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Bridging the Language Gap: AI-Driven Translation for Indigenous Inclusion

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Abstract

Almost 88% of the population in a country with a large population of 1.324 billion has trouble understanding English, which makes it hard for them to do things like read pharmaceutical labels, grasp menus at restaurants, or even understand road signs. This inability to communicate effectively widens the gap between the well-off, who can afford to send their children to private schools taught in English, and the poor, who must settle for public schools where they are taught in their native tongue.

There are many different languages spoken in India, which is a strength, but it also presents difficulties for social inclusion. Due to the fact that many indigenous languages are in danger of being lost, it is essential to bridge the linguistic gap in order to ensure that everyone has equal access to opportunities. With the purpose of promoting indigenous inclusion and addressing language-based inequities, this article investigates the potential of translation technologies driven by artificial intelligence (AI), such as the Bhashini platform. Translation Powered by Artificial Intelligence: The Bhashini platform offers translation in real time for 22 different Indian languages Indigenous language preservation: techniques powered by artificial intelligence can document and promote languages that are less well-known

Communication in multiple languages improves access to government services and information, which is an essential component of inclusive governance. By bridging the digital divide and promoting digital literacy, artificial intelligence-driven translation contributes to digital empowerment. The importance of ensuring that artificial intelligence translations accurately convey nuances and context The lack of data for languages that are not widely known is a barrier to the development of artificial intelligence. Expanding access to digital technology in rural areas is an essential component of digital infrastructure. Translation powered by artificial intelligence has the ability to close the language gap in India and encourage the inclusion of indigenous people. It is possible for us to create a society that is more equal and inclusive if we take action to address issues and capitalize on opportunities.

1. Introduction

One aspect of Indian society that perpetuates inequality is the requirement for fluency in English for many government employment and higher education programs. The purpose of this paper is to provide a complete investigation into the difficulties and innovations that are related with teaching English to students who are located in rural areas of India. The purpose of this study is to contribute to the creation of inclusive and sustainable models for English language instruction by conducting an in-depth analysis of real-life case studies and experimental practices, as well as conducting a critical examination of the socio-cultural, infrastructural, and pedagogical barriers that exist in the field of English education. In the end, the objective is to make English education more relevant, powerful, and accessible to students in rural areas. This will allow rural students to confidently participate

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in the academic, professional, and global realms of the 21st century. According to the findings of this study, English teaching in rural areas has to go beyond the traditional ways of grammar translation and memorization methods. It advocates for a pedagogy that is learner-centered, adaptable, and inclusive, and that respects the learner's particular learning pace as well as their language background. At the end of the study, recommendations are provided for curriculum designers, teacher educators, and legislators. These recommendations emphasize the necessity of frequent teacher training, the development of resources that are bilingual and localized, and the incorporation of rural-specific needs into the planning of national education.

