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REVIEWS ON PRESERVATION AND CONSERVATION OF ANCIENT MANUSCRIPTS: A VALUABLE SOURCE FOR FUTURE USERS

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Abstract

Manuscripts are invaluable sources required for research and innovative activities in the society. Safeguarding the manuscripts collection of any organisation is necessary in the present and future scenario. The study covered 23 articles related to preservation and conservation of manuscripts. The reviews covered in this paper examine the role of libraries in preserving educational, cultural, research, and recreational materials for users. Further it discusses the comprehensive overview of the current state of digital preservation services and tools. In addition to this, preventive and restorative conservation strategies, conservation process of manuscripts and documents, ongoing digitization initiatives in India, benefits and potential threats associated with digital preservation, training need for technical staff and funding from concerned state are also discussed in this paper.

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Introduction:-

For the present and the future generation, manuscripts are invaluable resources. Their preservation and conservation are essential for safeguarding the knowledge, history, and culture contained in the manuscripts. Historical libraries are the home to these precious documents, which provide in depth insights into the past. The cause of deterioration due to different factors, pests, and improper handling ensures their accessibility for research, education, and cultural appreciation protecting them is very need. They are not only primary sources but also first-hand accounts of past events, personal experiences, and societal evolution. Beyond historical data, manuscripts serve as the unique source of ancient knowledge that represent intellectual wealth of earlier civilizations. Researchers and students rely on these manuscripts to gain knowledge about the past. Therefore, implementing effective preservation and conservation techniques is vital. Measures like environmental control, pest management, and proper handling can significantly reduce both physical deteriorations. Additionally, digitization plays a crucial role in preserving content while enhancing accessibility. As S.R. Ranganathan's Second Law emphasizes, it is the responsibility of librarians, archivists, and custodians to preserve these materials for providing access to every user. Libraries, being integral to

society, must fulfil the needs of users across generations. Prioritizing the preservation of manuscripts ensures the continuity of human knowledge, cultural heritage, and artistic legacy of generations to come.

Objectives of the Study:-

The main objectives of this study are to, what kind of action taken care by different studies, identify the need of preservation and conservation of manuscripts, explore the measures to prevent manuscripts from physical damage, chemical deterioration, and biological threats and to know different methodologies followed by different libraries to maintain their informational and cultural value, and make them accessible more convenient for future generations.

Literature Review:-

Nuraini (2024) carried out a study titled on "Assessing Ancient Manuscript Conservation Practices: A Case Study on Local Content Preservation at the North Sumatra State Museum". This is an ancient manuscript and this is invaluable cultural antiquities provide critical insights of the past civilization such as; historical, social, and cultural dimensions. Author used a descriptive methodology to inspect the conservation of ancient manuscripts with local content preserving strategy. Study highlights the, North Sumatra State Museum, because it plays an active role by offering data related to the collection, conservation, and preservation of (parchment) Manuscripts. Data collection methods included interviews, observations, and document analysis. Study high lights the museum and library practices by emphasizing the importance of regional cultural heritage safeguarding in preserving manuscript collections. Findings shows some of the conservation methods adopted such as fumigation for removal of pests and fungi and also, use lemongrass oil, and storage in shaded environment to prevent damage. Study high lights, the additional applied methods to protective measures such as gel-based chemicals and paper napkins. Author felt and identified that, staff members have needed to receive specialized training from conservation experts and there are the several challenges such as inadequate tools and equipment, shortage of skilled personnel, limited funding, the absence of a structured preservation schedule, and insufficient storage space.

Nuraini (2024) submitted is research on "conservation Activities on Ancient Manuscripts". Study shows the ancient manuscript conservation activities and it shows the descriptive method literature adapted and to collected information on processing the contents used for reading materials such as books, dictionaries, and journals. Researchers gain a deeper understanding of the topic before conducting field research hence the result shows deeper information, carrying out good information on conservation of ancient manuscripts this can be accessed and used by the public as a source of knowledge. Study raised some important activities for adopted manuscripts such as fumigation, removing acidity from the paper, repairing the manuscript (Lamination), as well as encapsulation and reproduction and steps adopted for prevent damage and protect ancient manuscripts that have cultural heritage value. Finally, author felt apart from that, conservation efforts carried out well and also provide long-term benefits for future generations, so that the knowledge contained in ancient texts can continue to be passed on and make a significant contribution to the development of society. Therefore, author finally said, the above activities are important to the future, hence these will conduct by experts and related departments with continue to support and carry out ancient manuscript conservation activities with full support and responsibility is need.

