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Awareness and Usage of Digital Resources: A Study among the Research Scholars in the State University of Uttarakhand

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ABSTRACT

Background: Knowledge of digital technology is crucial for everyone in today's world, as it is leaving an indelible mark on education day by day. Therefore, digital literacy becomes essential for students engaged in research. In light of the impact of technology, the researcher conducted a study to assess the awareness and use of digital resources among the research scholars at SSJ University, Almora, in the hill state of Uttarakhand.

Purpose: The primary objective of the study was to assess the level of awareness and usage of digital resources among the research scholars enrolled in the PhD programme.

Methods: A descriptive survey was employed, given the nature of the study. A sample of 48 research scholars from the social science and science faculties was selected using random sampling, and data were collected using a self-constructed tool, viz., the Digital Awareness and Usage Questionnaire.

Results: After data analysis, it was found that most research scholars have equal awareness of digital resources across specific demographic variables. Some differences were found in the use of digital resources based on family income, gender, and locality. Female and science scholars are integrating digital resources more than their male counterparts. Twenty percent of science scholars fall into the 'high usage' category, whereas none of the humanities scholars are represented in this category. Additionally, the low-income group shows 0% representation in the 'Very High' usage category. A gap was also observed between awareness and usage: 33% of respondents reported very high awareness, while only 4% reported very high usage. Research scholars are aware of digital resources, but most of them do not use them to the extent of their awareness.

Conclusions: Based on the findings, it is recommended that HEIs should adopt innovative research approaches, strengthen technological infrastructure, integrate digital technology functionally through training workshops for capacity building, and implement policy interventions that focus on digital proficiency and promote digital transmission.

1. Introduction

Digitalization is the process of converting information, data, or processes into a digital format. It involves using digital technologies to transform manual processes into automated, electronically stored, and processed ones. It refers to the widespread adoption of digital technology across various sectors, including education, healthcare, and finance. It has significantly transformed communication, work, and daily life, leading to what is now known as the digital revolution. Advances in high-speed internet, modern computers, and artificial intelligence have driven this transformation (Vala, 2023).

The Digital India Program, launched on July 1, 2015, aims to transform India into a digitally empowered society and knowledge economy. It offers several digital services, including DigiLocker, Attendance.gov.in, MyGov.in, the SBM Mobile App, e-Hospital, the National Scholarship Portal, and the e-Sign Framework (Sharma, 2016).

1.1. Digital Literacy

Digital literacy was first introduced by Paul Gilster in 1997 in a book titled Digital Literacy, in which the author defined it as "the ability to understand

and use information in multiple formats from a wide range of sources when presented via computers" (Krishnamurthy, 2019).

Digital literacy is the ability to use digital technologies effectively, including computers, smartphones, software, applications, and the internet, for communication and collaboration. It enables individuals to live, learn, and work in a digital society. A digitally literate person should have the skills and knowledge to navigate computer networks, participate in online communities, and understand societal issues related to digital technologies (Pawar, 2021).

In today's digital age, digital literacy is essential for effective communication and social harmony. Staying up to date and actively participating in the digital society is crucial. Digital literacy encompasses a range of skills, including communication, problem-solving, media literacy, information literacy, and basic computer proficiency (Vanek, 2017).

1.2. Review of Related Literature

Pratap (2018) highlighted the growing importance of digital literacy, the acquisition of new skills, and advanced thinking. Educators and researchers explore creative uses of digital tools to enhance group-based learning (Pinto, 2020). The value of learning from institutions that have successfully implemented OOFAT lies in guiding HEIs in adapting to the digital landscape (Orr, 2019). To establish a global identity in digital education, the government should also collaborate with institutions.

Kumar (2019) noted that achieving knowledge power requires improved digital access, government support, and collaboration with stakeholders. Bhateja (2019) emphasised the importance of promoting digitalisation, which, in turn, enhances practical teaching methods and boosts collaboration and research opportunities. Kryukov and Gorin (2017) stressed that innovations in digital technology accelerate educational change and boost university competition.

Bansal (2015) recommended improving infrastructure and incorporating computer training into the regular curriculum. Prasad and Dabas (2025), with reference to Uttarakhand, found that researchers with higher exposure to international collaborations reported more frequent use of specialised digital databases. An intermediate level of digital competence among teacher educators working in teacher education institutions in the Kumaun region of Uttarakhand was observed by Saini and Pandey (2024).

