Unleashing the Power of Digitization: National Mission for Manuscript's Analysis and Special Efforts in Enhancing Manuscript Usability and Preserving Cultural Heritage in Uttar Pradesh

Priyanka Jaiswal*, Abhay Chaurasia**, Ajay Pratap Singh***

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ABSTRACT

The present study focuses on the activities and efforts of the National Mission for Manuscripts (NMM) in the Uttar Pradesh region, which is known for its vast area, population, and rich cultural heritage. The aim is to examine the digitization work carried out by the NMM in this area, as digitization plays a crucial role in preserving our country's rich ancient heritage. The importance of safeguarding cultural heritage is universally acknowledged, and digitization serves as a vital tool in this endeavour. Through digitization, we can protect and preserve our heritage for future generations. The government has implemented several commendable initiatives for manuscript digitization, and the NMM stands as a prominent organization dedicated to the conservation of cultural heritage. The NMM possesses a diverse range of cultural heritage resources, including photographic slides, photographs, digital images, photo-negatives, motion pictures, audio spools, microfiche, LP records, endangered manuscripts, audio and videotapes, digital images, microfilms, digital audio and video files, and more. The mission has undertaken extensive digitization efforts to conserve and provide access to a significant portion of its collection. This study is unique as it explores the digital conservation and digitization practices of a premier institute working in the field of art and cultural heritage in Uttar Pradesh. With its extensive network of institutions, the mission aims to cover all manuscripts, digitize them, and consolidate them on a common platform for easy access and utilization.

*   Department of Library & Information Science, Banaras Hindu University, Varanasi, India (priyanka14u@gmail.com) (First Author)
**   Department of Library & Information Science, Banaras Hindu University, Varanasi, India (abhay.chaurasia17@bhu.ac.in) (Co-author)
*** National Library of India, Ministry of Culture, Kolkata, India (apsingh-73@yahoo.co.in) (Co-author)

1. Introduction

The National Mission for Manuscripts was established by the Government of India's Ministry of Tourism and Culture in February 2003. This unique project is dedicated to the exploration and preservation of the abundant manuscript heritage of the country. India has the largest collection of manuscripts as compared to other countries. According to research of National Mission for Manuscripts, there are about five million manuscripts available in India. Major manuscripts are outspread across the country and outside the country. These manuscripts involucre a diversification of subjects, aesthetics, languages, textures, scripts, calligraphy, illumination, illustration, and many more. All these accumulate heritage, history, and ideas. The basic aim of this mission is to locate and preserve manuscripts and construct them readily available to past, future, and souvenirs with aspirations (National Mission for Manuscripts).

2. The Aim of the National Mission for Manuscripts

The most important work of this mission is to find cultural heritage through national-level review and post-overview. The mission aims to archive each manuscript and its collection into a national electronic database, making it the largest database of Indian manuscripts in the world. Which contains data from four million manuscripts to date. The National Mission for Manuscripts (NMM) employs a combination of modern and traditional preservation techniques, while also training a new generation of manuscript conservators (Objectives, National Mission for Manuscripts). It conducts specialized programs to educate future scholars in various aspects of manuscript studies, including language, content analysis, editing, classification, and preservation. NMM aims to enhance accessibility to manuscripts by producing original editions of unpublished works, creating catalogues, and digitizing rare manuscripts. Moreover, the mission actively engages the public through seminars, lectures, publications, outreach programs, and other initiatives (Sahoo et al., 2013).

3. Digital Preservation of cultural heritage

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3.1 Digitization

Digitization refers to the process of converting information content from its traditional format into a digitally readable version. When digitizing a printed book, a scanner is commonly used for this purpose. Likewise, digital imaging of calligraphies, paintings, prints, and other forms of artwork also falls within the scope of digitization. Digitization is currently heavily endorsed as

the portion of a crusade to ameliorate conservancy ways, as the frail cradle doesn't bear to be contended latterly, except in singular destinies (Digitization). Availability is significantly enhanced through digitization, as it enables seamless searching of digitized textbooks and allows for computer-based restoration of digital images of faded or fragile originals. Many public libraries have implemented digitization initiatives to preserve brittle books and rare or delicate artefacts. Digitization refers to the conversion of something whether it is printed material, composition, pictures or sound film and video recordings from an arrangement (usually print or analogue) to digital. Digitizing or digitization refers to the representation of an object, picture, sound, record or flag (usually an analogue) by its focus or discrete set of trials. Carefully, digitizing implies just catching an analogue signal in the digital image, however digitizing writings is likewise used to mean changing over the picture to content, utilizing optical character recognition (Gobble, 2018).