Devegowda's (2022) study emphasizes the critical role of both museum management and preventive conservation practices in safeguarding of cultural collections highlighted on the topic of "Museum and Preventive Conservation". The author said innovative conservation and restoration measures which applied for museum settings is need, not only individual items taken care to and services to long hours, and also raise the accessibility, interpretation, and appreciation by the present and future generations. The paper addresses both preventive and restorative conservation strategies aimed at the long-term protection of tangible cultural heritage including light exposure, pests, dust, pollutants, and fluctuations in temperature and relative humidity. Light, particularly ultraviolet (UV) radiation, is identified as a major contributor to material degradation, causing photochemical changes, dye fading (especially blues and reds), and brittleness in materials use of Biological threats such as insects, fungi, nature affects, dust, moisture, temperature factors, organic factors and chemical to be apply for wood and metal based items and discussed with making the use of gloves and acid-free storage materials essential during handling and packaging. Author highlights on implementing preventive conservation practices for museum collections and preserving them for cultural significance. The study advocates the regional museums to give concentration to take preventive measures for conservation, preservation, maintenance and transmission to future generation.

Rieger, Schonfeld, & Sweeney (2022) research reports on “Digital Preservation and Curation Systems” the effectiveness and durability of preservation and conservation activities. The Institute of Museum and Library Services (IMLS) is supported to this research work, and also supports libraries, archives and museums across all 50 U.S. states and territories. Author gives information of “heritage organizations” which provide research and strategic guidance both to academic and cultural institute for public good with discussed economic, demographic, and technological changes. Author said scientific heritage increasingly created and distributed by both born-digital or digitized from physical materials and also highlights programming preservation such as (CLOCKSS, the Internet Archive, HathiTrust, and Portico), and third-party digital preservation systems (APTrust, Archivematica, Arkivum, Islandora, LIBNOVA, MetaArchive, Samvera, and Preservica). Author highlights the effectiveness of the system, challenges they are facing, such as; market needs, profit and non-profit platforms and emphasizing 3rd party service rather than programmatic solutions. Report on many issues such as; many heritage organizations, limited resources, service providers, decision making process, preservation solutions etc., Along with this some findings of this study on many vendors market tools, user interfaces, content transfer tools for long term preservation, competitive market, risks, stakeholders—including higher education institutions, funders, and policymakers, challenges with non-profit platforms, finally he said planning to series blog posts for feedback and share practical strategies for the future and he suggests preservation experts study the system well and provide insights research and to commitment for advancing project.

Another article “Manuscripts: Preservation in the Digital Age”, written by **Rajan and Mohamed (2021)** explore the role of libraries in preserving educational, cultural, research, and recreational materials for users. Author discussed libraries are central hubs for gathering comprehensive information, including intellectual and cultural heritage, library collections, particularly manuscripts, are vulnerable source but by various environmental factors that can cause irreversible damage. It highlights value of manuscripts because they are the factual records because they contained human accomplishments, thoughts, and theories that contribute to societal development and they are timeless guides for future generations and must be preserved accordingly. They also report preservation strategies used for protection for manuscripts and preventive measures implemented with care and cost-efficiency. Author conclude with key concern, means increase public participation, store manuscripts and rare documents preserve in mathas, Monastic institutions (Madarasas), private libraries and Monasteries even in villages also. Author opinion is, Preservation and Conservation of rare manuscripts such as historical books, official records, and digital materials is a crucial area that demands increased attention.

The study “Preservation and Conservation of Manuscripts and Rare Documents in Libraries: Issues and Perspectives” conducted by, **Dhananjay, Chile, and Rohit (2021)** describe about many Library and Information Science issues, such as; librarianship, awareness of systematic process, preserving the sources and cultural activities lack of training and knowledge of staff, and barriers in well developed (LIC’s). Main objective of the study is: raising awareness regarding causes of rare materials, conservation process of manuscripts and documents, encouraging preservation of rare collections as symbols of National identity. Noted that “It shall be the duty of every citizen of India to value and preserve the rich heritage of our composite culture” (Government of India, 2015). The constitution outlines and highlights fundamental duties and preservation of heritage materials. Authors said the importance of preserving rare documents that contain the thoughts and experiences of eminent thinkers and historical figures, providing valuable insight for future generations. Study highlights preventive conservation, curative conservation, required conservation technical process should be adopted and conclude with effective conservation and preservation efforts require not only technical skills but also a deep sense of responsibility and passion among LIS professionals. They argue that, while time-consuming and complex, this work is vital for safeguarding our documentary heritage for future generations.

