Indian Journal of Information Sources and Services
ISSN: 2231-6094 (P) Vol.15, No.1, 2025, pp.42-46

DOI: https://doi.org/10.51983/ijiss-2025.IJISS.15.1.07

Text to Tech: Preserving Ancient Hindu Texts in the Digital Realm

Daisy Irani Patnaik[1*], Priyanka Priyadarshini[2], Debashrita Mishra[3] and Sudeshna Datta Chaudhuri[4]

[1*]Department of Humanities, School of Liberal Studies, KIIT (Deemed to be University), Bhubaneswar, India
[2]Department of Humanities, School of Liberal Studies, KIIT (Deemed to be University), Bhubaneswar, India
[3]Department of Humanities, School of Liberal Studies, KIIT (Deemed to be University), Bhubaneswar, India
[4]Department of Humanities, School of Liberal Studies, KIIT (Deemed to be University), Bhubaneswar, India
E-mail: [1]daisy.patnaik@gmail.com, [2]pp.priyadarshini12345@gmail.com, [3]debashritam1@gmail.com, [4]sudeshna.chaudhurifhu@kiit.ac.in
ORCID: [1]https://orcid.org/0009-0001-9340-8149, [2]https://orcid.org/0009-0006-5806-9344, [3]https://orcid.org/0009-0006-8636-7752, [4]https://orcid.org/0000-0002-7254-9751
(Received 09 November 2024; Revised 26 December 2024, Accepted 13 January 2025; Available online 28 March 2025)

Abstract - **In the 21st century, with artificial intelligence dominating the world scenario, why should preserving ancient Hindu texts take a back seat? Ancient Hindu texts consisting of the Vedas, Epics, Puranas, Sangam Literature, and folk narratives in various languages were written on fragile palm leaves, birch barks, and old manuscripts that have deteriorated over time. Cloud technology has paved the way for creating digital libraries that can be accessed with a button. Easy as it may seem, it is a Herculean task considering the huge volume and complex nature of the ancient Hindu texts, which span over thousands of millennia. The process of digitisation involves scanning, transcribing, and encoding these texts in digital formats, ensuring accessibility, longevity, and scholarly analysis. Digital archives and open-access platforms allow scholars, historians, and enthusiasts worldwide to study and decipher these scriptures easily in the comfort of their homes. However, challenges such as script disparities, loss of original copies, and ethical concerns regarding cultural ownership must be addressed to ensure accurate and respectful digitisation. This paper explores the significance, methodologies, challenges, and prospects of ancient Hindu texts and their impact on academic research, cultural preservation, and global accessibility. By leveraging modern technology, the timeless wisdom of Hindu scriptures can be preserved for future generations while fostering cross-cultural understanding and scholarly discourse.**

Keywords: **Ancient Hindu Texts, Digitisation, Manuscripts, Preservation, Challenges**

I. INTRODUCTION

The emergence of digital technology has paved the way for us to rethink the ways ancient Hindu texts can be preserved and accessed. However, the idea of creating a digital library for Hindu mythology is fraught with multiple challenges (Ahmed, 2009). Hindu texts consist of a vast and diverse array of ancient texts, stories, and oral traditions spanning several millennia that not only act as a foundation for understanding the cultural heritage of India but also encompass multi-dimensional principles guiding the Hindu philosophy and way of life. These texts describe the ideas that lay the foundation of our existence, our society, our relationship with nature and the universe, and with the supreme consciousness and its forms. All of these ideas are brought to life through the way of multifaceted stories, epics, poems, and oral traditions. The knowledge embodied within these works stipulates an ideal way of leading life and thus makes it the cornerstone of India's long spiritual and cultural heritage. Digitization of such complex and culturally significant texts is a colossal venture owing to its diversity, multifarious forms involved, languages used, and the dates of their creation. Classification of these texts, their storage, and accessibility are the three key areas that require consideration and detailed planning (Banerjee, 1996; Asl & Naderi, 2016). The diverse spectrum of ancient scriptures to be considered—such as the Vedas, Puranas, and Epics—shows the need for proper classification to facilitate easy access and consumption. The languages involved in such texts, such as Sanskrit and other regional languages, and the existence of such works in various forms, starting with printed books, manuscripts, and handwritten scrolls, including palm-leaf writings, some of which have not been well preserved and have deteriorated with time, add to the multi-dimensional complexity involved in the digitization process (Jabborova et al., 2024).