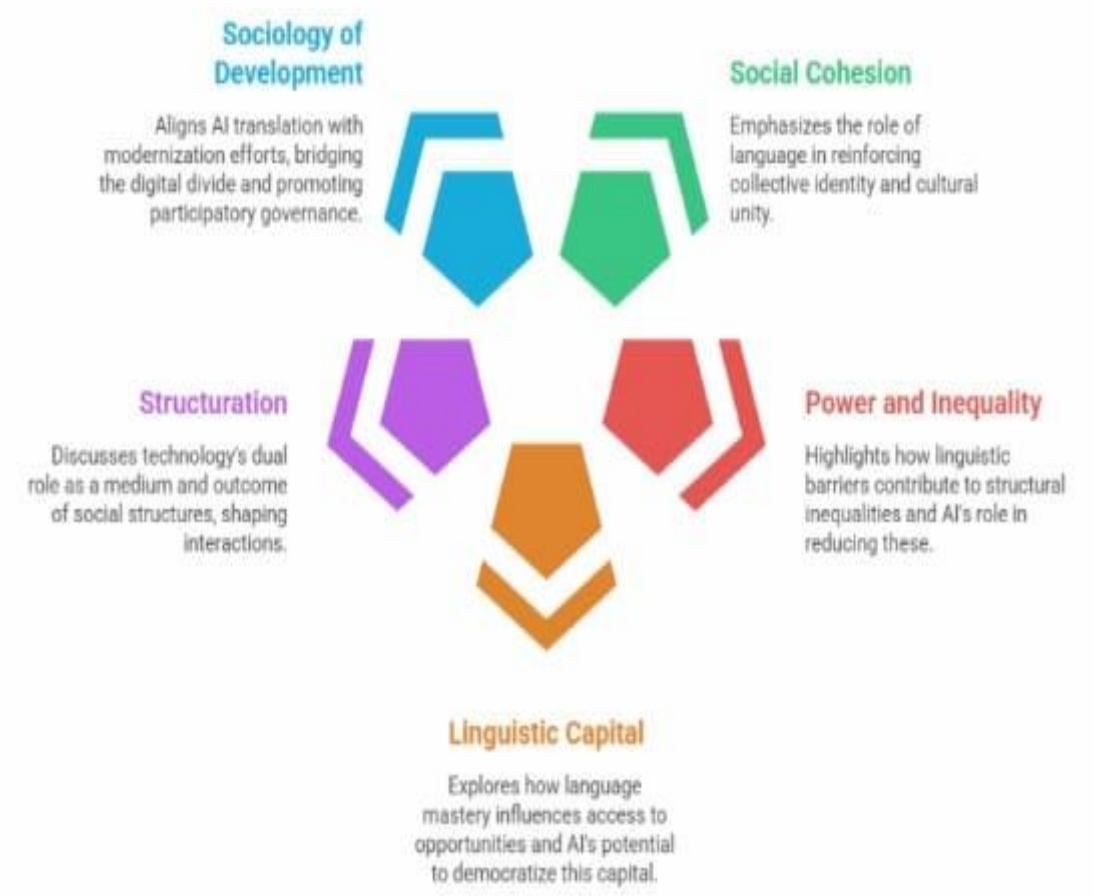
Communication is not the only function that language serves; it also serves as a vehicle for culture, identity, and involvement in social activities. The lack of access to digital and governmental content in tribal languages has traditionally contributed to the perpetuation of marginalization in multilingual societies such as India or other similar countries. This is an example of how technology may mediate social inclusion, mirroring sociological concerns about equity, cultural preservation, and empowerment. Aadi Vaani is India's first artificial intelligence-powered translator for tribal languages, and its introduction is a prime example of this trend.

Among the Adivasi languages that are translated by Aadi Vaani are Bhili, Mundari, Gondi, Santali, Kui, and Garo. Hindi and English are other possible translations. It handles "low-resource" languages by utilizing artificial intelligence models known as NLLB (No Language Left Behind) and IndicTrans2, which enables tribal populations to participate in governance responsibilities, educational opportunities, and career prospects. Gramsci's concept of cultural hegemony is demonstrated by this initiative, which is connected to Adi Karmayogi and encompasses one million communities and twenty million volunteers. This initiative exemplifies how access to information allows subordinate populations to resist structural imbalances.

2. BHASHINI and Linguistic Equity

In order to improve digital accessibility and inclusivity, the National Language Translation Mission (BHASHINI) encourages translation across more than 22 different Indian languages. Integration with platforms such as e-Shram, e-Gram Swaraj, CPGRAMS, AICTE, and UGC makes it possible for marginalized people to exercise agency. This approach resonates with Amartya Sen's capability approach, which places an emphasis on enhancing substantive freedoms and possibilities.