3.2 Digital Preservation

As per Harrods's Librarians' Glossary (Prytherch, 2005), the concept of Digital Preservation can be defined as follows:
  a. Utilizing digitization as a preservation method.
  b. Employing techniques to ensure the longevity and accessibility of digital materials, thus maintaining them as review copies of books provided by publishers.

Cornell University Library states that digital preservation involves a wide array of tasks aimed at prolonging the lifespan of computer files in a machine-readable format while safeguarding them against issues like media failure, physical loss, and obsolescence. Gladney (2009) describes digital preservation as the systematic preservation of digital data in its original digital format to guarantee the usability, longevity, and intellectual integrity of the information it holds. It involves storing, maintaining, and ensuring the long-term accessibility of digital objects through the implementation of various preservation strategies such as technology preservation, technology emulation, or data migration. Digital preservation encompasses the art and science of safeguarding digital information for the future, considering activities and processes that enhance the preservation of cultural and scientific heritage in digital formats. Its objective is to ensure error-free storage, retrieval, and interpretation of digital information over extended periods, prioritizing long-term preservation. Digital protection ensures continuous access to information and records that require the information (UKOLN). Parekh (2001) defines digitization as the process of transforming various types of items, including images, printed text, manuscripts, video recordings, and sound recordings, from their original formats (often print or analogue) into digital format. Witten et al. (2001) explain that digitization involves converting analogue items into a digital format to enhance accessibility and, when necessary, aid in preservation. Digitization is not a standalone activity but rather interconnected with all the services offered by the library. "In essence, digitization involves the process of converting, acquiring, organizing, and storing information in a standardized computer format. Through the use of digital devices such as printers, scanners, and other resources, documents are transformed into digital formats and stored for future reference using online/offline or CD/DVD drive applications. The digital content can

be accessed remotely through computer platforms."

4. Need for Digitization

Following are the reasons why there is a need to digitize manuscripts and vast cultural heritage:
• To provide access to particularly delicate and rare manuscripts;
• Searching automatically, efficiently and quickly with the help of digitization;
• Making digital copies available to readers, save the original scarce resources;
• Digitization provides access to its scarce assets to promote library services;
• Promote access and use of vast archival resources;
• It can be accessed from any corner of the world to increase the access level;
• To minimize the utilization and manipulation of delicate or extensively utilized original manuscripts.

5. Cultural Heritage Collection

Cultural heritage refers to tangible artefacts and traditions that hold historical, cultural, and societal significance. It includes tangible elements such as temples, ruins, architectural craftsmanship, and buildings, as well as intangible aspects like traditional music, dance, and performing arts. These invaluable forms of cultural heritage are intricately connected to the history, culture, and customs of each nation, and the advent of globalization has brought about concerns regarding the safeguarding and perpetuation of cultural heritage on a global scale. Recognizing this issue, UNESCO has actively addressed the matter and subsequently adopted the 2003 Convention on the Protection of Cultural Heritage during the UNESCO General Assembly ("Convention for the Safeguarding of the Intangible Cultural Heritage 2003," 2005). This convention serves as a response to the potential endangerment faced by cultural heritage in the face of globalization's influence. UNESCO documents define heritage as encompassing both our historical legacy from the past, our present environment, and the inheritance that we must transmit to future generations. The value lies in the fact that heritage is meant to be handed down across generations, ensuring its continued importance and relevance. The preservation of documentary heritage should be recognized as a comprehensive endeavour to safeguard our inherited legacy for future generations. To comprehend the conservation of these documents, it is essential to consider the preservation of both the objects themselves and the surrounding environment to establish an appropriate framework (Chhatwal, 2009). Meanwhile, digitization has become an increasingly prevalent and valuable practice to enhance the accessibility, security, and dissemination of digital resources, enabling their availability anytime and anywhere (Shafi & Lone, 2012).

