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Digital Readiness of Technical Universities of Haryana in Light of NEP 2020: A Librarian's Perspective

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ABSTRACT

Digitalization has transformed all aspects of our society, including higher education.The National Education Policy(NEP) 2020 also emphasizespromoting digital librariesin higher education institutions to meet various objectives. The present studyis an attempt to assess the digital readinessof selected government technical universities of the State of Haryana in light of NEP 2020. Digital readiness assessment allows education institutions to gauge their preparedness for success in the digital era. This study has explored the available digital Infrastructure, resources, services, and the challenges library staff face.

1. INTRODUCTION:

Digital readiness refers to the preparedness of Higher Education Institutions to adapt and integrate digital technologies/tools (Chounta et al., 2024). Digital technology integration ushered education into a new digital world in the past few decades. Digital readiness is a continuous process and become imperative in the digital age. The lack of digital readiness in education, especially in developing countries, may prove counterproductive for the students and teachers (Atta et al., 2021). Ogbevoen Linda (2020) stated that digital readiness ishow an organization's workforce is prepared to adapt to digital workflows made possible by software and Technology. Digital readiness refers to the ability to

effectively use technology-related knowledge, skills, and attitudes to achieve educational goals for college students in higher education (Kim et al., 2019). Hongand Kim (2018) defined digital readiness as "technology-related knowledge, skills, attitudes, and competencies for using digital technologies to meet educational aims and expectations in higher education." The digital readiness of students is the extent to which they use digital technologies for their academic and future career success.Digital learning is a domain of international research exploring people's preparedness in technology-rich education (Blayone, 2018).Digital readiness is similar to digital transformation and digitization. Digital readiness refers to the ability of individuals and organizations to use digital technologies effectively. It encompasses essential digital skills, such as navigating online platforms, sharing content, and performing tasks. Digital readiness extends beyond mere access to technology, emphasizing preparedness, digital literacy, and confidence in using digital tools (Horrigan, 2016).Libraries are pivotalin advancing knowledge and fostering academic excellence in universities.

Haryana has four government technical universities: DCRUST in Murthal (Sonepat), GJUST in Hisar,YMCA in Faridabad, and PLCSUPVA in Rohtak. To rule out the significant deviation due to the difference in gestation time for development. In the present study,the two oldest technical universities,i.e.,GuruJambeshwar University of Science &Technology, Hisar (GJUST) (founded in 1995) and DeenbandhuChhotu Ram University ofScience&Technology, Murthal (Sonepat) (DCRUST) (established in 2006) has been selected out of total four, to evaluate their digital readiness.The Library of an educational institution reflects its digital preparedness. A brief information about the central libraries of the selected universities is given in Table 1 below:

Table 1: Library collection

University	GJUST	DCRUST
Library	Dr.Bhim Rao Ambedkar Library	Saraswati Library
Books	130584	85042
Newspapers	20	20
Magazines	42	53
Journals (Indian + Foreign)	283	165
Online databases	06	03
Thesis/Dissertations/Projects	1102/966	320

Bound Journals	5850	1400
Abstracting Database	02	01
Bibliographic Database	02	01
E-Journals	8000+	17613
E-Books	262281	10493
Audio/Video Materials	18200	84331
Institutional Repository	01	01
Plagiarism Detection Software	02	02
CD/DVDs	2068	07
Library's Database	01	00
Any additional resources not covered above.	Expert talk (2949), Research database lab, Shodhganga repository, and Video lectures (18310) from IITs.	Virtual Lab (142), Expert talk (7773), Shodhganga repository, Video lectures (84331) from NPTEL.

The library collection is a total of materials that make up a particular library's holding. Through the study, an attempt has been made to analyse the collection strength of the selected two university libraries. Table 1 shows that GJUST has more print collection and electronic information resources than DCRUST.

Different authors have reviewed several significant studies on digital readiness with their designed/selected parameters, as given below in the literature reviewand Table 2. The current research has been carried out from the library's perspective, and hence, selective digital readiness parameters have been chosen to this effect,as mentioned in Table 3.