Preserving ancient Hindu texts and transmitting forward these precious works is not only our tradition (similar to our ancestors who did so in a *shruti* mode) but also our responsibility to ensure their access to our future generations to help preserve our traditions and cultural legacy, and doing so in a digital mode is the best choice we can make for our upcoming generations (Ahmed, 2009; Mejail et al., 2024). The literature review synthesises key findings from various studies: According to research, the major objectives behind digitization are protecting materials, especially those that are old and fragile, and providing access to a wide array of enthusiasts. The chief causes of the deterioration of materials are a lack of proper storage and a dearth of trained personnel who can handle these documents (Das, 2008). Another factor that affects rare library materials is the environment, which includes temperature, humidity, dust, and pollution

(Banerjee, 1996). The digital presence and pan-India participation have made the digitization of many rare books possible. He also described the stages of digitization by various libraries (Gopalakrishnan et al., 2017). A paper described the principles for developing, organising, and maintaining digital collections. The writers stress the importance of preserving rare materials through digitalization (Yaremko et al., 2024). They outline several factors that must be taken into consideration while digitising library items, in addition to talking about the benefits of digitisation. "Digital Preservation of Indian Manuscripts: An Overview," Ramana (2005) (Ahmed & Pandey, 2024). provides an overview of the preservation techniques and digitisation of manuscripts in India. The author emphasises the pros of digitisation. Additionally emphasised is the National Library of India's contribution to the digital preservation of Indian manuscripts (Selvam & Stalin, 2018). The function of India's Manuscript Conservation Centres and Manuscript Resource Centres is also covered in the report.

Very few universities in India were established pre-independence, and the Osmania University at Hyderabad is one of them. It is home to some extremely impressive Nizam-era manuscripts. At the 7th International CALIBRE, the technology and software utilised for digitisation at the Osmania University Library argued that the only way of efficient preservation is through digitisation. It outlines the workflow and process of digitisation through various technologies, including scanning and storage technologies, that make digitisation easier. "Digital Libraries, Epigraphy, and Paleography: Bring Records from the Distant Past to the Present: Part II," Stephen M. Griffin (2023) examines the connections between palaeography, epigraphy, and digital libraries (Balvad et al., 2023). He focuses on advancements that have transformed the study of ancient writings and how damaged artworks are restored by using new imaging technology and computational technologies that reveal obscured or unreadable texts (ALCTS, 2009). According to him, the increase in ancient works collection, along with advancements in the area of digital library research, indicate palaeography and epigraphy gaining momentum (Griffin, 2023). However, a critical gap remains in understanding how ancient Hindu texts will be converted from scrolls, scriptures, texts, and manuscripts into the digital realm and the subsequent challenges involved in the above context, thereby providing scope for further research.

II. METHOD

The study uses a qualitative approach to comprehend what comprises the ancient Hindu texts, the various methods used for digitization, and the challenges associated with it. Data is collected and reviewed from the document analysis of ancient Hindu texts, digital libraries, and existing digital manuscripts and preservation policies. In India, the chief patrons of treasures of literature, especially manuscripts, texts, and other important works, were kings, scholars, and priests who guarded and protected these works in monasteries, temples, libraries, palaces, and other similar repository institutes. But with the advent of the 21st century and the strides made in technology, especially in artificial intelligence, digital libraries have transformed the study of ancient texts. However enormous the challenges, the benefits of digitising these texts are equally huge: the eternal longevity of these texts through preservation (in dematerialized and digital format), easy accessibility to a wider global audience (not only including academicians, theologians, and religious seers but also the general public), and easy transfer of such texts through prevalent communication methods using computers and mobile phones.

III. DISCUSSION

The discussion will consist of two parts. The first part will discuss what constitutes the ancient Hindu texts; the second part will examine the challenges arising in preserving these ancient texts, along with reviewing the technological solutions and digitization efforts that are being used today to transfer ancient Hindu texts into the digital realm.