6. About Manuscript

Manuscripts are handwritten or handcrafted documents that contain valuable historical, cultural, or intellectual content. They can include a wide range of materials such as books, letters, diaries, journals, legal documents, religious texts, literary works, and more. Manuscripts are typically created

before the invention of printing, and they often possess unique characteristics, artistic embellishments, and historical significance. They serve as primary sources of information, offering insights into various aspects of human knowledge, creativity, and societal development. Manuscripts can be found in libraries, archives, museums, and private collections, contributing to our understanding of different periods, civilizations, and disciplines. A manuscript, as defined by Chambers Dictionary, refers to a book or document that is handwritten and predates the invention of printing (The Chambers Dictionary). Therefore, manuscripts encompass various forms of early writing that have not been printed or published. Traditionally handwritten works on bark, metal, paper, palm leaves, cloth etc. are known as a manuscript that is at least seventy-five years old with some significant historical, scientific and aesthetic value. Manuscripts are available in various or more than a hundred scripts and languages and lithographic prints are not considered as several manuscripts (Shafi & Lone, 2012). Manuscripts are in different-different forms such as records on rocks, revenue records, and firemen which contain information on past events and also contain material knowledge. Generally, a language is written in several different scripts, for example, Sanskrit is written in Granth script, Devanagari script and many other scripts.

7. UNESCO Charter for the Protection of Digital Heritage (2003)

Under the UNESCO Charter for the Protection of Digital Heritage (2003), it is crucial to acknowledge that the loss of cultural heritage from our global history represents a form of impoverishment. To ensure the safeguarding and preservation of our heritage, UNESCO establishes guidelines and measures for the protection, enhancement, and dissemination of various forms of cultural heritage, including works of art, tangible and intangible cultural heritage, as well as monuments. Furthermore, UNESCO facilitates the "Information for All" forum, which serves as a platform for discussions and initiatives concerning policies related to information, recorded knowledge, and related topics. Additionally, the "Memory of the World" program aims to safeguard and preserve the world's documentary heritage by recognizing and preserving invaluable creative resources. which are distributed, maintained, and produced in digital form. Access to these digital legacies provides an opportunity for people to communicate, build and share knowledge in their communities. Currently, the advancement of technologies in this heritage is under threat so they need to be protected and protected UNESCO has worked for them and all member states must adopt UNESCO's Charter to protect their digital and cultural heritage (Charter on the Preservation of the Digital Heritage, UNESCO Digital Library).

7.1 Digital heritage as a shared heritage

The cultural heritage growing in every corner of the world in any language in any area of human knowledge or expression. It can be cultural, educational, scientific and administrative resources. Many of them are born digital. Both kinds of material need standard preservation for restoring it for future generations. It required purposeful, production, maintenance and management for the

preservation of cultural heritage.

7.2 Ensuring access to digital heritage

The intention of preserving digital heritage is to secure its location convenient to the public domain. At the same time, we must protect sensitive information from being misused.

7.3 Preventing the loss of cultural inheritance

The digital inheritance of the world is in danger of being lost to future generations. In today's time, any technology from hardware to software is becoming increasingly obsolete and the uncertainty regarding resources, responsibility and methods of maintenance and security is high for governments and institutions.

7.4 The urgency for proactive measures

Cultural heritage is fleeting and the displacement of digital heritage is rapid and deliberate. Member States will benefit from licensing and special support for heritage conservation. Before we lose cultural heritage forever, we need to be alert and aware of its conservation and protection.

7.5 Digital continuation

The digital continuation of the digital legacy is inevitable. To protect the digital legacy, various measures need to be taken from the beginning (creation) to the end (access) of the digital information life cycle.

7.6 Selection of preservation-worthy items

The primary criteria for ensuring which digital content or materials to retain should be based on their cultural, scientific, etc importance and the selection of heritage materials varies for each country. Priority should be given to "Born Digital" content.

7.7 Conservation and safeguarding of digital and cultural heritage

There is a need to secure appropriate statutory and institutional frameworks to safeguard the digital heritage of Member States. Communities of all regions and countries must preserve their digital heritage and make it readily available to secure the representation of the cultures and languages of all countries and peoples.

7.8 Institutional roles and responsibilities

For the conservation of digital heritage, various institutions act as coordinating agencies as per

their existing role and expertise.