3. Sociological Dimensions and Thinkers



- Émile Durkheim: Social Cohesion: Preserving tribal languages strengthens social solidarity by reinforcing collective identity and shared cultural symbols.
- Karl Marx: Power and Inequality: Linguistic barriers are part of structural inequality, where dominant groups control access to knowledge and resources. AI translation reduces this asymmetry, facilitating empowerment.
- Pierre Bourdieu: Linguistic Capital: Mastery of dominant languages often acts as cultural capital, influencing access to opportunities. By enabling tribal languages digitally, AI democratizes linguistic capital.
- Anthony Giddens: Structuration: Technology acts as both a medium and outcome of social structures. Tools like Aadi Vaani reshape interactions while being shaped by policies and grassroots initiatives.
- Sociology of Development: AI translation aligns with modernization and development frameworks, bridging the digital divide and fostering participatory governance.

With the goal of overcoming the linguistic barrier in a country as diverse as India, Bhashini is an important initiative that is part of the Digital India agenda. It makes it possible for millions of Indian residents to participate effectively with digital services using their home tongue by supporting real-time translation, speech recognition, and access to a variety of Indian languages. The consequences of this are far-reaching, despite the fact that it faces obstacles such as a lack of resources for low-digital languages, a lack of uniformity in translation accuracy, and gaps in infrastructure. Increasing digital inclusion and assisting with e-governance are only two of the many ways

that Bhashini has the potential to revolutionize India's multilingual digital environment. Other ways include boosting artificial intelligence innovation and protecting linguistic heritage. To achieve success in the future, it is necessary to maintain community interaction, establish productive collaborations between the public and private sectors, and implement policy frameworks that are inclusive and promote equal access for all.

4. Instructing English to Rural Students: Current Challenges and Realities

The teaching of English in rural India presents a number of complex issues that are molded by socio-economic disparities, deficiencies in infrastructure, and the presence of a diverse range of languages. For many students who come from rural areas and are first-generation learners, English is not only a subject but rather a symbol of exclusion and fear. This is because English is frequently taught using rigorous, exam-oriented techniques that ignore the life experiences of the students. The dearth of skilled teachers, limited exposure to the language, and curriculum content that is still detached from rural surroundings all contribute to the overall deterioration of these conditions. However, this scenario is undergoing a steady transformation. The rural English classroom is undergoing a transformation as a result of the implementation of context-sensitive and learner-centered practices by educators and institutions in a variety of regions. There has been a significant amount of success in boosting learners' confidence, motivation, and language competency through the implementation of bilingual instruction, culturally relevant content, peer learning, and the creative use of mobile technology and community participation. An approach to English education that is more inclusive and egalitarian is required, and these developments indicate a critical transition toward that approach. In order to solve the obstacles that are associated with teaching English in rural areas, this article argues that structural reforms and experimentation at the grassroots level are both necessary. For the purpose of developing training programs, producing locally tailored teaching materials, and promoting pedagogical flexibility, policymakers, curriculum developers, and teacher educators need to work together. For rural settings, a model that is universally applicable is insufficient; rather, permanent solutions need to be established in the socio-cultural and linguistic backgrounds of the learners. In the end, enhancing English instruction in rural places is not only a subject of academic concern; rather, it is an issue of educational fairness. Learners in remote areas are given the ability to access greater educational, professional, and social horizons when they are provided with the resources, the confidence, and the chances to improve their English language skills in a meaningful way. In order to create a future that is more equal and connected, it is not only possible but also vital to transform English classrooms in rural areas into spaces of learning that are lively and welcoming to all students.

5. Pursuit of a Linguistically Empowered India

Learning English is a journey that demands concentration, abilities, and determination in order to empower India with English competence. The government of India needs to make investments in education and training of a high standard in order to provide its citizens with the language skills that are required for full participation in the global community. Through the elimination of barriers and the promotion of inclusive linguistic policy, India has the potential to bridge the divide and establish a nation that is more equal and empowers all of its citizens. The objective of enhancing English proficiency for all Indians extends beyond the advancement of education; it also involves bridging societal divides and fostering a future that is inclusive and egalitarian. As a group, we embarked on a journey of transformation with the goal of establishing a linguistically powerful India.