Hindu Mythological Texts

But before we delve into the challenges of preserving the ancient Hindu texts in the digital realm, we need to understand what comprises the ancient Hindu texts. From our perspective, ancient Hindu texts can be classified into three categories: ancient Hindu texts, Sangam literature, and folk narratives. The ancient Hindu texts were primarily written in Sanskrit and can be classified into Śruti and Smṛti. Śruti denotes manuscripts considered divine and is regarded as the highest authority in Hindu tradition (Ahmed, 2009). These texts are believed to have been transmitted orally by Rishis (sages) (Nehru, 1965). The four *Vedas—the Rigveda, Samaveda, Yajurveda, and Atharvaveda*—as well as its four embedded text types—the *Samhitas*, *Brahmanas*, *Aranyakas*, and *Upanishads*—are the primary Shruti texts.

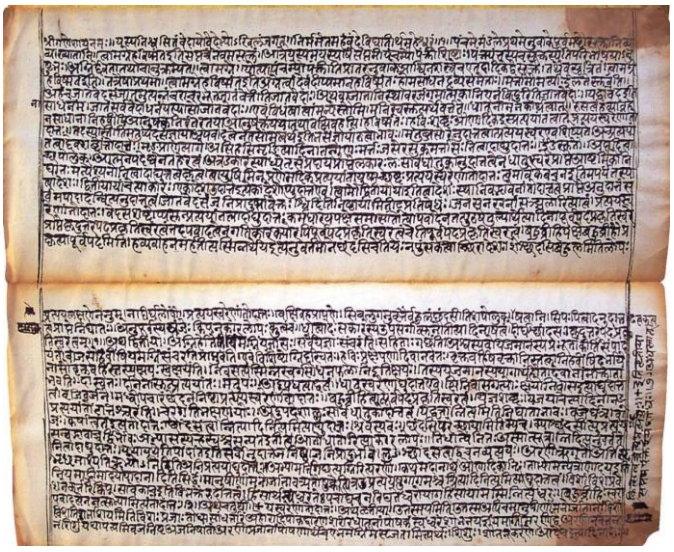

Fig. 1 Collection of Rigveda Manuscripts at Bhandarkar Oriental Research Institute, Pune (https://www.namami.gov.in/memory-world)

Fig. 1 shows how the *Rigveda* is considered to be the oldest text in the world. The *Rigveda Samhita* is the core Vedic text, which is a collection of 10 books (*maṇḍala*s) with 1,028

hymns (*sūkta*s) in about 10,600 verses. The *Samaveda* is considered the shortest, as most of its hymns are taken from the *Rigveda*. The *Yajurveda* is meant for sacrificial rituals. *Atharvaveda* is considered to be the origin of Ayurveda, the Indian science of medicine (Nehru, 1965). The Upanishads are considered to be an important part of the Vedas. There are more than 200 Upanishads, out of which ten are considered to be mukhiya (main) (principal) and majorly found in the concluding part of Brahmanas and Aranyakas (Griffin, 2023). The Vedangas are the last treatises of the Vedic literature. The *Vedāṅgas* are assisting disciplines that help in understanding and interpreting the Vedas. There are six *Vedāṅgas: śikṣā* (phonetics, phonology, and morphophonology), *Vyākaraṇa* (grammar), *Nirukta* (etymology), *Chanda* (metre), *Kalpa Jyotisha* (astronomy).

Smṛti, on the other hand, serves as secondary scriptures that are remembered and written down by sages, evolving with interpretations over time. These are written in classical Sanskrit and regional languages. Some major Smriti texts are Epics, Puranas, Agamas, and so on. Epics are also known as Itihasa (Panage, 2003). The epic *Rāmāyaṇa,* composed by Valmiki, consists of 24,000 shlokas and seven cantos (kaṇḍas). The *Mahābhārata,* which includes the *Bhagavad-Gītā* composed by Ved Vyasa, has about 1.8 million words. Legends and other traditional tales are among the many subjects covered in the Puranas. They contain an intricate layer of symbolism in their stories. Most of these texts are named after major Hindu deities like Vishnu, Shiva, Brahma, and Tridevi. Puranic literature includes diverse topics, including cosmogony, cosmology, and genealogy of holy gods and goddesses (Banerjee, 1996).