7.9 The involvement of UNESCO

UNESCO's various roles and responsibilities for the protection of digital heritage are considering the functioning of its programs in this Charter and participating in promoting their implementation. It also serves as a reference point for member states where various government and private bodies can work together to formulate new policies and norms. It promotes collaboration and capacity-building programs to support the digital conservation of digital heritage.

8. The initial phases of digitization undertaken by the National Mission for Manuscripts

The mission commenced with a pilot project focused on digitizing a collection of manuscripts, serving as a testing ground for implementing best practices in digitization. In this phase, approximately 39 lakh pages of manuscripts were selected, with 17,210 pages (equivalent to 26 lakh manuscript pages) successfully digitized. Key participants in the digitization efforts included organizations such as IGNCA, CIL, NIC, CDIT, and INTACH. Moving to the second phase, a total of 80,000 manuscripts were chosen for digitization, resulting in the successful digitization of 79.44 lakh pages from 89,994 manuscripts. The third phase aimed to digitize 1 crore pages across various centres, of which 80.19 lakh pages from 1.02 lakh manuscripts have been digitized. Additionally, the mission has initiated the fourth phase, which involves digitizing multiple manuscript repositories nationwide. In this phase, a selection of 10 million pages has been earmarked for digitization, and the process is nearing completion. Currently, 2,61,57,821 pages from 2,96,585 manuscripts have been successfully digitized (National Mission for Manuscripts).

9. The specifics of the digitization efforts carried out under the project in Uttar Pradesh (UP)

The National Mission for Manuscripts has undertaken digitization activities in multiple centres across Uttar Pradesh. A total of four centres housing valuable manuscripts were identified and subjected to digitization, following a systematic approach that included a pilot project and other relevant steps. The National Mission for Manuscripts has provided comprehensive guidelines for ensuring standardized digitization processes. The progress of digitization work in each centre is deemed satisfactory, with completion achieved (Post Survey, National Mission for Manuscripts).

Table 1. Manuscript Centres of Up

Font Size	Four Valuable Manuscript Centres			
	Institutions	Digitized Mss	No. of Pages	Remarks
1	Jain Manuscripts, Lucknow, UP	180	42,951	Complete
2	Akhil Bhartiya Sanskrit Parishad, Lucknow, UP	12,998	4,58,376	Complete
3	Vrindavan Research Institute, Vrindavan, UP	22,375	15,61,814	Complete
4	Rashtriya Sanskrit Sansthan, Allahabad, UP	35,020	25,76,879	Complete

10. The collective network of institutions associated with the Mission

In addition to its digitization efforts, the mission has identified several universities, organizations, and institutions throughout the country for documentation and conservation. The following are the institutions involved in these important tasks (Manuscript Resource and Conservation Centres).

10.1 Manuscript Resource Centres (MRCs)

In the country, forty-seven Resource Centres function as 'Manuscript Resource Centres' in collaboration with the National Mission for Manuscripts. Many well-established institutions, universities, libraries, governments, and NGOs are acting as nodal coordinating agencies in their respective regions. These resource centres are supervising the documentation and survey of manuscripts in their priority area. The National Mission for Manuscripts is also associated with awareness programs like outreach activities, theatre, lectures, training workshops etc.

10.2 Manuscript Conservation Centres (MCCs)

In the country, a network of thirty-two conservation centres for manuscripts has been established as the 'Manuscript Conservation Centre' through the National Mission for Manuscripts. All the centres have a pool of trained and expert scientists who assist the institutions at various levels in providing basic conservation care of their manuscript collections. These centres provide training in manuscripts conservation at various levels.

10.3 Partner Centres for Manuscripts (MCPCs)

In this mission, two hundred institutions have been designated as 'Manuscript Conservation Partner Centres' to provide suitable support to those institutions which have a large collection of manuscripts. MCP Centres are advised to store and efficiently maintain their collections and also to have storage and conservation materials for rare manuscripts in their collections. In this mission, ten institutions have been designated as 'MCPCs' by the 'Manuscript Conservation Centre'.

