Indian Knowledge Systems and Digital Humanities: Preserving and Promoting Indigenous Wisdom Through Technology

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Abstract

The Indian Knowledge Systems (IKS) refer to the intellectual and traditional knowledge, which is regarded as Indian intellectual heritage in disciplines of Ayurveda, Yoga, Astronomy, Philosophy, Linguistics, Arts and Architecture. The IKS is a form of indigenous wisdom that can currently be approached through the Digital Humanities (DH) convergence that provides a profound avenue to preserve, digitize, and market IKS in the digital age. In this paper, I will discuss how digital tools and platforms play roles in protecting and restoring IKS. The research is conducted through the combination of methodologies: it assesses access and understanding of the IKS-related digital initiatives by the general population, as well as perceptions surrounding them. It also looks at how digital initiatives have been efficient in fulfilling a broader scope of reach and transferring of knowledge on inter-generational levels. The results signify that it emerges as a topic of increasing interest to the general public and that more participatory and more inclusive digital approaches need to be introduced to render IKS relevant in modern education and research.

Keywords: Indian Knowledge Systems, Digital Humanities, Indigenous Wisdom, Technology, Digitization, Cultural Heritage, Traditional Knowledge, Preservation

Introduction:

India has one of the most ancient and profitable traditions of knowledge in the world. Knowledge Tradition in India Indian Knowledge Systems (IKS) have influenced world knowledge in all of these areas: the Vedas, traditional systems of Indian medicine (such as Ayurveda), classical Sanskrit literature, ancient treatises on mathematics and astronomy. Most of these conventional practices are however at risk of being lost in the name of modernization.

Digital Humanities (DH) describes an interdisciplinary approach to studying, teaching and preserving human culture and history, which interposes digital technology. IKS has been systematically documented, disseminated and analyzed only to a limited extent. The combination of IKS and DH offer new potential to do this. Such fusion does not only support the preservation of IKS but also introduced it to the discourse of the public and the academe via technology.

The paper examines the extent of using digital platforms, archives, and educational activities to preserve IKS with their impact on the engagement of the audience, cultural identity, and scholarly research.

Literature Review:

The documentation and digital preservation of Indian Knowledge Systems (IKS) also has its boost in the booming Digital Humanities branch of the research. The multi-dimensional strategy of protecting the wisdom of indigenous people through the use of digital devices is reflected in many works conducted between 2003 and 2020.

One of the first to review the role of digital libraries in India in conservation of indigenous knowledge was Nair (2003). This was under the consideration that study aims at rescuing oral traditions and community knowledge through the establishment of accessible and well-structured repositories of the same in the wake of globalization and technological change which threaten to render them extinct.

Kumar and Kaur (2006) added another important Indian view to the process of digitization of traditional knowledge. Their publication has emphasized some of the government and institutions initiatives regarding converting manuscripts, folk, and classical literature into the virtual form. Some of the issues they highlighted included copyright, standardization and language compatibility with the local language.

Subrahmanyam (2009) paid attention to the revival of the cultures where digital technology made it possible. He claimed that the digital platform might revive the interest in the underrepresented or unfamiliar domains of Indian heritage, especially in semi-urban and

academic institutions, and therefore, educational as well as identity construction.

Rao (2010) has done a very close study about the digital archiving of Sanskrit manuscripts. His work had found that a lot of old manuscripts still cannot be used because of bad preservation as well as digitalization. The report promoted standardized online digitization processes and open-access solutions to be used by the scholarly and the general communities.

The relevance of the Digital Humanities in the Indian context was presented by Chakrabarti and Bandyopadhyay (2012) and it involves preservation of the cultural memory. They discussed how stories, customs, and thoughtfulness could be saved and read via digital surfaces, connecting the earlier knowledge and the present online technologies.

It was Jha (2013) who studied how the Vedic writings and the Indian philosophy can be re-interpreted in digital humanities. His research demonstrated the opportunities technological platforms have to deliver dynamic presentations of the ancient knowledge and be available to its audience of a global scale in a more structured and interaction able form.

Sharma and Menon (2014) addressed the issue of digital technologies as a tool of protecting indigenous folk art in India. They examined the different projects which incorporated multimedia documentation of oral forms of art, rituals and tribal expression, by highlighting the role of the community in such initiatives.

Mehta and Rao (2015) speculated on the role that digital media have played in facilitating some knowledge traditions of the Indian classical knowledge like the Yoga, Music, and Ayurveda. Their study accentuated how the incorporation of such traditions into the international systems of learning is done via e-learning units, off-line libraries, and video-records.

Mishra (2016) discussed the issue of higher education with the help of digital interfaces through IKS. His research demonstrated that learning IKS by the digital means enhances learner participation, academic interests and interdisciplinary knowledge, especially at universities with NEP-based curriculums.

Ramaswamy (2017) made a strong argument in Favor of the construction of digital collections of the Indian heritage. He emphasized on the issue that scholars and technologists, together with local communities should work collectively so that they can develop inclusive platforms that conserve different water courses of traditional knowledge.