There are 18 Mukhya Puranas and 18 Upa Puranas, accounting for more than 400,000 verses in total. The main Puranas include: *Brahma Purana, Padma Purana, Vishnu Purana, Shiva Purana, Bhagavata Purana, Narada Purana, Markandeya Purana, Agni Purana, Bhavishya Purana, Brahmavaivarta Purana, Linga Purana, Varaha Purana, Skanda Purana, Vamana Purana, Kurma Purana, Matsya Purana, Garuda Purana, and Brahmanda Purana*. Alongside history, agama refers to a non-canonical collection of religious texts associated with Hinduism (Raza & Arora, 2004). In modern usage, 'Shastra' refers to a treatise or text about a specific field of knowledge. Such texts could be on any subject, including religion. There are three main divisions of Shaiva, Vaishnava, and Shakta agama. Agamas are an assemblage of Tantric works. The Agama texts explain the construction of temples, deity worship, four kinds of yoga, and mantras. There are three primary branches of Agama texts: Shaiva, Vaishnava, and Shakta. The Agama literature is considered to be extensive and voluminous in 28 Shaiva Agamas, 64 Shakta Agamas (also called Tantras), 108 Vaishnava Agamas (also called Pancharatra Samhitas), and numerous Upa-Agamas (Banerjee, 1996).

Out of all the mythological literature that is available, Sangam literature is considered to be the earliest available Tamil literature (Nehru, 1965). Most historians and scholars agree regarding the historical date range of Sangam literature, also called the Sangam period, which is from 300 BCE to 300 CE. It is a compilation of discourses and poetry that shed light on the political, social, and economic climate of ancient Tamil Nadu. Sangam literature is comprised of *Patiṉeṇmēlkaṇakku.* These texts are again classified into *Ettuthokai* (Eight Anthologies) and *Pattuppāṭṭu* (Ten Idylls). Amazing folk narratives from various regions of India also exist in diverse languages, such as Odia, Kannada, Pali, Prakrit, and Assamese, to name a few, and have withstood the test of time. These folk narratives have versions, often incorporating local deities and cultural elements specific to the area. Again, we also have the retellings of the Epics in regional languages with their versions (Das, 2008).

Challenges in Preservation

Not very long ago in the timescale of humankind, India was the epicentre of knowledge and wisdom in the known world through its renowned universities such as Nalanda, Taxashila, and Vikramashila, which served as the pedestals of learning for scholars from across the globe. Apart from the knowledge held by the seers and the specialists within the walls of these universities, they also contained a wealth of manuscripts in their libraries (Das, 2008). History also teaches us that foreign invaders destroyed these centres of learning and their libraries to obliterate the huge amount of knowledge contained in them. However, repeated attempts at destruction have never been completely successful in effacing knowledge due to the prompt action of gurus and knowledge protectors at that time. Some of them are locked in the minds of the individuals thanks to the usage of the *shruti* system (Panage, 2003). The key challenge in preserving Hindu mythological texts in the digital realm is the collection and organisation of multiple types of sources of knowledge, ranging from documented to undocumented. The table below shows the huge number of manuscripts in various Indian languages all over the world that need to be collected to transform into the digital realm.

TABLE I MANUSCRIPTS AVAILABLE IN VARIOUS INDIAN LANGUAGES ALL OVER THE WORLD

Total Number of Manuscripts in India	5,000,000
India Manuscripts Available in European Countries	60,000
India Manuscripts in Asian Countries	1,50,000

In *Table I*, we can find the total number of manuscripts found in India and can see the major difference between India and other countries. Several of these texts are in formats such as handwritten palm leaves, birch barks, handmade paper, cloth, and leather, and some are in the form of oral narratives held by individuals, temples, and *maths* and are not very accessible in the current context. Moreover, some of these are very fragile and are prone to degradation with time and touch (Das, 2008). It is due to these reasons that the preservation of these Hindu texts is required in a way that requires lesser maintenance, can withstand the vagaries of time, can be easily accessed, and can last forever. The digitization of Hindu texts and bodies of knowledge provides the solution to

all of these problems and thus becomes imperative in the current age (National Mission for Manuscripts, 2025).