2. REVIEW OF LITERATURE:

Atta et al. (2021) aimed to validate the Digital Readiness for Academic Engagement (DRAE) scale among healthcare students in Pakistan. The study was conducted across 1744 students from seven institutionsusing the DRAE scale, encompassing five key domains: digital tool application, information-seeking skills, digital media awareness, information sharing behaviour, and digital application usage.

Similarly, Giang et al. (2021) introduced criteria for assessing the readiness of a "digital university" using four fundamental facets, including Education Program, Learners, Training Services, and Governance. Their study presented a digital readiness framework for digital transformation,serving as a reference for the other higher Education Institutions (HEIs).

Building on this, Händel, Stephan, and Gläser-Zikuda (2020) explored students' readiness for digital learning during the COVID-19 pandemic and its impact on socio-emotional impacts. Conducted in 1826 by German Universitystudents, their research revealed that while most students were ready for digital learning, and those unprepared experienced loneliness and stress, emphasising the importance of addressing inequalities and supportingunder-resourced students.

Furthermore, Soomro, Hizam-Hanafiah, and Abdullah (2020), in their systematic literature review of 57 research papers spanning 2007-2019,investigated digital readiness models in the context of the Fourth Industrial Revolution. Their analysis identified four critical success factors: Digital Infrastructure & systems, Digital tools & applications, Digital agents & skills, and Digital ecosystem & culture, underscoring the significance of digital readiness for organizations in the digital age.

Similarly,Roffi, Ranieri, and Bruni (2020) assessed the digital readiness of schools during the COVID-19 pandemic using the SELFIE questionnaire and interviews related to Infrastructure, digital technologies, digital literacies, etc. Their findingshighlighted significant gaps in digital competence among teachers and students, further stressing the necessity of training, support, and strategic planning to enhance their digital readiness.

Kim, Hong, and Song (2019) emphasized the pivotal role of e-learning environments anddigital readiness in ensuring academic success for higher education students. They advocated for robust digital skills amongstudents and faculty to effectively integrate digital technologies and e-learning platforms. Likewise, Blayone et al. (2018) highlighted the alignment of digital readiness with online learning for educational innovation, drawing from a study on university students in Georgia & Ukraine.

Nasution et al. (2018) examined the concept of digital readiness in their paper "The Evaluation of Digital Readiness Concept: Existing Models and Future Directions." They highlighted various predictive models such as the Technology Readiness Index, Digital Readiness, Employee Readiness to embrace Electronic Business, and Mobile Readiness. Their work provided a simplified pathway for organizations

to evaluate and enhance their digital readiness, emphasizing the utilization of digital technologies in a rapidlyevolving digital landscape.

3. DIGITAL READINESS ASSESSMENT OF EDUCATION INSTITUTIONS:

Table 2: Digital readiness assessment scales given by different authors

Sr. No.	Authors	Assessment Scale	Parameters
1	Chounta, et al. (2024)	Digital readiness dimensions	1. Leadership and governance, 2. Policies and strategies, 3. Teaching and learning, 4. Content and curricula, 5. Training and support 6. Infrastructure
2	European Commission (2017); Castaño Muñoz, Pokropek, and Weikert García (2022)	SELFIE (Self-reflection on Effective Learning by Fostering Innovation through Educational Technology)is a free tool for schools	1. Collaboration and networking, 2. Infrastructure and equipment, 3. Professional development, 4. Assessment practices, 5. Student digital competence 6. Pedagogy (support and resources).
3	European Commission (2018); Hippe, Pokropek, and Costa (2022).	SELFIE for work-based learning (WBL) online self-reflection tool for VET (Vocational Education and Training) schools and companies.	1. Leadership and governance, 2. Collaboration and networking, 3. Infrastructure and equipment, 4. Pedagogy (supports and resources) 5. Pedagogy (implementation in the classroom) 6. Assessment practices, 7. Continuous professional development

			8. Student digital competence.
4	Hong & Kim (2018)	Digital Readiness for Academic Engagement (DRAE) Scale.	1. Technological proficiency, 2. Digital learning attitudes, 3. Adaptability to digital environments.
5	Atta et al. (2024)	DRAE Scale	1. Digital Tool Application 2. Information Seeking skills 3. Digital Media Awareness 4. Information Seeking Behaviour 5. Digital Application Usage