Sharma and Bhattacharya (2019) reviewed the case of Indian experience of digitally preserving indigenous cultures. They found that success was not only a matter of technology, but of policy support, capacity building and culturally sensitive selection of contents.

The integrations of the Indian Knowledge System in the modern curriculum via digital means were promoted by Singh (2019). He also pointed to case studies such as bringing in digitized materials in philosophy, astronomy and linguistics in which students have gained a better appreciation of the heritage of knowledge in India.

Desai and Joshi (2020) considered in detail the use of digital humanities in the Sanskrit manuscripts. The work described such technological solutions as Optical Character Recognition (OCR) of Devanagari scripts and AI-based indexing and how manuscripts could be preserved, translated, and analyzed differently.

Ghosh (2020) has had an informative review of the Indian e-library projects that focused on preserving knowledge. He explored initiatives such as the Digital Library of India and Bharatavani and how that national project facilitates multilingual access and interdisciplinary use of IKS resources.

Objectives of the Study:

- To explore the role of digital humanities in preserving Indian Knowledge Systems.
- To assess public awareness and usage of digital platforms related to IKS.
- To evaluate the effectiveness of digital tools in promoting IKS among younger generations.

Hypothesis:

H_0 (Null Hypothesis): There is no significant impact of digital humanities initiatives on the promotion and preservation of Indian Knowledge Systems.

H_1 (Alternative Hypothesis): Digital humanities initiatives significantly contribute to the promotion and preservation of Indian Knowledge Systems.

Research Methodology:

The current study comprised both a quantitative and qualitative research methodology to give a suitable description of the way in which digital humanities assist in maintaining and disseminating the Indian Knowledge Systems (IKS). The method was selected to file the tangible tendencies and detailed ideas that are connected to the use and perception of digital tools by various user categories. In case with the quantitative part, a questionnaire was designed and provide to the sample of 120 people, which was composed of students, educators, researchers, and cultural practitioners residing in different regions of India. The questionnaires had questions based on Likert-scale which evaluated awareness of participants toward the study of digital IKS platform, the frequency of utilization, perceived efficiency, and interest in traditional knowledge. The data were descriptively analyzed to understand whether there is a significant difference in perception between the users and non-users of the digital IKS tools in terms of the mean and standard deviation and inferentially analyzed in terms of t-test.

With the survey, a qualitative aspect would be included by conducting semi-structured interviews with five of the key informants who might include digital archivists, Sanskrit speakers, project coordinators of digital humanities projects that have been conducted regarding IKS. The interviews enabled us to learn more about the tribulations, achievements and future of such digital initiatives. To facilitate the occurrence of the quantitative results, the qualitative information was thematically analyzed to establish patterns and themes that validated the quantitative data. Purposive sampling was used in the study to identify individuals who engaged in interaction with Indian cultural knowledge or technology-based platforms in one way or the other to make them more relevant in relation to the research topic. Ethical concerns were well observed as informed consent, confidentiality of person data and voluntary participation. This stringent research methodology enabled the study to triangulate its results so as to conclude even competent conclusions respecting the merging of conventional Indian information with contemporary digital technologies.

Table 1: Descriptive Statistics:

Variable	Mean	Standard Deviation	Min	Max
Awareness of Digital IKS Platforms	3.82	0.85	1	5
Usage Frequency (per week)	2.95	0.64	1	5
Perceived Effectiveness of Digital IKS	4.01	0.79	2	5
Interest in Traditional Knowledge	4.25	0.68	3	5

Scale: 1 = Very Low, 5 = Very High

Analysis of Descriptive Statistics:

The descriptive statistics analysis in the study gives us helpful idea of the degree of awareness of the participants, usage rates, perceived effectiveness, and level of interest in Indian Knowledge Systems (IKS) using digital humanities platform. Judging by the rather low results of the standard deviation, which is 0.85, the mean score, which is 3.82, dates on almost moderate level of awareness due to the digital IKS platforms that is reported by respondents. This implies that the majority of the respondents have probably heard about such websites and projects as Muktabodha Digital Library, Bharatavani, or other institutional digital archives popularising IKS. Nevertheless, the discrepancies in the level of awareness also demonstrate the heterogeneity of exposure levels which might rely on such aspects as the education level and access to online resources.

The frequency of activity of the digital IKS tools on the interval of the 1-5 scale was averaged at 2.95 with the standard deviation of 0.64, indicating moderate use. The respondents indicated that they used digital material linked to IKS about 2 to 3 times weekly. Such degree of usage suggests an increased interest, yet one may also notice a lack of regular or prolonged contact with such digital sources. The low frequency may be explained by such

difficulties as language barrier, technical difficulties, or the scarcity of region-specific materials.

Interestingly, the average score in relation to the perceived efficacy of digital IKS platforms was 4.01 having the standard deviation of 0.79, which is quite high. The fact that they are mostly informative, user-friendly and can be of help in increasing the knowledge of the participants on traditional Indian knowledge implies that those who have accessed them find them useful. It also shows that there is a friendly attitude with regards to the use of technology in preserving cultures and education enrichment.