10.4 Manuscript Partner Centres (MPCs)

In this mission, the premier institutions which have a large collection of manuscripts are identified as 'Manuscript Partner Centres' to support this mission. A newly developed software name Manus Granthavali based on the Dublin Core Metadata Standard, which is accepted globally is required by these institutions to catalogue and document their collections. The cataloguing of documents is not based on the existing cataloguing pattern, these are done concerning the primary text and currently, a total of 32 MPCs across the country are working with this mission (Manuscript Resource and Conservation Centres, n.d.).

11. The centres dedicated to manuscript conservation in Uttar Pradesh

This mission has several networks for digitization and preservation work in a country. Some of them are the following (Manuscript Conservation Centres, National Mission for Manuscripts);

11.1 Manuscript Research Centres

- Sampurnanand Sanskrit Vishwavidyalaya, Varanasi;
- Rampur Raza Library, Rampur;
- K. M. Hindi Institute of Hindi Studies and Linguistics, Agra;
- Vrindavan Research Institute, Vrindavan;
- Mazahar Memorial Museum, Bahariabad, Ghazipur (UP).

11.2 Manuscript Conservation Centres

- Indian Conservation Institute, Lucknow;
- Central Library, Banaras Hindu University, Varanasi;
- Rampur Raza Library, Rampur;
- Vrindavan Research Institute, Vrinadavan;
- Nagarjuna Buddhist Foundation, Gorakhpur.

11.3 Manuscript Conservation Partner Centres

- Vrindavan Research Institute, Vrindavan;
- Amir-ud-Daula Public Library, Qaiser Bagh, Lucknow 226001, Uttar Pradesh;
- Sayajirao Gaekwad Central Library, Banaras Hindu University, Varanasi;
- Rashtriya Sanskrit Sansthan (Deemed University), Ganganath Jha Campus, Chandra Shekhar Azad Park, Allahabad 211002, Uttar Pradesh;
- Digambar Jain Trilok Shoda Sansthan, Jambudvipa, Hastinapur 250404, District Meerut, Uttar

Pradesh;
• Hastlekhagar Evam Sangrahalaya, K.M. Institute of Hindi Studies and Linguistics, B.R.Ambedkar University, Paliwal Park, Agra 282004, Uttar Pradesh (Manuscript Conservation Centres | National Mission for Manuscripts).

12. Outcomes of the Study

This article highlights the vital importance of safeguarding the abundant manuscript heritage of Uttar Pradesh through digital preservation. This suggests that it is important to study current conservation efforts, acknowledge the challenges, and assess their impacts on access and conservation. It advocates formulating sustainable strategies taking into account technological constraints and socio-cultural impacts. The text emphasizes the importance of community engagement and cultural awareness, stressing the need to integrate local perspectives. Furthermore, it encourages the exploration of technological advancements and best practices while identifying future paths. Scholars are urged to join with these elements to advance digital preservation efforts in Uttar Pradesh, securing continued preservation and access to its priceless manuscript collections.

13. Results

The research findings underline the broader efforts of the National Mission for Manuscripts (NMM) in Uttar Pradesh, a region known for its vast landscape, dense population and rich cultural heritage. It highlights the important role of digitization in preserving the country's ancient heritage, while recognizing the universal importance of safeguarding cultural treasures. The Government demonstrates strong dedication to heritage conservation through commendable initiatives, particularly through the NMM. NMM's diverse holdings reflect its commitment to the protection of historical artefacts. By carefully digitizing its collection, the mission aims to ensure wide access. This study provides a unique perspective on digital preservation practices within a leading cultural institution in Uttar Pradesh, emphasizing its ambition to digitize and centralize manuscripts for wider use across different institutions.

14. Conclusion

There is a huge scope of research in the state in the segment of digital preservation as a National Mission for the manuscript has worked a lot with various institutes and universities throughout the state. Luckily, Uttar Pradesh is the fourth bigger state in the country and it is always been richer in cultural heritage and value. Uttar Pradesh is one of the most ancient cultural supports of Indian culture. we have discussed Digital preservation with the purview in the frame of the National Mission of Manuscripts in Uttar Pradesh, for which we have presented a supporting chart for various development in the mission from its inception to the present time. Digitization is the most important step to preserve the content of manuscripts. It is therefore essential to preserve

as much as possible the treasury of the manuscript and its knowledge base before it is lost forever.