4. DIGITAL READINESS OF LIBRARIES UNDER NATIONAL EDUCATION POLICY (NEP) 2020:

The NEP 2020 outlines several goals, including those relevant to the role of libraries and library professionals in education. The parameters for the current study have been derived from the key recommendations of NEP 2020 concerning libraries in its different chapters, as mentioned below:

1. **ICT Infrastructure and Resources available in the Digital library:**
   a) Ensured ICT-equipped suitable infrastructure for adult education and lifelong learning(Part-III; Para 21.6, 21.10).
   b) Digital infrastructure (Part-III; Para 24.2, 24.4).
   c) To strengthen & modernize the existing colleges and universities libraries (Part-III; Para 21.9).
   d) To provide quality technology-based, including online books, apps, and ICT-equipped libraries for learning (Part-III; Para 21.10).
   e) To make library books more accessible and available online (Part-III; Para 21.9).
   f) To ensure that students have access to sufficientbooks that cater to their interests (Part-III; Para 21.9).

g) High-quality learning, translations, and print materials must be available in different Indian languages, including textbooks, workbooks, videos, plays, journals, magazines, novels, non-fiction books & poetry, etc. (Part-III; Para 22.6, 22.20)

2. **Services available in Digital Library:**
   a) All HEIs should have libraries and classrooms with the latest educational technologies for better learning experiences (Part-II; Para 13.2).
   b) Utilizing Technology for Digital or Online Education (Part-III; Para 24.2, 24.4).
   c) Increased access to learning materials, available and accessible to remote, socio-economically disadvantaged, underprivileged students & learners with disabilities (Part- II, III; (Para 9.3 (i), 21.9).
   d) To establish rural and mobile libraries (Part-III; Para 21.9).

3. **Digital readiness of library staff:**
   a) To foster collaborations between libraries & educational institutions (Part-III; Para 21.9).
   b) Assist in advancing research at HEIs and universities (Part-II; Para 17.8, 17.9).
   c) India may become a digitally empowered nation by integrating cutting-edge technologies like artificial intelligence, blockchain, machine learning, handheld PCs, and other educational software and hardware, (Part-III; Para 24.2, 24.4).
   d) E-learning platforms such as SWAYAM, DIKSHA, and SWAYAMPRABHA digital content repositories, including creating and disseminating e-content, will beavailable to students (Part-III; Para 24.2, 24.4).
   e) To provide quality libraries for students in higher education institutions (HEIs) for quality learning (Part-II; Para-12.1).

4. **Continuous professional development (CPD) through training programs:**
   a) To promote career pathway development for library staff(Part-III; Para 21.9).
   b) Using technological platforms for teacher training, like SWAYAM and DIKSHA (Part-II; Para 15.10).

5. OBJECTIVES OF THE STUDY:

The current study has been carried out with the following objectives:

1) To assess the digital readinessof selected technical Universitiesin Haryana.
2) To evaluate theirdigital readiness in light of NEP 2020.
3) To identify the challenges the library staff faced in acquiring digital readiness.

6. METHODOLOGY:

Based on the literature survey, parameters for digital readiness have been designed from librarian's perspective. A questionnaire was developed based on the parameters and objectives of the study. The survey has been conducted on library staff of technical universities. The population under studyis the Library staff of two technical universities in Haryana, GJUSTand DCRUST. Respondents have been asked to provide information on selected parameters. The limitation of the study is that it is based only on the responses of the library staff.The responses that were receivedhave been analysed and presented in the form of tables.

7. DIGITAL READINESS PARAMETERS FOR THE CURRENT STUDY:

Drawing insights from the digital readiness assessment scalesmentioned by different authors is given in Table 2. The present study introduces four digital readiness parameters tailored to align with the objectives of NEP 2020 from the librarian's perspective, as given below in Table 3:

Table 3: Digital Readiness Parameters

Digital readiness Parameters	1. ICT Infrastructure and Resources
	2. Digital Services
	3. Digital readiness of library staff
	4. Training and Support

These parameters aim to strengthen the digital capabilities of libraries, enabling them to contribute to the policy's educational reformseffectively.

