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A STUDY ON ARTIFICIAL INTELLIGENCE APPLICATIONS AND THEIR ROLE IN EMPOWERING THE VISUALLY IMPAIRED IN THE NETWORK SOCIETY

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Abstract

The impact of technology and the internet on social structure is immeasurable. In the 20th century, the emergence of a globalized digital environment reflects the idea of the Marshall McLuhan's Global Village. McLuhan argued that *"*We shape our tools and thereafter our tools shape us*."* This idea is further echoed by Manuel Castells, who states that technology does not determine society; rather, society shapes technology according to the needs, values, and interests of the people who use it. Digital platforms have significantly reduced barriers of inequality by bringing people from different economic backgrounds and those with disabilities into the information superhighway, thereby improving their quality of life. Technology has particularly played an important role in empowering the visually challenged by enabling them to participate in mainstream social activities. The digital world allows them to function more independently and interact with other segments of society on equal terms. Moreover, technology provides opportunities for recognition, self-expression, and social connection through networks that help maintain emotional relationships with others. In a networked society, visually challenged individuals are able to connect through social media platforms such as Facebook, Instagram, Twitter, and YouTube for purposes including socialization, recognition, entertainment, information sharing, and status building. Their interaction with digital technologies is facilitated through assistive tools such as screen readers and AI-based applications, which make communication easier, faster, and more convenient. This study adopts a mixed-method approach to examine how networking tools influence the identity, individuality, and aspirations of visually challenged individuals within the network society.

Keywords: Visually Challenged, Facebook, AI applications, Network society

Introduction

Social media refers to digital communication platforms that allow individuals to create, share, and exchange information within virtual communities and networks. Popular platforms such as Facebook, Instagram, X (Twitter), and YouTube have transformed the way people communicate and interact in the digital age. These platforms enable users to share opinions, ideas, images, and videos instantly across geographical boundaries. Social media has become an important tool for communication, information sharing, entertainment, and social interaction. It allows individuals to maintain relationships and build new social connections through online networks. Social media also encourages public participation in discussions, debates, and social movements. It provides opportunities for self-expression and identity formation in digital spaces. In addition, it plays a major role in shaping public opinion and cultural trends. As digital communication grows rapidly, social media continues to influence how people interact and engage in society.

Network Society

The rapid growth of social media and digital communication technologies has led to the emergence of what Manuel Castells describes as the Network Society. In this society, social structures are organized through interconnected digital networks. Communication, information exchange, and social relationships are increasingly mediated through online platforms and internet technologies. Digital networks connect individuals, organizations, and communities across the globe. The concept also reflects the earlier idea of the global interconnected world proposed by Marshall McLuhan. In a network society, information flows quickly through technological systems, influencing economic, political, and cultural activities. People interact, collaborate, and participate in social processes through digital platforms. This form of social organization emphasizes connectivity, participation, and knowledge sharing. As a result, the network society reshapes traditional forms of communication and social interaction. Social media platforms therefore become key spaces where these networked relationships are formed and maintained.

While the network society expands digital participation, accessibility remains an important concern for individuals with disabilities. Advances in Artificial Intelligence have helped address these barriers by providing assistive technologies that make digital platforms easier to use. AI-powered tools enable users to interact with social media through voice commands, audio feedback, and automated assistance. Applications such as Google Assistant, Siri, and software like JAWS Screen Reader help users navigate online platforms effectively. These technologies convert text into speech, recognize images, and provide audio descriptions of digital content. AI also supports features like automatic captions, voice typing, and smart navigation. Such innovations improve accessibility and usability for individuals with disabilities. By reducing technological barriers, AI tools enable more inclusive participation in digital communication. Consequently, AI plays a significant role in ensuring equal access to social media in the network society.