The purpose of this research was to investigate the use of translanguaging as a teaching method in Pakistani higher education, specifically paying attention to how both students and professors assess its effectiveness. With regard to the promotion of English as the principal medium of instruction in their classes, the findings demonstrated that pupils had a strong recognition of the promotion. At the same time, they indicated the idea that their first language (L1) and the Pakistani Lingua Franca (Urdu) should be allowed in the classroom, provided that it has the potential to improve their capacity to express themselves. Furthermore, the utilization of translanguaging was frequently seen as a catalyst for boosting the effectiveness of teaching and learning processes, fostering inclusion, and enhancing the results of learning situations. On the other hand, the implementation of translanguaging procedures presented a number of potential obstacles. The reluctance to change, difficulties with language competency, the complexity of assessment and evaluation, the necessity for good teacher training and growth, and the influence of sociocultural variables were all included in these problems. In order to address these challenges, it is essential to

make investments in comprehensive teacher training and support, to create classroom environments that embrace linguistic diversity, to develop innovative assessment methods that are tailored for translanguaging, and to actively recognize and address sociocultural influences on language use and education. Translanguaging in higher education should be investigated in a variety of ways, and future study in this field should focus accordingly. In the first place, doing in-depth research into the specific difficulties associated with the implementation of translanguaging, such as resistance to change and language proficiency, can provide a more nuanced knowledge of how these issues effect the dynamics of the classroom. Second, research that focuses on the practical tactics and procedures for effective teacher training in translanguaging, as well as research that evaluates the effects of such training, can provide useful insights into the process of enhancing the professional development of educators. Furthermore, additional research could be conducted to investigate the development of new assessment methods that are able to accommodate translanguaging practices. This would ensure that students' comprehension and proficiency are evaluated in a manner that is both fair and accurate. Finally, in order to have a complete knowledge of the difficulties and opportunities that are linked with translanguaging in higher education, it is necessary to conduct an investigation into the larger sociocultural context. This investigation should include the identification of language ideologies, social hierarchies, and power dynamics.In a nutshell, this study contributes to the continuing debates and discussions that are taking place regarding the function of language in the educational system. In addition to shedding light on the viewpoints of students and teachers in Pakistan, it has the potential to serve as a significant resource for shaping the establishment of language policies and practices that more accurately represent the linguistic and cultural variety of the student population. Contributing to the continuous attempts to improve the quality of education in multilingual situations such as Pakistan, it does so by supporting teaching and learning methods that are more inclusive and hence more effective.

There are significant issues over digital disparities that go beyond physical access. Although digital technology is becoming a crucial component of both schooling and daily life, not everyone has equal access to it (Miah, 2024). Overall, India’s economic success in the years since globalisation has been excellent, but it also has a social component with educational indicators. It is becoming increasingly apparent that the nation is experiencing contradictory circumstances, despite the fact that literacy rates have increased. There are many school pupils who are coping with the difficulties of limited access to educational materials to satisfy the expectations of digital educational facilities. Access to digital technology is only one aspect of the digital divide, which manifests itself in the form of discrepancies in the allocation of digital capital. Because of this, it is essential that pupils be provided with equal attention in order to cultivate the appropriate attitude towards digital technology. Teachers and peer groups play a key role in helping kids create digital capital. The perspective that parents have toward the utilization of digital technology is also an essential factor. It is one of the most difficult tasks to locate information of sufficient quality in the local language. In the context of India in general and Assam in particular, there is an urgent requirement to pay close attention to the way in which users of digital technologies access and participate in the usage of these technologies. The closing of the digital divide is not only the right thing to do from a moral standpoint, but it is also very necessary to ensure that all individuals have access to education of a high standard. It is possible to guarantee that every student has an equal opportunity to succeed by giving emphasis to programmes that encourage fair use of educational technology, providing online resources to everybody, and training persons in good technology usage. In an effort to close the digital divide and expand access to digital resources, school management system software has emerged as a crucial instrument for streamlining administrative processes and enhancing communication between various stakeholders. By making it possible for educational institutions to adjust to the requirements of the digital age, these systems foster greater collaboration among teachers, students, and parents. In addition, the state has begun broadcasting academic programs on direct-to-home (DTH) radio and television in order to bridge the digital divide, particularly in rural areas where the availability of smart phones is restricted due to budgetary restrictions. Additionally, in order to make the most of the advantages offered by digital technologies, it is necessary to provide a high-quality internet connection, to make regional language content accessible and to ensure that it is relevant, to provide opportunities for users to make use of information and communication technology tools for routine work, and, most importantly, to ensure that users have the necessary skills and competencies to use the various ICT tools.