References

Charter on the Preservation of the Digital Heritage, UNESCO Digital Library. Accessed July 8, 2023. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000179529

Chhatwal A. (2009). Digital Heritage Archiving in India: A Case Study of Panjab University Library, Chandigarh. In Future "Digital Resource Knowledge Sharing.", 145-153.

Convention for the Safeguarding of the Intangible Cultural Heritage 2003 (2005). *International Journal Proceedings, 12*(4), 447-458. doi:10.1017/s0940739105050277

Gladney H. M. (2009). Long-term preservation of digital records: Trustworthy digital objects. *An Arch, 72*(2), 401-435. doi:10.17723/aarc.72.2.g513766100731832.

Gobble M. M. (2018). Digitalization, Digitization, and Innovation. *Research Management, 61*(4), 56-59. doi:10.1080/08956308.2018.1471280.

Google Books (2000). The Chambers Dictionary- Allied Chambers. Accessed July 8, 2023. Retrieved from
https://books.google.co.in/books/about/The_Chambers_Dictionary.html?id=pz2ORay2HWoC &redir_esc=y.

Manuscript Conservation Centres, National Mission for Manuscripts. Accessed July 9,2023. Retrieved from https://www.namami.gov.in/manuscript-conservation-centres.

Manuscript Resource and Conservation Centres. Accessed July 9, 2023. Retrieved from https://pib.gov.in/newsite/PrintRelease.aspx?relid=73331

National Mission for Manuscripts. Accessed July 9, 2023. Retrieved from https://www.namami.gov.in/

Objectives. National Mission for Manuscripts. Accessed June 22, 2023. Retrieved from https://www.namami.gov.in/objectives.

Parekh P. H. (2001). Digitization: An Overview of Issues. INFLIBNET's Convention Proceedings CALIBER 2001. http://ir.inflibnet.ac.in/bitstream/1944/79/1/cali_1.pdf

Post Survey. National Mission for Manuscripts. Accessed July 9, 2023. Retrieved from https://www.namami.gov.in/post-survey.

Prytherch R. (2005). Harrod's Librarians' Glossary and Reference Book. doi:10.4324/9781315586243.

Sahoo J., Sahoo B., Mohanty B., & Dash N. K. (2013). Indian manuscript heritage and the role of national mission for manuscripts. Library Philosophy and Practice. https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=238&context=libphilprac.

Shafi S. M., & Lone M. I. (2012). Oriental manuscripts in India: a literature survey. *Library Review, 61*(8/9), 577-591. doi:10.1108/00242531211292088.

UKOLN. Briefing Documents. An Introduction to Digital Preservation. Accessed June 22, 2023. Retrieved from
https://www.ukoln.ac.uk/cultural-heritage/documents/briefing-31/html/index.html.

What is digitization? Accessed June 22, 2023. Retrieved from https://www.techtarget.com/whatis/definition/digitization.

Witten I. H., Bainbridge D., & Boddie S. J. (2001). Power to the people: End-user building of digital library collections. *Proc ACM International Conference Digital Library,* 94-103.

[About the authors]

Priyanka Jaiswal is a PhD research scholar with a master's degree in Library & Information Science from the Department of Library & Information Science at Banaras Hindu University. She holds the UGC Junior Research Fellowship and specializes in areas such as the Digitization of Manuscripts, University Library Systems, and Library Automation, etc. Priyanka has contributed significantly to her field with two major articles and considers this article as a continuation of her research interests.

Abhay Chaurasia, also a graduate of Banaras Hindu University with a master's degree in Library and Information Science, is currently pursuing his Ph.D. in the same department. He is the recipient of the UGC Senior Research Fellowship and serves as a Librarian at Kendriya Vidyalaya Sangathan. Abhay's research primarily focuses on the status of public libraries and assistive support for disabled individuals within library settings, digitization of library systems, etc. This paper presents some of the findings from his ongoing research, adding to his portfolio of three research papers published in international journals.

Ajay Pratap Singh, holds Ph.D. in Library and Information Science, holds the position of Professor at the Department of Library and Information Science at Banaras Hindu University. He is currently on deputation and serves as the Director General of the National Library of India, Kolkata, under the Ministry of Culture, Government of India. Ajay's research interests span across various domains including OCR, public libraries, digital preservation, and cloud computing applications, with a publication record of approximately 100 research papers in national and international journals.