With the support of AI-based assistive technologies, visually impaired individuals are increasingly able to access and participate in social media platforms. Tools such as screen readers and voice assistants help them navigate digital environments independently. Through platforms like

Facebook, Instagram, X (Twitter), and YouTube, visually impaired users can communicate with friends, family, and broader communities. These platforms provide opportunities for sharing experiences, expressing opinions, and accessing information. Social media also helps them participate in cultural, educational, and social discussions. It strengthens their social connections and reduces feelings of isolation. Online platforms create spaces where visually impaired individuals can build identity, confidence, and social recognition. Participation in digital networks enhances their independence and inclusion in society. Thus, social media supported by AI technologies plays a vital role in empowering visually impaired individuals within the network society.

Review of Literature

Social media has emerged as a powerful communication platform in the digital era. According to Andreas Kaplan and Michael Haenlein (2010), social media are internet-based applications that allow the creation and exchange of user-generated content. Research indicates that social networking platforms such as Facebook, Instagram, X (Twitter), and YouTube have transformed the way individuals communicate and interact online. Studies by Danah Boyd describe social media as "networked publics" that allow people to gather, communicate, and share content in digital environments (Boyd, 2014). Scholars highlight that social media plays an important role in information dissemination, identity construction, and social engagement. According to Sherry Turkle, digital communication platforms influence the ways individuals form relationships and express themselves online (Turkle, 2011). Several studies also emphasize that social media encourages civic participation and public discourse. However, researchers also discuss concerns related to misinformation, privacy, and digital inequality. Overall, the literature indicates that social media significantly influences communication and social interaction in contemporary society.

The concept of the network society has been widely discussed in sociological and media studies. Manuel Castells introduced the concept to explain how digital networks shape the structure of modern society (Castells, 1996). According to Castells, the development of information and communication technologies has transformed social organization into interconnected networks. Earlier, Marshall McLuhan proposed the concept of the "Global Village," suggesting that electronic media connects people across geographical boundaries (McLuhan, 1964). Scholars argue that digital communication networks influence economic activities, political participation, and cultural exchange. Research also highlights that networked communication enables individuals and communities to interact globally in real time. Studies suggest that the network society promotes collaboration, knowledge sharing, and decentralized communication. However, some scholars point out that unequal access to technology may create digital divides within network societies. Overall, the literature shows that the network society represents a transformation in how people communicate, interact, and organize social life in the digital age.

Artificial Intelligence has increasingly contributed to improving accessibility in digital technologies. According to Stuart Russell and Peter Norvig, AI refers to computer systems

designed to perform tasks that normally require human intelligence (Russell & Norvig, 2016). Researchers highlight that AI-powered assistive technologies support individuals with disabilities in accessing digital platforms. Tools such as JAWS Screen Reader and voice assistants like Google Assistant and Siri enable users to interact with online content through voice and audio feedback. Studies show that AI technologies such as speech recognition, text-to-speech conversion, and image recognition improve accessibility in social media platforms. Research by Cynthia L. Bennett highlights the importance of inclusive design in digital technologies to support people with disabilities (Bennett et al., 2018). Scholars emphasize that AI plays a crucial role in reducing accessibility barriers in the digital environment. Overall, literature suggests that AI-based tools contribute significantly to digital inclusion and equal participation in online spaces.

Research indicates that social media provides new opportunities for visually impaired individuals to communicate and participate in society. According to Katie Ellis and Mike Kent, digital media platforms can empower people with disabilities by improving accessibility and social participation (Ellis & Kent, 2011). Studies show that visually impaired users access social media through assistive technologies such as screen readers and voice-based applications. Platforms like Facebook, Instagram, X (Twitter), and YouTube allow visually impaired individuals to interact with others, share experiences, and access information. Research highlights that social media helps them maintain social relationships and reduce feelings of isolation. Scholars also emphasize that digital platforms support self-expression, identity formation, and community participation among visually impaired users. However, accessibility barriers still exist in some digital interfaces. Overall, the literature suggests that assistive technologies and social media platforms play a vital role in enhancing communication, participation, and inclusion for visually impaired individuals.

Research Methodology

This study adopts a qualitative research approach to explore the experiences and perceptions of visually impaired individuals in using social media within the network society. Qualitative research helps in understanding social phenomena through detailed insights, interpretations, and experiences of participants. The research design used for this study is an exploratory case study, which allows the researcher to investigate a particular issue in depth within its real-life context. The exploratory approach is suitable because the study seeks to understand how visually impaired individuals interact with social media platforms and how AI-based assistive tools support their communication and participation.