Due to the fact that they are connected to the digital divide, the resource disparities that are present between languages have a tendency to perpetuate further disparities in technology. Examples of such technologies include generative artificial intelligence. Most language-based systems are taught using data from the internet, which researchers are able to scrape in large quantities. However, there are only a few hundred languages that are represented online, with English being the language that is represented the most. Since this is the case, English has emerged as one of the languages with the greatest amount of data, and the widespread availability of English data has resulted in the development of datasets and models that are centered on English. The majority of natural language processing (NLP) systems were created and tested in "high resource" languages such as English even before the advent of generative artificial intelligence. There are only twenty languages that are considered to be "high-resource" languages out of all the active languages that are spoken throughout the world. This classification is based on the amount of data that is available in a particular language in order to properly train language-based algorithms. Speakers of languages that are under-resourced have limited access to digital services, which means they have a substantially smaller digital footprint and are consequently less likely to be included in web-scraped training data. This extreme asymmetry can be attributed to the fact that speakers of these languages have limited access to digital services. Without sufficient data to train language-based systems that are useful, the majority of the world's artificial intelligence applications will fail to adequately represent billions of people all over the world. People who speak regional dialects of "high resource" languages are also at risk, in addition to those who speak languages that have a limited amount of resources available to them. Most of the content that can be found on the internet, such as books, blogs, news stories, advertising, and social media posts, is written in "standard" English in the United States. This content is then used as web-scraped training data for natural language processing systems and generative artificial intelligence tools. In point of fact, ChatGPT was trained on 300 billion words; just think about how many of those words could have been borrowed from a dialect of English that is not considered standard. Speakers of non-standard dialects, such as AAVE (African American Vernacular English) or Chicano English (spoken primarily by Mexican American communities in the Southwest), are more likely to not be connected to the internet due to the lack of high-speed broadband, an internet-enabled device, or both. This makes them less likely to be productive online contributors. Chicano English is spoken primarily by Mexican American communities in the Southwest. This is the reason why the digital divide can have a strong correlation with scant and unequal representation in LLM training datasets. As a consequence, generative artificial intelligence and related resources are not adequately constructed and representational to effectively serve populations that are more diverse. The impacts of these tendencies are referred to as the "digital language divide," which will be discussed in greater detail in the following section for further clarification. The English language is just one example of how non-standard speakers of a language with a high resource capacity can be excluded from the study. In addition to Mandarin, German, and other high-resource languages, there are both "standard" and non-standard variants that may be under-represented online and in research. One example of this is the German dialect known as Kiezdeutsch, which is utilized by first-generation immigrant kids living in urban areas. Although differences in resources among speakers are caused by differences in digital access and infrastructure, having technical leaders and developers who reflect linguistic diversity will also play a significant role in the development of inclusive generative AI tools and beyond.

Researchers frequently resort to risk mitigation, which focuses on reducing faulty models, rather than bias mitigation, which moves the focus onto addressing concerns head-on. This is a mistake because bias mitigation is more effective. In order to directly minimize bias in generative artificial intelligence technologies, researchers have the ability to make decisions that are specific to a region or language when it comes to the construction of models and the development of training datasets. The inclusion of a varied group of "humans-in-the-loop" at an early stage and the solicitation of participation from local populations in order to bring their voices, dialects, and timing to LLMs are also necessary steps. In spite of the fact that there are a great number of ways to involve underrepresented groups in training data that is already in existence or will be collected in the future, such data gathering must be carried out with transparency and certain safeguards to guarantee that cultural expertise is not an asset that may be used. This fact should not be overlooked because, in addition to being a cultural characteristic, language is also a personal quality that is unique to each individual speaker and household. The ability to transfer conversational and strong language tools is a characteristic of distinctive cultural efficacies that might not be encoded in more homogenous language learning machines (LLMs) or artificial intelligence in general. An