8. RESULTS & DISCUSSION:

The present studyassessedlibrary staff's digital readinessin light of NEP 2020. A comprehensive survey was conducted to gather responses from the library staff members. The responses were systematically

analysed based on several key parameters. The analysis is presented in various tables throughout this section,as given below.

1) ICT Infrastructure and Resources available in the library:

Table 4: ICT Infrastructure and Resources		
University	**GJUST**	**DCRUST**
Computers/PCs	79	40
Server	03	04
Laptop	04	02
Printers	08	07
Scanners	02	01
Barcode Scanners	03	02
Generators	01	01
Multimedia Projectors	01	00
LED Screen	02	02
UPS system	04	05
CCTV	70	32
Webcam	11	00
RFID	00	00
Total	188	96

Table 4 shows the ICT infrastructure and resources available in (DCRUST and GJUST) librariesto support their academic and research activities. GJUST's Library has moredigital resources and a better ICT infrastructurethan DCRUST's Library. A noteworthy observation is that the implementation of RFID technology for efficient tracking and circulation is yet to be adopted in both libraries. These facilities reflect the institutions' commitment to leveraging technology to create efficient, secure, and user-friendly library environments for their users.

2) Digital Services available in the Library:

Table 5: Digital Services		
E-Services	**DCRUST**	**GJUST**
Fully automated Library services through Library management software	Yes (KOHA)	Yes (KOHA)
Digital Library Software (GSDL, Dspace, Eprints, Fedora etc.)	Yes	Planned for Future
Circulation with Barcodes	Yes	Yes
Circulation with RFID	Planned for Future	Planned for Future
Mobile/Email alert service	Planned for Future	Yes
OPAC/ Web OPAC facility	Yes	Yes
Online databases	Yes	Yes
Remote access to online databases	Yes	Planned for Future
Multimedia/ Audio-visual room	Planned for Future	Yes
Scanning and printing facility	Yes	Yes
Virtual Library reference service by email or the web	Yes	Yes
Services/Technology to assist patrons with disabilities	Planned for Future	Yes
E-thesis and dissertations	Yes	Yes
Facility to digitize library resources	Yes	Yes

Table 5 reveals that both universities provide IT-enabled digital services,reflecting their current capabilities and digital preparedness. Both university libraries use KOHA Integrated Library Management Software (ILMS) for library housekeeping operations, barcode scanning system for circulation, Online databases, Web-OPAC, Virtual Library reference service, E-thesis/dissertations, and Scanning and printing facility for patrons. However, DCRUST's Saraswati Library has digital library software, Dspace, for managing digital resource collection for online access. It provides remote access to its online databases to improve online user engagement. In contrast, GJUST'sDr.Bhim Rao Ambedkar Library has plans to introduce these services in the future. GJUST library excels in providing digital services such as mobile/Email alert services, Multimedia/Audio-visual room, and services/Technology to assist patrons with disabilities, showcasing accessibility and inclusivity to meet the objectives of NEP 2020 while DCRUST library plans to implement all these services/technologies in the future.

3) Digital Readiness of the Library Staff:

Table 6: Digital Readiness of the Library Staff at the University

Digital Readiness	DCRUST	GJUST
Can easily connect hardware components of the computer	03	04
Knows how to create files and folders	05	05
Knows how to move files between drives	03	05
Can run CDs/ DVDs effectively	04	05
Knows how to secure library digital data	01	04
Can use and create PowerPoint presentations.	02	05
Know how to attach files to email	05	05
Know how to host online meetings	02	05
Experience using emerging technologies such as AI, machine learning, or Block-chain for academic or research purposes.	01	04
Can effectively record, edit, and share videos	03	02

Utilize advanced search features (e.g., Boolean operators, & filters).	02	05
Total	**31**	**49**

1="No Knowledge" 2="Basic Knowledge" 3="Intermediate" 4="Advanced" 5= "Expert

Table 6 provides insights into the digitalreadiness of library professional staff of both DCRUST & GJUST universities.GJUST library staff feel more competent, "Advanced" to "Expert" in connecting hardware components, creating files/folders,moving files between drives, attaching files to email, creating PowerPoint presentations, hosting online meetings, using advanced search skills like Boolean operators, and emerging technologies such as AI, Blockchain, etc., as compared to DCRUST staff, indicating that there is a need of regular training for library staff. By examining these parameters mentioned in Table 6, we can better understandthe library's preparedness to adapt to the evolving digital landscape and library staff's capability to utilize the digital resources to enhance library services effectively.