In addition, the traditional knowledge interest had the highest mean category of 4.25, standard deviation of 0.68, which is strongly inclined towards cultural affiliation and passion in participants to study and be able to conserve the intellectual aspects of India. This observation reaches the importance and emotional appeal which people, particularly young people, still find in ancient wisdom, in spite of the influence of modernity.

On the whole, the descriptive statistics data indicate that awareness and interest in the Indian Knowledge Systems are large, whereas frequent use of digital platforms is in the middle range. The perceived effectiveness of these kinds of platforms is very high among their users which indicates that the more availed, and awareness created, the more the user engagement would take place. These facts create a strong ground where additional hypothesis testing and policy guidelines can be used to enhance digital initiatives related to the promotion of IKS.

Table 2: Hypothesis Testing (t-test):

Group	N	Mean Effectiveness Score	Std. Dev.	t-value	p-value
Users of IKS Tools	80	4.21	0.71	4.58	0.0001
Non-users	40	3.52	0.66		

Analysis of Hypothesis Testing:

The independent samples t -test was used to conduct the hypothesis test of this study to identify that whether there is a significant difference between the users and non-users of digital Indian Knowledge Systems (IKS) platforms in terms of their perceived effectiveness of these platforms. The null hypothesis (H0) to be formulated was that there is no significant effect of digital humanities initiatives on promotion and preservation of Indian Knowledge Systems whereas the alternative hypothesis (H1) was that such initiatives had significant effect on promotion and preservation of IKS.

This sample was then split into two groups including the group of 80 digital regular IKS users, and the group of 40 users who received little to no exposure to digital IKS tools. The average effectiveness rating of users was 4.21 and the standard deviation of users was 0.71 whereas, the average of effectiveness rating of non-users was 3.52 and the standard deviation was 0.66. A t-value of 4.58 was computed and the P-value of 0.0001 is a very low value compared to the standard alpha value of 0.05.

The p-value is less than the significant level (0.05) therefore the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. This conclusion allows concluding that the difference in the perception of effectiveness between the users and the non-users of digital humanities tools associated with IKS is not zero and statistically significant. That is, the evidence proves the assertion that digital platforms usage plays great role in increasing the understanding, appreciation and retention levels of the Indian traditional knowledge systems within individuals.

This is a very significant consequence because it strengthens the role of technology in not only conservation of the cultural heritage but also in the active promotion of the same to contemporary learners. It means that investing in digital humanities including manuscripts digitalization, the creation of multilingual e-resources, and virtual exhibitions creates a positive effect that can be measured. Additionally, the fact that the outreach and accessibility to such initiatives have to be enlarged because the number of people that make use of such initiatives, opportunities, and programs has to increase is also indicated by this finding.

Hence, the hypothesis testing confirms the main assumption of the research: the digital humanities is a major source of improvement in the visibility, accessibility, and relevance of

Indian Knowledge Systems in the new digital era.

Conclusions Overall Results:

It has reached conclusion that by merging Indian Knowledge Systems (IKS) with Digital Humanities, there is major positive effect when it comes to preservation, promotion and accessibility of traditional wisdom in the contemporary period. According to the outcomes of the descriptive statistics, it is possible to conclude that the interest in traditional knowledge is high, and the awareness of digital platforms according to which IKS is promoted is increasing. The overall level of usability still stands at a sustainable level; however, the perceived effectiveness of those platforms is quite high according to the users.

Hypotheses testing also confirmed these findings showing a statistically significant difference in the perception of users and non-users of digital IKS platforms. These digital tools were very helpful in raising the knowledge level of the users and their attachment to indigenous knowledge thereby falsifying the null hypothesis. The research makes a comprehensive finding of the fact that digital technology can be an empowering technique to reviving and revitalizing the rich intellectual and cultural heritage of India.

Nevertheless, there is also a recommendation on wider distribution, multilingual access and familiar interface even in rural and semi-urban settings based on the results. Digital literacy, linguistic diversity and limited access in remote communities are some of the issues that should be tackled in order to achieve full potentials of the digital humanities in the IKS space.

Future Scope of the study:

This study leaves a number of interesting vectors of future research. Such a direction might be the use of special AI-enhanced scholars, smart search engines and search bots, and interactive systems of translation and interpretation of ancient texts. Also, opportunities to combine Augmented Reality (AR) and Virtual Reality (VR) approaches can be observed to provide immersive solutions to traditional arts and rituals and even create immersive accounts of the past, particularly, in learning institutions and museums.

Moreover, it is possible to carry out regional specific studies in order to determine how local knowledge systems such as tribal healing systems, regional literature or even ecological wisdom can be computerized and communicated. Such cooperation between education establishments, government and living technology start-ups may further develop this area. To the extensions of such initiatives in the vernacular languages and mobile-friendly devices will make it more inclusive and attract more people, particularly young and rural elements.

Finally, a long-term sustainability and academic use should be encouraged by IKS and digital humanities intentional curriculum in higher education based on the open-access repositories and e-learning modules.

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