increasing number of organizations and researchers have been working to pave the way for training that has an emphasis on locality. In order to facilitate the advancement of technical capabilities in African languages, Masakhane is gathering linguistic data from African speakers who speak a range of local dialects. They are doing their operations at the grassroots level in order to involve the community that they are attempting to serve in order to collect data that is culturally relevant. It is going to be absolutely necessary to construct more representative corpora, which are collections of language and textual data. Sharing open-source AAVE corpora that contain more than 141,000 AAVE words is one way that a machine learning specialist from Stanford University is working to solve the issue of resource inequity at the university level. In addition, Universal Dependencies, a worldwide research community for computational linguistics, has been sharing data for languages and dialects that go beyond "standard" English spoken in the United States. This includes a corpus of Hindi English that represents code-switching from speakers of many languages. It is of the utmost importance to bridge the digital gap, as the growing utilization of generative artificial intelligence is only serving to exacerbate the digital language divide, which, at its heart, is a manifestation of discrepancies that exist online. Gender, geographic location, and socioeconomic level are all factors that influence a user's access to the internet, and these factors intersect with the user's regional dialect and linguistic variation. In the future, communities that have restricted access to the internet will be underrepresented online, which will then result in the textual data that is accessible for training generative artificial intelligence programs being skewed. In the end, addressing the values and norms that drive the predominant language, acceptance, and discrepancies in online access can assist us in developing online ecosystems that are more inclusive and that accurately reflect the full breadth of our linguistic diversity.

6. Language gaps constrain generative AI development

Prompt-based generative artificial intelligence (AI) technologies are rapidly being used for a variety of use cases, including the drafting of emails and the compilation of legal cases, as well as the personalization of research essays in a wide variety of educational, professional, and vocational fields. However, language is not a monolithic entity, and there is a possibility that advancements in generative artificial intelligence tools for non-standard languages and dialects would be ignored. When it comes to certain communities or demographics, the applications that are now available are frequently not optimized, and in certain cases, they may even worsen existing social and economic divisions. "The limits of my language mean the limits of my world," said Ludwig Wittgenstein, an Austrian philosopher and linguist. Wittgenstein made this insightful observation. This is especially true in the modern era, when the language we speak can potentially alter the way in which we interact with technology, and the limitations of our online vernacular might potentially restrict the full and equitable utilization of both present and emerging technologies. The majority of people who speak languages around the world are falling behind if they do not speak one of the prominent languages spoken around the world, such as English, French, German, Spanish, Chinese, or Russian. This is especially true in the current situation. The majority of content on the internet is published in English, despite the fact that there are over 7,000 languages spoken around the world. The languages spoken in Asia and Europe, such as Mandarin or Spanish, claim the largest portion of the remaining online content. In addition, there are around 150 varieties of the English language that are distinct from the "standard" English spoken in the United States. Therefore, large language models (LLMs) that train artificial intelligence tools, such as generative AI, rely on binary internet data, which serves to expand the gap between standard and non-standard speakers, thereby contributing to the expansion of the digital language divide.

Language is a source of power among sociologists, anthropologists, and linguists. It is also a source that has a large influence on the development and diffusion of new tools that are dependent upon the linguistic capabilities that are learnt. It is possible for local language to enhance communities on the inside, but it may also magnify and replicate inequities when it is coopted by existing power structures to restrict immigrant and historically marginalized populations. This is dependent on where one stands within socio-ethnic contexts. For instance, during the transatlantic slave trade, white supremacists exploited literacy as a weapon to reinforce the dependence of African Americans on their slave masters. As a consequence, various anti-literacy laws were created in the 1800s in the majority of states that were part of the Confederacy. It is essential to take into consideration the implications of constructing the same linguistic frameworks in the digital world, which exacerbate the digital divide in autonomous and generative systems. This is because of the historical artifact in question, as well as other movements that have prohibited bilingual communications in favor of rules and laws that only apply to English.