Hindu mythology was not documented in the ancient period; it was passed down orally from one generation to the next using the *Śhruti* (that which is heard) and the *Smṛti* (that which is remembered) systems (Ahmed, 2009). These oral narrations or ancient works were documented at a much later stage, and as a result, many texts were left incomplete or fragmented, requiring extensive restoration efforts. These ancient texts, which were originally written on available material at the time, such as fragile palm leaves, birch barks, handmade paper, cloth, and leather in various shapes and sizes, were prone to degradation with time due to humidity, temperature fluctuations, and pests causing irreversible damage to these manuscripts (Griffin, 2023). The fact that foreign invasions and colonisation have led to the loss or partial destruction of many ancient manuscripts has added to the problem, and recovering and restoring these is a huge challenge in itself.

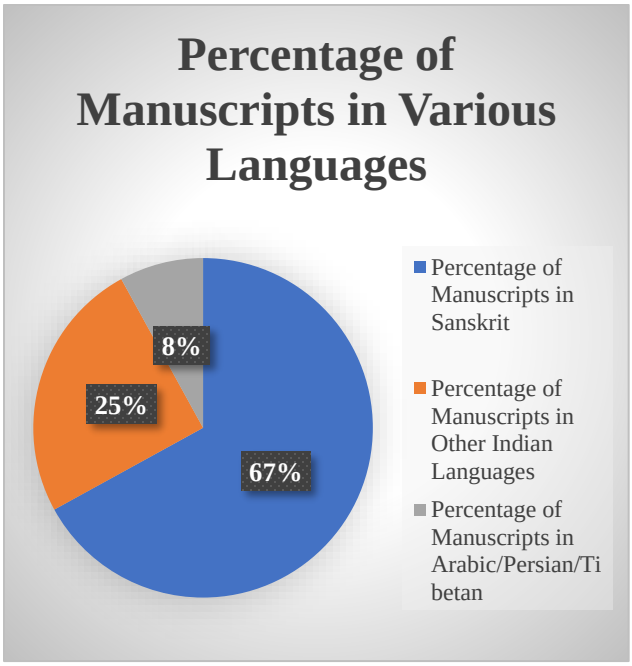

Fig. 2 Percentage of Manuscripts in Various Languages in India

Fig. 2 shows the huge volume of Sanskrit manuscripts compared to the other Indian language writings that need to be digitised. Many ancient Hindu mythological texts are preserved not just in public libraries and institutions but also in private collections owned by individuals, families, and religious institutions. These private collections often contain rare manuscripts, handwritten texts, palm-leaf scriptures, and unique commentaries. For instance, the Kanchi Matha in Tamil Nadu has rare Vedic and Agamic scriptures; Sringeri Sharada Peetham (Karnataka) preserves ancient Advaita Vedanta texts; the Govardhan Matha at Puri, Odisha, houses sacred Hindu manuscripts; and the temples at Varanasi contain handwritten Puranic texts (Das, 2008). The private collectors of ancient manuscripts hardly make their collections available and accessible to scholars, researchers, and the general public. Scholars are advocating for digitization and public access initiatives of these texts and manuscripts so that they can have easy access to these documents.

Over time, there has been a decline in Sanskrit scholars who can interpret these manuscripts. Again, some texts are written in ancient Brahmi, Grantha, or Devanagari scripts; it is difficult for scholars to decipher them. Without actual knowledge of a language, it is difficult to interpret and translate any text, as it might lead to misinterpretation and distort the original meaning of sacred texts. Hindu kings and wealthy families owned and maintained private libraries of sacred texts (Panage, 2003). The Travancore Royal Family of Kerala preserves rare palm-leaf manuscripts; the Mysore Royal Library in Karnataka holds ancient commentaries on the Bhagavad Gita; the Bikaner and Jodhpur Royal Archives in Rajasthan have Hindu texts written in Sanskrit, Devanagari, and Prakrit (Raja & Arora, 2004). Some traditional Sanskrit scholars have family-owned manuscripts that have been handed down through generations. Again, many rare manuscripts are sold in private auctions.