Dutta (2019) unique socio-cultural and technological landscapes of the Global South, study conducted by Dutta and advocating for approaches that are tailored and control over their historical records and cultural heritage. What is the crucial role of indigenous communities in the digital preservation process, stressing the need for their active participation and ownership? Particularly, the alignment with this movement, Saudi Arabia is ensuring that the stewardship of its history and culture is managed domestically; promoting a deeper sense of ownership, authenticity, and responsibility among its people, Author emphasizes. This work acknowledges the digital divide and its potential impact on access to technology and shows participation in digital preservation initiatives. The study suggests exploring minimally invasive computing approaches to enable wider participation, especially among those with limited literacy or digital skills. Opinion, the broader researches interests in sustainable development and social change are reflected in the emphasis on using digital technologies to empower marginalized communities and

promote cultural preservation. The research seeks to inform strategies for leveraging digital tools to safeguard indigenous knowledge and narratives for future generations by examining the intersection of culture, communication, design, and innovation. Study opinion is future research will examine the evolving role of national capacities in archival practices to gain a better understanding of the long-term impact of these efforts on cultural preservation.

Kaur (2017) presented a paper the 4th International Symposium on Emerging Trends and Technologies in Libraries and Information Services related to titled “Digital Preservation of Manuscripts: An Indian Perspective with Special Reference to Punjab. Here is discussed the libraries role in digital age, shifting from traditional book lending institutions to e-information providers and focusing its involvement. Kaur said manuscripts as primary sources of historical information and are gradually deteriorating over time and are increasingly difficult to preserve in their physical form. The study emphasizes of underscores the significance of digital preservation as a method to protect the valuable documents from damage, theft, and decay. Paper explored the key areas such as, need for digitizing manuscripts, ongoing digitization initiatives in India, benefits and potential threats associated with digital preservation, and the overall digitization process. Study outlines some guiding principles for effective digital preservation along with special focus is given to the manuscripts and rare literary collections housed at Panjab University, Chandigarh, as well as digitization efforts at the state level in Punjab.

Ruusalepp and Dobрева (2012) report titled “Digital Preservation Services: State of the Art Analysis”, providing a comprehensive overview of the current state of digital preservation services and tools. Study shows information on the DC-Net project, and emphasis on digital preservation practices in selected European countries—namely Italy, Estonia, and Hungary. It highlights the need to bridge existing gaps between e-infrastructures and efficient work, forward-looking digital preservation services. Based on desktop survey and rapid assessment of approximately 190 existing tools and services, the report categorizes the instruments to the digital preservation life cycle includes stages, such as pre-ingest, ingest, storage, digital object analysis, preservation planning, access, and reuse. The findings reveal that while certain areas—particularly digital object analysis and metadata extraction—are well-supported (accounting for over 25% and 30% of tools, respectively), there is a notable deficiency in tools that offer integrated, end-to-end preservation solutions. The authors emphasize that most existing tools serve only supporting roles rather than offering comprehensive orchestration of preservation workflows. Furthermore, they identify critical gaps in the availability of sustainable, well-documented services with strong user supports and it point-out the absence of standardized comparison metrics and maturity models for evaluating digital preservation services. In conclusion, the report calls for the development of a structured roadmap to define digital preservation as a key infrastructure service for the cultural heritage sector. It recommends benchmarking tools as a central feature of future initiatives aimed at improving digital preservation practices.