7. Digital Libraries project

There are programs that are working toward the goal of bridging the digital divide. One example of such a project is the Million Books Digital Project, which intends to digitize rare books in the country and make them freely accessible to users, thereby maintaining the project as an open source. With the intention of bridging the digital gap in a more comprehensive manner, the government of India, in conjunction with the Centre for Advanced Computing (C–DAC) located in Pune, has set a goal to deliver around one million digital books to the doorsteps of ordinary individuals. Literacy will continue to improve thanks to the Internet-enabled digital library. To do this, a mobile van equipped with satellite Internet connections will be utilized. The truck will be outfitted with printers, scanners, cutters, and binding equipment in order to provide end users with bound copies of books (Singh 2007). In the same manner as flowers do not complain when honey bees carry pollen away from them, honey bees stand for people to people networking in local languages and providing confidence to those who contribute knowledge that they will not be impoverished as a result of sharing knowledge. Honey Bee network brings together those farmers, artists, mechanics, fishers, and laborers who have solved a problem by their own ingenuity and without any assistance from the state, market, or even non-governmental organizations (NGOs). These individuals are creative and ingenious. Whether they are technological or institutional in nature, innovations that are self-triggered and developed are investigated, supported, sustained, and scaled wherever it is possible, with or without value addition, linkage with formal science and technology. The concept is to provide incentives and rewards to those who are willing to innovate. Individuals or groups could be responsible for the development of the innovations. Both the Muktabodha Digital Library Project, which was initiated in 1995, and the National Mission for Manuscript are currently engaged in the process of conducting digitization of the manuscript. They intend to accomplish this by making significant texts from the archives accessible on the internet of the entire world. The Indian Institute of Science (IISc) and the Ministry of Communication and Information Technology (MoIT) are working together on an ambitious project called the Digital Library of India. There are currently around 1,24,000 books written in Indian languages that may be accessed without charge through this digital library. Vidyanidihi, by means of its digital library and E-scholarship portal, and INFLLIBNET, by means of its shodhganga, are gathering all of the theses that have been submitted to the Indian university. Additionally, they are attempting to provide free access to the literature, which is yet another earnest effort towards bridging the digital gap.

When it comes to the implementation of e-governance, the most significant challenges include bridging the digital divide and ensuring that stakeholders are effectively involved. In India, a significant number of initiatives are being undertaken by both government and non-government organizations in order to demonstrate the ways in which information and communication technology (ICT) can assist in closing the digital divide. The dissemination of appropriate technology must be accompanied by the establishment of facilities for training and development. This is necessary in order to equip individuals with the proper tools and skills necessary for ongoing learning and improvement. The public should be provided with assistance from the government in gaining access to inexpensive Internet connections in order to increase their utilization of e-governance services. This will help to reduce the amount of the digital divide. Through the implementation of e-governance in an appropriate manner, the common man, also known as the neglected class, is provided with the opportunity to gain access to the vast resources of global information networks, which can enable them to acquire greater wealth and prosperity. Additionally, this can enable them to leapfrog over the information gap and prepare themselves for the global networked economy. Over the course of the past decade or so, there has been a consistent rise in the number of Indians who are proficient in the English language. On the other hand, the overall percentage of Indians who are proficient in English continues to be quite low. Due to the fact that the majority of the content on the Internet is posted in the English language, a significant number of individuals in India are unable to access it. The concept of the digital age was brought about as a result of the development of information and communication technology (ICT) and its extensive dissemination. The disparity in access to information and communication technologies, sometimes known as the digital divide, creates a gap in information between those who have access to ICT and those who do not. In order to address the issue of digital inequality in India, the Indian government has undertaken a number of measures. E-governance is one of these efforts that assists those who are economically disadvantaged or impoverished in gaining access to information and communication technology. Within the scope of this study, the notion of digital divide as well as the primary variables that contribute to digital divide are discussed. It also

highlights some of the e-governance projects that have been implemented in India, as well as the role that these projects play in bridging the digital divide. This helps to clarify how e-governance may actively engage in the process of lessening the digital divide within the country.