The study uses the case study method to examine specific instances of visually impaired users who actively engage with social media platforms. Case studies provide a detailed understanding of individual experiences, behaviors, and challenges in accessing digital platforms. In this research, three cases are selected as samples to analyze the use of social media and assistive technologies among visually impaired individuals. These cases help in exploring the social, technological, and personal dimensions of digital participation. The sampling technique used in this study is the snowball sampling method**.** In this method, the initial participants help the researcher identify other potential participants who meet the research criteria. This technique is particularly useful when studying specific groups such as visually impaired social media users, where it may be difficult to

identify participants directly. Snowball sampling allows the researcher to reach individuals through existing networks and social connections.

The data collection process involves both primary and secondary sources. The primary data for the study is collected through in-depth interviews with the selected participants. In-depth interviews allow participants to share their personal experiences, perceptions, and challenges in using social media and AI-based assistive tools. This method provides detailed qualitative information that helps the researcher understand the participants' perspectives. The secondary data is collected from academic journals, books, research articles, and other scholarly publications related to social media, network society, artificial intelligence, and accessibility for visually impaired individuals. These sources provide theoretical insights and background information that support the analysis of the study.

Case 1

The case 1 is a 25-year-old man who was born with a visual disability. He grew up in a small village where access to education and resources for visually impaired individuals was very limited. His parents were not aware of the educational opportunities available for children with visual disabilities. Instead, they planned to teach him basic mathematics so that he could manage a small grocery shop for his livelihood in the future. However, a teacher living near his house recognized his potential and informed his parents about a special school for visually impaired students in Chennai. She encouraged them to provide him with proper education and helped them understand that disability should not limit his opportunities. With this encouragement, he began his educational journey and travelled from Ramanathapuram to Chennai, similar to how A. P. J. Abdul Kalam once travelled from his hometown to pursue higher education. He completed his 12th grade in a special school in Chennai. Later, with determination and hard work, he prepared for entrance examinations and secured admission to Indian Institute of Technology Madras for his higher education.

Along with his studies, he started an Instagram page called “Meet for Thought.” The purpose of this page is to change the perception of people about visually impaired individuals and to create awareness in society. Through his content, he explains how visually impaired people walk, eat, groom themselves, and manage their daily lives independently. He creates engaging and interactive content, often including fun elements to connect with his audience. His main aim is to address the issues faced by visually impaired individuals and to build understanding and connection between them and the wider society.

AI application

To connect with people through social media, he needs proper accessibility. This accessibility is made possible through the use of AI-based tools. For example, when content is in text format, he can use Optical Character Recognition (OCR) and screen reader technologies to access and understand the information. However, platforms like Instagram are largely based on images and visual content. In such cases, artificial intelligence plays an important role. AI-powered image recognition tools help describe images and visual elements, allowing him to understand the content and interact with it effectively. These technologies enable visually impaired individuals to navigate

visual platforms that were previously difficult to access. Through this technological support, he is able to participate in the networked community and communicate with a wider audience. It not only helps him connect with other visually impaired individuals but also allows him to reach the broader public. This experience brings him a sense of happiness and confidence, as he is able to share his ideas, create awareness, and explore new opportunities through digital platforms.

Case 2

The case 2 is a 25-year-old man who has been blind since birth. His visual disability occurred due to his parents' marriage within the same blood relation. From an early age, his father wanted him to become independent and therefore enrolled him in a special school for visually impaired students. He was an ambitious and active child who performed well in his studies. After completing his 12th grade, he wished to pursue Computer Science. However, the school principal denied his request due to his visual disability. As a result, he chose to study BA History. Despite this setback, he did not give up on his interest in technology. Alongside his degree, he enrolled in crash courses to learn programming languages such as Python and C++. Through continuous learning and practice, he developed strong coding skills. Eventually, he began designing games specifically for visually impaired users. His passion for technology and gaming motivated him to overcome barriers and pursue his interests. Today, he works as a game developer and designs games for gaming companies, demonstrating that determination and passion can help individuals overcome limitations and achieve success.