IV. Results

Technology, especially artificial Intelligence or AI, as it is primarily called these days, has a vital role in preserving ancient texts, manuscripts, or documents in the digital realm. Blockchain, cloud storage, and virtual reality (VR) are some of the methods through which the digitization of ancient Hindu mythological texts can be accomplished (Das, 2008). Digital reconstruction of incomplete or damaged parts of a manuscript is possible using some of the advanced algorithms available today, allowing the completion of gaps and better analysis of the original text (Raja & Arora, 2004). Annotations, corrections, and highlighting of multiple writing styles are now possible using AR overlays, which helps to provide a better understanding of the manuscript. VR 3D models help researchers plan effective restoration of manuscripts by visualising their structure and identifying the damaged areas.

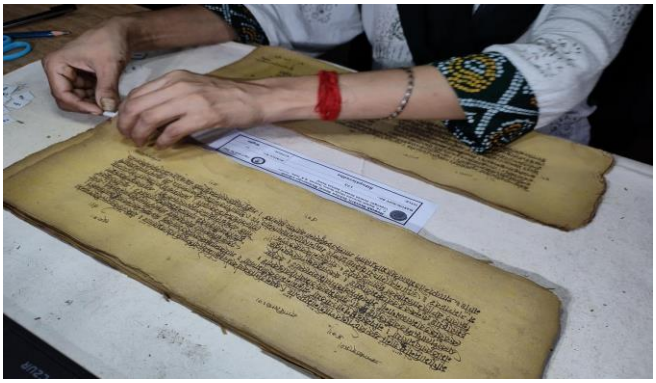

Fig. 3: A Restorer Placing an Ancient Manuscript Under the Scanner to Digitise the Folio as Part of an Initiative by the Howrah Sanskrit Sahitya Samaj and Bhaktivedanta Research Centre. Photo Credit: Debasish Bhaduri (https://www.thehindu.com/news/national/west-bengal/in-west-bengals-howrah-6000-ancient- sanskrit-manuscripts-find-a-digital-home/article68426326.ece)

Fig. 3 addresses the restorer placing an ancient manuscript under the scanner. Augmented reality (AR) and virtual reality (VR) are increasingly used in preserving ancient texts by allowing researchers and the public to digitally access and interact with fragile manuscripts, providing detailed 3D visualisations, reconstructions of damaged sections, and immersive experiences that can aid in study, conservation efforts, and public engagement, while minimising physical handling of the original texts, which can cause further deterioration, essentially creating a "virtual archive" of ancient documents (Panage, 2003). High-resolution 3D scans of ancient manuscripts can be created using specialised cameras, enabling detailed analysis of the text, material, and even subtle variations in ink colour, which can be crucial for restoration and research (Nehru, 1965).

Blockchain technology provides a key benefit for ancient text preservation: once a text from a manuscript is recorded on a blockchain, it cannot be deleted or unintentionally changed, guaranteeing the integrity of the original document. This helps to ensure the authenticity and originality of the text while allowing for required access, effectively preventing malefic alterations or forgeries, essentially acting as a digital vault for ancient texts (Panage, 2003). The blockchain can store changes, translations, or interpretations made, providing a complete audit of the origin and changes made to verify the historical authenticity (Ahmed, 2009). The prerequisite to enable blockchain is to digitise the ancient text and then tokenize it using important metadata such as the text's origin, author, date, and relevant historical context to store it on the blockchain as a digital asset, the access to which is managed through roles and permission lists granted specifically based on the requirements. However, the blockchain technology implementation skillset is extremely niche and rare in the market and hence needs to be planned. Muktabodha Indological Research Institute and Project Madurai are among some of the prominent institutions of India that have undertaken digitisation initiatives and projects for ancient Hindu texts.

