

In this Unit, we gained a comprehensive understanding of digital inequality. It explained the factors contributing to inequality, such as disparities in access to technology, internet connectivity, digital skills, and usage factors. Delving into diverse frameworks of digital inequality, it defined the patterns and manifestations of digital inequality across different dimensions of academic disciplines. It also sheds light on how digital disparities intersect with age, gender, race, ethnicity, income, geographical location, and unequal access to digital resources and skills, affecting opportunities, outcomes, and possibilities to ensure equitable and secure digital environments. We learnt that the challenges faced by digital exclusion contribute to broader social and economic inequalities. We also explored new inequalities such as privacy, algorithmic, and AI-related inequalities. The discussion provided a deep understanding of the concept, offered diverse perspectives, and equipped you

with knowledge and insights from a technological and sociological perspective of digital inequality.

4.11 KEYWORDS

Internet inequality: Internet inequality refers to the differences between people, communities, and nations regarding their capacity to access and efficiently use the Internet.

Digital inclusion refers to the inclusion of individuals and communities in the digital world. This means that they have access to digital technologies, internet connectivity, and the necessary skills to use them effectively, thus gaining access to the economic, social, and cultural benefits of the digital world.

ICT: Information and communication technology (ICT) comprises diverse hardware, software, networks, and digital systems that process, store, transmit, and retrieve data and information.

Digital participation is the active engagement, involvement, and inclusion of individuals and communities in the digital world through digital technologies. These technologies allow them to access information, communicate, create, collaborate, and contribute to digital content and platforms.

AI: Artificial intelligence (AI) refers to emulating human intelligence in machines programmed to carry out tasks that typically require human intelligence. It allows machines to perceive, reason, learn, and solve problems, enabling them to imitate or replicate human cognitive abilities.

4.12 FURTHER READINGS

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4.13 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress: 1

1. The term "digital inequality" reflects a broader conception of the digital divide and incorporates a variety of factors beyond access to technology, including skills, usage patterns, and stakeholders involved. It acknowledges that merely providing access (binary access to digital technologies) to technology is insufficient to ensure equal benefits from the opportunities it provides.
2. Three levels of the digital divide correspond to multiple dimensions of digital inequality. The first level of the digital divide describes the unequal distribution of access to digital technologies. The second level of the digital divide refers to the unequal distribution of digital skills and competence among people with access to digital technologies. The third level of divide refers to the disparities in individuals' abilities to use digital technologies to achieve tangible outcomes of technology usage.
3. Determinants of digital inequality include economic determinants - income, employment status, employment type, occupational status, and educational level; social determinants - online social interaction, social networking, types of social activities; cultural determinants - religion, ethnicity, and internet use language.
4. Inequality in the information society appears at the most fundamental level of information need, leading to a widening gap in the capacity for association and knowledge transfer, the capacity to judge the quality of information and other information-related decisions. In modern times, there is a considerable disparity in the distribution of information abilities among different groups of people.

Check Your Progress: 2

1. Social inequalities as a potential topic of discussion in digital inequality have been examined through Weber's social stratification and power dynamics. The Weberian approach uncovers the structural and systemic factors contributing to digital inequality and guides efforts to mitigate disparities in access, skills, and resources in the digital realm.
2. Core arguments of the Resources and Appropriation Theory are (i) Unequal distribution of resources results from categorical inequalities in society. (ii) Unequal access to digital technologies results from an unequal distribution of resources. (iii) Their features also influence unequal access to digital technologies. (iv) Unequal social participation results from unequal access to digital technologies.
3. Digital inclusion refers to the efforts and initiatives to ensure that all individuals, regardless of socioeconomic background, geographic location, age, gender, or ability, have equal access to and opportunity to use digital technologies effectively.
4. Digital competence and access are two distinct components of digital capital that can be built up and transferred to improve life chances.