AI application

With the help of AI tools, he is able to access and effectively use platforms like YouTube. He created a YouTube channel called "RJ Tamil Windows," where he posts videos and shorts related to technology. His content mainly focuses on helping people who struggle to use digital technologies, especially visually impaired individuals. Through his channel, he explains simple and practical topics such as how to apply for government services online, how to manage CAPTCHAs, and how to solve common technological issues. Whenever people have doubts related to technology, he creates videos to guide them step by step. In this way, he acts as a guide for the community and helps them become more confident in using digital platforms.

Before uploading any content on YouTube, he personally experiences and tests the process himself to ensure that the instructions he provides are accurate and easy to follow. His goal is to contribute to society, particularly to support the visually impaired community by sharing useful knowledge.

AI-based tools and applications play a significant role in enabling his work. Screen readers help him navigate websites and digital interfaces, while voice assistants allow him to search for information and operate devices through voice commands. Image recognition and object detection tools help him understand visual content, and speech-to-text technology assists in content creation and communication. These technologies provide him with greater accessibility and allow him to explore new opportunities in the digital environment. Through these AI-powered technologies, he is able to connect with people, guide them, and create meaningful engagement within the networked community. His strong interest in technology and programming has also helped him

develop advanced technical skills, allowing him to solve complex technological challenges with confidence and continue exploring innovative possibilities.

Case 3

The participant is a completely blind individual who comes from a very small village in Udumalpet. His parents initially had no awareness about educational opportunities for visually impaired children, so they did not plan to send him to school. However, he was an active and bright child who communicated well and spent much of his time listening to the radio, which helped him learn and develop his knowledge. One of his cousins later informed his parents about a special school for visually impaired students. The school was located in Coimbatore city, which was far from their village. Although his mother was very affectionate and found it difficult to send him away, she eventually agreed after considering his future. He then moved to a hostel in Coimbatore and completed his school education there.

After finishing school, he pursued his undergraduate studies at a Government Arts College. Later, he enrolled in a Master of Social Work (MSW) program at Bharathiar University. Through dedication and hard work, he successfully cleared the National Eligibility Test (NET), which became a significant milestone in his academic journey During his time at the university, he was very active in academic and extracurricular activities. He often took responsibility for organizing and managing events and participated in many programs. His confidence, enthusiasm, and determination helped him excel in various areas, and he became an inspiration to many others.

He is also known for his supportive nature and willingness to help others. He regularly guides visually impaired individuals regarding education and employment opportunities. With a strong desire to contribute to his community, he organizes monthly meetings where visually impaired people gather to discuss their challenges, share experiences, and support each other. Through these discussions, he has been able to connect and align many individuals within the community. He communicates warmly with everyone and has built a strong and positive reputation among his peers. In addition to his academic and social contributions, he is also talented in music. He plays the guitar and enjoys singing, which adds another dimension to his vibrant personality.

AI application

He wanted to clear government competitive examinations and also prepared for bank exams. For this preparation, he needed access to study materials from various online sources. In many cases, traditional screen readers were unable to read certain symbols, characters, or complex formats in study materials. AI-based tools helped him overcome these barriers by converting difficult content into accessible formats, allowing him to study more effectively. With the support of AI-powered accessibility tools such as advanced screen readers, text-to-speech applications, and OCR technologies, he was able to read digital materials, navigate websites, and access a wide range of resources. These tools helped him prepare more efficiently for competitive examinations. He also supported and guided his peers by sharing resources and helping them understand how to use accessible technologies for their studies.

Eventually, his hard work paid off when he cleared the bank examination and became a Probationary Officer at the Indian bank Canara Bank. Even in his professional work, AI tools

continue to play an important role. They help him perform his daily tasks by providing access to digital platforms, reading documents, and assisting with challenges such as CAPTCHA recognition and website navigation. Apart from his professional achievements, he is also passionate about music. He enjoys singing and writing lyrics. Together with his friends, he set up a small studio where they create and record music. Through their YouTube channel, they share their albums and musical performances, which has helped him grow as an independent singer.