V. Conclusion

With the advancement of information technology, especially artificial intelligence, the digitisation of Hindu texts promises a means of protecting and documenting textual heritage in India and its propagation to future generations. Digitisation of ancient Hindu texts provides us with multiple benefits—among the most important benefits are considerably lesser space consumption as compared to paper and other formats, easier and quicker access allowing for thorough analysis and study without the need to handle fragile manuscripts physically, preservation of the original integrity of documents, prevention of damage or degradation over time, and ultimately lower maintenance costs.

Disclosure Statement

The authors reported no potential conflict of interest.

References

[1] Ahmed, F. (2009). Digitization as a Means of Preservation of Manuscripts: Case study of Osmania University Library. https://ir.inflibnet.ac.in:8443/ir/bitstream/1944/1003/1/12.pdf

[2] Ahmed, M., & Pandey, S. K. (2024). Digital Innovation Management: A Study of How Firms Generate and Implement Digital Ideas. *Global Perspectives in Management, 2*(3), 13-23.

[3] ALCTS. (2009, June 18). Definitions of digital preservation. Association for Library Collections & Technical Services (ALCTS). http://www.ala.org

[4] Asl, M. R., & Naderi, H. (2016). Filter Spamming in Computer Networks by Text Mining and Machine Learning Method. *International Academic Journal of Science and Engineering, 3*(2), 146–160.

[5] Balvad, K., Lalit, D., Re-Ann, C., Halimpusan, T., & Beyes, J. O. (2022). Unveiling 4G LTE: Revolutionizing connectivity in the digital age. *National Journal of Antennas and Propagation, 4*(1), 41–46.

[6] Banerjee, D. N. (1996). The story of libraries in India. In *Books, Bricks and Bytes* (pp. 353-361). Routledge. http://www.jstor.org/stable/20027402

[7] Das, A. K. (2008). *An evaluative study of some selected libraries in India undergoing the process of digitization* (Doctoral dissertation, Jadavpur University, India). http://hdl.handle.net/10603/19137

[8] Gopalakrishnan, K., Lakshmanan, R., Naveen, V., TamilKumaran, S., & Venkatesh, S. (2017). Digital signature manager. *International Journal of Communication and Computer Technologies, 5*(2), 53-57.

[9] Griffin, S. M. (2023). Digital libraries, epigraphy and paleography: Bringing records from the distant past to the present: Part II. *International Journal of Digital Libraries, 24*, 139–147. https://doi.org/10.1007/s00799-023-00381-2

[10] Jabborova, D., Tanieva, G., Isakov, B., Yaxshiyeva, M., Sulaymanova, N., Tillakhodjaeva, K., Akmalxonov A., & Sattorova, Z. (2024). From Manuscripts to Machines: The Evolution of Book Publishing Devices. *Indian Journal of Information Sources and Services, 14*(4), 117–124. https://doi.org/10.51983/ijiss-2024.14.4.18

[11] Mejail, M., Nestares, B. K., & Gravano, L. (2024). The evolution of telecommunications: Analog to digital. *Progress in Electronics and Communication Engineering, 2*(1), 16–26. https://doi.org/10.31838/PECE/02.01.02

[12] National Mission for Manuscripts. (2025). https://namami.gov.in/

[13] Nehru, J. (1965). The discovery of India. Asia Publishing House. https://books.google.co.in/books?id=RKsqAAAAYAAJ

[14] Panage, B. M. (2003). *Conservation and preservation of library materials with special reference to digitization of rare materials* (Doctoral dissertation). http://hdl.handle.net/10603/175048

[15] Raza, M. M., & Arora, R. L. (2004). Digitization, Preservation and Management of Rare Materials in Modern Library System. *IASLIC BULLETIN*, *49*(2), 89-92.

[16] Selvam, P., & Stalin, N. (2018). Power Transfer Efficiency Analysis of Double Intermediate-Resonator for Wireless Power Transfer. *International Journal of Advances in Engineering and Emerging Technology, 9*(3), 130–141.

[17] Yaremko, H., Stoliarchuk, L., Huk, L., Zapotichna, M., & Drapaliuk, H. (2024). Transforming Economic Development through VLSI Technology in the Era of Digitalization. *Journal of VLSI Circuits and Systems, 6*(2), 65–74. https://doi.org/10.31838/jvcs/06.02.07