Katre (2011) explores on Digital Preservation: Converging and Diverging Factors of LAMs in India, study core focuses on examines the convergence and divergence among libraries, archives, and museums regarding digital preservation and it stresses that convergence should go beyond just integrated access, respecting the distinct roles, scopes, and identities of each discipline (libraries vs. archives vs. museums). It explains, several museums in India have digital preservation systems deployed, including: Chhatrapati Shivaji Maharaj Museum, Mumbai, Raja Dinkar Kelkar Museum, Pune, Salar Jung Museum, Hyderabad, Victoria Memorial Museum, Kolkata (upcoming), C-DAC’s development of the Heritage Information System for the Heritage Conservation Society archives heritage monument information in Mumbai, The Human-Centred Design and Computing Group at C-DAC Pune presented ideas on: Cross-museum collaboration for metadata enrichment and Distributed search across homogeneous virtual museums. Author made some critical Observations, such as; integrated digital preservation software solutions for exist, they often oversimplify by treating libraries, archives, and museums as interchangeable, Indian academic courses in musicology, archives, and library/information science show varying levels of integration of digital preservation methods, Staff in LAMs have conducted gap analyses identifying significant deficiencies in digital preservation readiness. Finally, author recommended; unique identities and roles of LAM disciplines rather than forcing full convergence, virtual museums and digital archives, actionable steps to bridge gaps consider to institutions. Study concludes, Indian libraries, archives, and museums are not yet ready for full digital convergence and prioritizing the creation of virtual museums and digital archives is necessary alongside ongoing digital library efforts.

The study Preservation of Manuscripts in Kerala conducted by Vasudevan & Amrutha (2011) it reports addresses three major manuscript libraries in Kerala, including traditional preserving methods and importance of preserving

manuscripts, causes of their deterioration, and challenges faced by them. Discussed with the nature and composition of manuscripts writings such as; Palm leaves, Cotton, silk, wood, bamboo and Copper plates. Some of the methods highlight such as; shade drying and gingerly (sesame) oil coating, smoke tender palm leaves in kitchens to **harden and preservethem** with Leaves are cut, cleaned, smoothened, and treated before writing. Study raised some causes of manuscripts deterioration they are, Environmental factors, Biological factors, Human caused and pollutants. Paper high lights preservation techniques such as; Air conditioning, Deep Freezing, Fumigation, use of moisture absorbents, Xeroxing and Microfilming and digital archiving along with key findings are oiling and cleaning, lack of trained personnel, inadequate funding absence of structured preservation programs and also implemented modern methods.

Study conducted by Hale &Reuell (2010) on Digitization of Naxi Manuscripthighlights some issues and effortsondigitization of ancient Naxi manuscripts.Naxi manuscriptsContain valuable cultural, historical, and linguistic content. Study discusses the goals and impact of digitations, preservation of cultural heritage, Translation and Knowledge sharing, manuscripts translations, accessibility and understanding of wider audience.Further the study highlights theintersection of technology and endangered knowledge systems, role of digitization in cultural continuity, especially when oral or script-based traditions are on the verge of vanishing, Importantly, the effort iscollaborative and community-involved, **leveraging**indigenous knowledgefor meaningful interpretation. Finally, the authors compared his study with other studies including many aspects.

Sarasvathy, Giddaiah&Selvaraja (2010) reports on the study of “Rare Collections in Karnataka Libraries”.The Study focused on, quantifying rare collections,Analyzing document types and Assessing usage patternsof rare materials here highlights some key factors such as; rare documents used by users regularly by academic and public interests.Some materials are original and unpublished, including:Palm-leaf manuscripts and other manuscript forms, Study recommended Analysepublication and authorship patterns within the rare documents, understand thedepth and scopeof the content.Further discussed theCitation Analysis: Track citations of rare works to evaluate theirimpact and significancein a global scholarly context andDigitization Initiatives: Call forfinancial resourcesto support the digitization of rare materials. Digitization is seen as essential forpreservation, accessibility, and scholarly use. Study conclude with some significant research value, regular use of materials, importance of bibliometric and citation studies, strategic vision activating rare collections financial supports.

Digital Preservation of Indian Manuscripts An Overviewreports by Ramana (2005) drawn some objectives, comprehensive overview of digital preservation efforts, explain digitization techniques and initiatives, and role of the **National Library of India** act as centralinstitution relating to collecting, preserving, and disseminating the**national heritage** digitizing its holdings Persian: 955, Arabic: 681, Bengali: 168, English: 255, Hindi: 5, Tamil: 370, Sanskrit: 790to including operational areas such as; Quality, Image, format, pagination and structure of the manuscripts and also explained 5 states which have collaboration works in Indian National Library. Author Manuscript Resource Centres (MRCs) and Manuscript Conservation Centres (MCCs): study concludes with **Government of India** is committed to cultural preservation along with good strategies among National Library of India, National Informatics Centre (NIC), National Archives and other Numerous libraries such as; Universities and Research Centres.