AI technologies have opened many pathways in his life. They have helped him access education, prepare for competitive examinations, perform his professional duties, and pursue his creative interests. With the support of these technologies, he has been able to overcome many challenges and achieve his goals. Today, he lives with confidence and happiness, demonstrating how AI can empower visually impaired individuals and create greater opportunities for independence and success.

Discussion

The three cases illustrate how individuals with visual impairments navigate and participate in the network society through determination, education, and the support of technology. The concept of the network society, associated with Manuel Castells, explains how social structures and relationships are increasingly shaped through digital networks and information technologies. In all three cases, digital platforms such as social media, YouTube, and online learning resources enabled these individuals to connect with a wider community beyond their physical environment. Despite coming from rural or socially limited backgrounds, technology helped them overcome geographical barriers. Through these networks, they were able to share knowledge, communicate with others, and build meaningful social connections. Their participation reflects how digital networks can create new spaces of inclusion for visually impaired individuals.

Artificial Intelligence applications play a significant role in enabling accessibility and participation in the digital environment. Tools such as screen readers, text-to-speech systems, Optical Character Recognition (OCR), and AI-based image recognition provide access to information that would otherwise remain inaccessible. For example, AI tools help interpret images on social media platforms, convert printed or digital text into speech, and assist in navigating complex digital interfaces. These technologies allow visually impaired users to read study materials, create digital content, and interact with online communities. In the cases discussed, AI tools were essential for education, competitive exam preparation, and professional activities. Thus, AI applications act as an important bridge between visually impaired individuals and the digital world.

Empowerment is another key theme emerging from these cases. Access to technology and education enabled the cases to move beyond traditional limitations often associated with visual impairment. The first case used digital platforms to create awareness about the daily lives of visually impaired individuals. The second case transformed his interest in programming into opportunities in game design and technology education. The third case achieved success in competitive examinations and secured a professional position in the banking sector. These achievements demonstrate how access to information and digital tools can empower individuals

to develop skills, pursue careers, and contribute meaningfully to society. Technology therefore functions not only as an assistive tool but also as a source of confidence and independence.

Social identity is also shaped through digital participation and community engagement. Through their activities, the participants challenge stereotypes and redefine how visually impaired individuals are perceived in society. By creating educational content, guiding others, and sharing their personal experiences, they establish themselves as capable, knowledgeable, and active members of the community. Their engagement in platforms such as Instagram and YouTube helps build a positive representation of visually impaired individuals. These digital spaces allow them to construct a new social identity that is based on ability, creativity, and contribution rather than limitation. In this way, technology helps shift public perceptions and promotes greater social acceptance.

Overall, the comparison of the three cases highlights the transformative role of AI and digital networks in the lives of visually impaired individuals. The network society provides opportunities for connection, knowledge sharing, and participation, while AI applications ensure accessibility within these networks. Together, they contribute to the empowerment of individuals and the development of a stronger social identity. The experiences of these participants demonstrate that when technology is accessible and inclusive, it can significantly improve the quality of life and opportunities for people with disabilities. Their journeys serve as examples of how digital tools and supportive environments can help individuals overcome barriers and actively contribute to society.

Conclusion

Artificial Intelligence tools play an important role in empowering visually impaired individuals by improving accessibility to information, education, and digital platforms. Technologies such as screen readers, OCR, voice assistants, and image recognition systems help them read content, understand visual information, and navigate websites and applications independently. These tools reduce many barriers that visually impaired people face in daily life.

Through AI-enabled technologies, visually impaired individuals are able to study, prepare for competitive examinations, perform professional work, and actively participate in social media and online communities. This access not only improves their skills and knowledge but also builds confidence and independence.

Overall, AI tools create new opportunities for visually impaired individuals to connect with society, express their talents, and contribute meaningfully to their communities. By providing greater accessibility and inclusion, AI technologies play a key role in empowering visually impaired people and supporting their participation in the network society.

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