4) Training and Support:

Table 7: Frequency of Library Training/Orientation

User Education/Training Programs	DCRUST	GJUST
Library orientation	02	02
Virtual library orientation	02	02
Training in the use of databases (by library staff)	01	02
Training in the use of databases (by vendors/ publishers)	01	02
Training in the use of OPAC/ Web-OPAC	02	02
Awareness about e-resources	02	02
Awareness to protect personal data and privacy in the digital	02	02

environment		
Training in search skills/strategies	02	02
Total	**14**	**16**

Annually = "1" &Biannually = "2"

Table 7 identifies training and support programs available for users in the selected technical universities of Haryana. The table shows that GJUST library provides user education or training programs to its patrons twicea year. In contrast, DCRUST library provides user education or training programs annually or biannually, such as library orientation, training in use of databases, web-OPAC, e-resources, search skills/strategies awareness to protect personal data and privacy in a digital environment.

9. PROBLEMS/CHALLENGES FACED:

Table 8: Problems faced in acquiring and effective utilization of digital technologies

Problems	DCRUST	GJUST
Financial Constraints in acquiring the necessary digital technologies and tools.	01	02
Limited Infrastructure and insufficient access to computersand digital devices hinder my digital work	02	02
Inadequate training for updating knowledge	03	02
Difficulty in integrating various digital tools into academic or research work	03	02
Lack of administrative support	01	02
Inadequate cyber security/data security/privacy	03	02
Lack of ICT skills among library staff	04	02
Lack of awareness of open source software (OSS)	03	04

Lack of awareness about Digital library software	04	04
Lack of training to overcome digital challenges/ new technologies	04	03
Inadequate Internet connectivity	03	01
Total	**31**	**26**

1 =“Strongly Disagree”, 2 =“Disagree”, 3 =“Neutral”, 4 =“Agree”, 5 =“Strongly Agree”

Table 8 shows the problemsusers of selected universities face in acquiring and effectively utilizing digital technologies. Both DCRUST & GJUST library staff are satisfied with the financial allocationsfor acquiring the necessary digital technologies and tools. Similarly, bothuniversities have sufficient Infrastructure and digital devices. GJUST library staffmentioned that training has been provided to them to update their knowledge, and they are not facing any difficulty integrating various digital tools, as well as inadequate training on cyber security/data security/privacy. However, DCRUST library staff feelsneutral on training programs, integrating various digital toolsinto academic or research work, and inadequate trainings on cyber security/data security/privacy. DCRUST library staff “Agree” that they are not aware of Digital library software and ICT skills due to lack of training to overcome digital challenges/ new technologies. Meanwhile, GJUST library staff feels they “Disagree” to “Neutral” on the awareness of ICT skills and lack of training to overcome digital challenges/ new technologies.

CONCLUSION:

The study highlights the critical importance of digital readiness in aligning libraries with the objectives of NEP 2020. By examining the digital infrastructure, services, and readiness of library staff in selected technical universities of Haryana, the analysis reveals both achievements and areas for improvement. GJU demonstrates a higher overall digital readiness in several key areas, particularly in providing digital services, new technologies to assist patrons with disabilities, and essential training to enhance their patron’s digital skills or competence aligned with NEP 2020. However, both institutions face challenges/problems in emerging technologies and data security, indicating potential opportunities for collaborative improvement by sharing their resources and digital services.The study underscores the need for continuous professional development, collaboration, and investment in digital resources to enhance library contributions to academic and research excellence. The findings provide valuable

insights for policymakers and educational institutions striving to foster a digitally empowered academic environment.

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