Alahakoon (2005) explained on indigenous Methods for Preservation of Palm Leaf Manuscripts in Sri Lanka, study focused preservation and conservation of palm leaf manuscripts. He explained traditional preservation techniques to be employed natural hurbs and local materials, non-toxic and safe for humans, Non-damaging to manuscripts, cost effective methods, unlike synthetic chemicals and modern pesticides, traditional methods enhance the longevity and flexibility of palm leaves. Study conclude with recommendations, recommends identifying, reviving, and continuing the use of these traditional conservation methods and Emphasizes that indigenous knowledge is both culturally valuable and practically sustainable for manuscript preservation. Author felt Emphasizes that indigenous knowledge is both culturally valuable and practically sustainable for manuscript preservation.

The study Preservation and Retrieval of Manuscripts in India reports by **Rawtani& Amjad (2003)** focused on importance of manuscripts as irreplaceable sources of history and cultural heritage and lack of preservation initiatives and limited access. Study highlights some important key points, Manuscripts are poor utilized because of poor collection, in India lack of centralizedorganization and publicity and information dissemination and also delayed of information use of technology because of different environmental condition. Author finally concludes

that Preserve manuscripts, facilitate retrieval, access, and scholarly use and he Suggests that new media can be a viable and sustainable solution to protect these fragile resources.

A project document on National Mission for Manuscripts Published by Department of Culture, Government of India (2002), focused on importance of manuscripts as key sources of India's related to social, cultural, and literary and need to establishment of National Mission for Manuscripts (NMM). Study highlighted some key points such as; India's intellectual heritage and rulers' individual libraries (Saraswati Bhawan Library, Maharaja Serfoji Library, Ranvir Sanskrit Research Institute, Government Oriental Manuscript Library, Adyar Library). Finally report highlighted the significance of the study, preservation and conservation of the Manuscripts in systematically for future purposes.

Another study Preservation and Access to Documentary Heritage in Southern India by **Raju (2002)** discussed the issues of reservation and wider accessibility of the rich documentary collections in libraries across Andhra Pradesh, Tamil Nadu, Karnataka, and Kerala. The study covered some key points on Rich documentary collections, democratizing issues and preservation issues. Author highlights preservation is as National responsibility and proposal for National Fund for creation of documentary heritage and even extend for world heritage purposes. Author felt funds should support to the work of Preservation projects, capacity building and infrastructure development and funds managed by department of culture and Ministry of Human Resource Development

A survey conducted by **Cabral (2002)** related to national libraries in Lisbon, Madrid, Barcelona, Rome, Florence, and Athens. Author examined some internal operations, such as; institutional cooperation, and international collaboration in preservation and conservation. Author discussed some issues such as technical expertise including conservators, technicians, binders, librarians, and microfilm operators need to handle tasks like binding, digitization, microfilming, pest control, and maintenance in-house operations. Finally, his opinion is financial support among libraries with similar responsibilities is a primary source to maintain preservation and maintenance of the museum sources. He noticed that there is a disparity of budgets, some of the libraries received and some of them no, by this problem, the project works and international cooperation, collaboration and maintenance are suffering. The author concludes libraries need funding, training regarding modern preservation methods and he recommends IFLA to take necessary support and training to these libraries.

Dean (1990) submitted work report on the Preservation of Books and Manuscripts in Cambodia in April 1989, Cornell University, supported by the Christopher Reynolds Foundation which initiated to the preservation program to take care of rare and unique archival materials and safeguard in Cambodia and along with some part of the effort was made by Cornell's broader engagement in Southeast Asian research and education. Study followed by some of the activities survey of collections, Staff training, Preservation Prioritization, Supply Arrangements and Microfilm program development operation identified in the study. The author took the project because there has a serious problem faced by factor such as; serious damage by the war and neglect. So, author felt to be continuing need to maintain cultural heritage through proper preservation and need some joint support.

Conclusion:-

This article points out the enduring value of manuscripts as archives of literacy, cultural, and historical knowledge by providing a thorough overview of the significance, difficulties, and solutions related to their preservation and conservation. In addition to being important information sources, manuscripts are physical reminders of our past that how societies, art, and thought have changed over time. This literature review identifies the current and traditional conservation methods used by libraries, museums, and other cultural organization around the world. Further highlights that maintain and conserving manuscripts is a cultural obligation as well as a technical one. By ensuring their survival, we can protect human knowledge, identity, and creativity for generations to come. To create sustainable, inclusive, and creative preservation frameworks that respect the legacy of the past, libraries, archivists, and academics must collaborate quickly and resolutely.

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