Our comprehension of the varied nature of the digital divide has been improved as a result of the existing body of literature, which has demonstrated that it encompasses more than just access to information and communication tools. According to research, the disparity that exists in the digital realm is a substantial reflection of the inequality that exists offline in relation to socioeconomic resources. In order to create digitalized societies that are sustainable, it is essential to bridge digital divisions. A literature assessment of information systems research on the digital divide in environments with advanced technical infrastructures and economies throughout the past decade (2010–2020) is presented in this study. The research was conducted over the course of the last decade. The findings of the review are arranged in a concept matrix, which maps the reasons that contributed to the divides as well as the steps that were taken to bridge them. On the basis of the findings, we develop a research agenda that includes the following suggestions:

- Expanding previously established models of digital inequalities by incorporating new variables and the application of theory.
- Conducting an in-depth analysis of the effects of interventions aimed at bridging the digital divide.
- Enhancing the connection between research on the digital divide and research on sustainability.

China is the most populous nation in the Asian region, while India, which is a union of states, is the second most important nation. In the sphere of science and technology, the nation has made remarkable advancements, and it is currently emerging as one of the most powerful economies in the developing world. Through the distribution of knowledge, information and communication technologies have brought about substantial changes in the development of the Indian society. Today's technology is comparable to the industrial machinery that were used during the industrial revolution. They serve as engines of growth, power, and riches in the modern world, and they are extremely important for the development of both the economy and society. It is impossible to find another technology in human history that is as significant as information technology (IT). Information technology has had a significant impact on the economy as well as the lives of individuals all over the world. The benefits of information technology are starting to become apparent in India, and the repercussions of these benefits are causing a significant amount of change. It is also true that the usage of digital technology in the globe has not only made people's day-to-day lives easier, but it has also created a division in the world between those who have access to a lot of information and those who do not, also known as the information haves and the information have-nots. The digital divide has become significantly more pronounced as a result of unequal access to information and communication technologies. In spite of the fact that India has emerged as one of the emerging superpowers in the field of information technology, the advantages have been astonishingly slow, particularly in isolated and rural areas. There have been a number of problems that the government has faced while attempting to implement IT-oriented projects. These challenges include socio-economic considerations, geographic factors, educational factors, and attitude factors. The purpose of this article is to highlight a number of ongoing projects and programs that have been undertaken by the government, non-governmental organizations, and private business houses. Additionally, we will detail some of the obstacles that the country is currently facing in order to overcome these hurdles. The purpose of this paper is not to draw any conclusions in a definitive manner; rather, it is to focus on highlighting the reflections.

8. Conclusion:

Both Aadi Vaani and BHASHINI are excellent examples of how technology, policy, and society intersect with one another. From a sociological point of view, these efforts are methods that promote cultural preservation, ensure fair access to knowledge, and empower populations who have been excluded. India gets closer to a society in which linguistic variety, social inclusion, and digital empowerment intersect through the integration of artificial intelligence with grassroots capacity-building. This is a reflection of the visions of philosophers ranging from Durkheim to Sen in contemporary situations regarding the future of society.

One may observe a great deal of work being done in India to close the digital divide. Each and every one of these efforts is represented in the numerous initiatives that have been made by the government, business sectors, and libraries as well. A great number of libraries and information centers, in addition to providing users with their own individual terminals within the library, also offer training to users so that they can access information through the Internet. There are a number of libraries that have built digital and institutional repositories in order to increase the availability of free literature to its patrons.

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