Das & Malaviya (2024) investigated the acceptance of adaptive e-learning platforms among university students in Uttarakhand and found that ease of use, perceived usefulness, and the quality of technological infrastructure are pivotal in driving adoption. However, fewer studies have examined the use of digital technology in Uttarakhand.

1.3. Digitalisation in Higher Education

Higher education is an advanced stage of learning beyond secondary education, encompassing undergraduate, postgraduate, vocational, and professional programs that lead to bachelor's, master's, and doctoral degrees. Research scholars are expected to be familiar with and utilise digital resources to enhance their research.

Digitalisation has significantly impacted the education sector, with Learning Management Systems (LMS) and educational applications and software helping colleges and universities enhance their educational delivery and make learning more interactive and engaging by providing access to e-books and digital resources that are easier to use and more flexible.

The digitisation of education enhances both quality and relevance, thereby contributing to a more effective learning experience. The sector is undergoing rapid transformation with the growth of electronic textbooks, online portals, databases, course platforms, and remote learning (Sousa, 2020).

To enhance and promote digital learning among the masses, the Government of India has launched various digital initiatives, viz. SWAYAM, SWAYAM Prabha, the National Digital Library, e-PG Pathshala, Shodhganga, e-Yantra, and Virtual Labs. The COVID-19 pandemic also surged the demand for digital education, increasing dependency on online platforms for remote learning and collaboration. The education system worldwide survived tough times with the help of these collaboration tools. Therefore, it becomes evident that digital literacy needs to be promoted at every level to keep pace with technological advancements.

The state of Uttarakhand is situated in hilly terrain, with many state and central universities offering PhD programs in various disciplines. The infrastructure and level of digital literacy in hill states may differ from

those in the plains due to geographical complexities. Therefore, with the objective of studying the awareness and usage of digital resources among research scholars, this study was initiated.

1.4. Objectives of the Study

The objectives of the study were established in relation to the demographic variables, specifically gender (male and female), subject stream (science and humanities), locality (urban and rural), and family economic status.

- To find out the awareness of digital resources among research scholars based on the above demographic variables.
- To assess the level of usage of digital resources among research scholars based on the above demographic variables.
- To compare the level of awareness and usage of digital resources among the research scholars.
- To identify factors influencing the gap between awareness and actual usage of digital resources among the research scholars.

1.5. Hypotheses of the Study

The hypotheses of the study are as follows:

- There is no significant difference in digital resources awareness among research scholars based on demographic variables such as gender (male and female), subject stream (science and humanities), locality (urban and rural), and the economic status of the family.
- There is no significant difference in the level of usage of digital resources among research scholars based on demographic variables such as gender (male and female), subject stream (science and humanities), locality (urban and rural), and the economic status of the family.
- There is no significant difference between digital resources awareness and the usage of digital resources among research scholars based on gender (male and female), subject stream (science and humanities), locality (urban and rural), and the economic status of the family.

2. Research Methodology

The study uses a descriptive research (survey) approach to describe and interpret data on digital resource awareness and usage among research scholars enrolled in PhD programmes at SSJ University, Almora, Uttarakhand.

2.1. Area and Limitations of the Study

This study was conducted at SSJ University, Almora, Uttarakhand. The study was limited to a sample of research scholars (n = 48) from a population of 192 enrolled in the university's Science and Humanities departments.

2.2. Sample and Sampling Technique

In the present study, a sample of 48 research scholars from various departments of the university was selected through random sampling. A complete list of all individuals in the population was prepared; each individual was assigned a serial number, and the sample was drawn via lottery. Participants voluntarily consented to participate in the study.

The chosen sample may be considered a good size (since it is greater than 30). With this size, the randomness of representation and the possibility of generalization increases.

2.3. Tools of the Study

A self-constructed tool was designed to measure the awareness and usage of digital resources among research scholars, after consulting the subject experts and reviewing the related literature. The questionnaire consisted mainly of two parts, viz

A. Digital Resources Awareness

This part consisted of a total of 45 items assessing respondents' awareness of digital resources and platforms. The items were structured in a dichotomous format with "Yes" or "No" options.

B. Usage of Digital Resources

The second part contained a total of 43 items to determine the extent to which the scholars used the digital resources in their research and learning. The items were framed using a three-point response scale: "Always," "Sometimes," and "Never," which helped in determining the frequency of usage.

2.4. Reliability and Validity of the tool

The reliability of the self-developed Digital Awareness and Usage Questionnaire was assessed using the split-

half method, in which the tool was randomly split into two parts. The reliability coefficient was 0.82, indicating strong internal consistency.

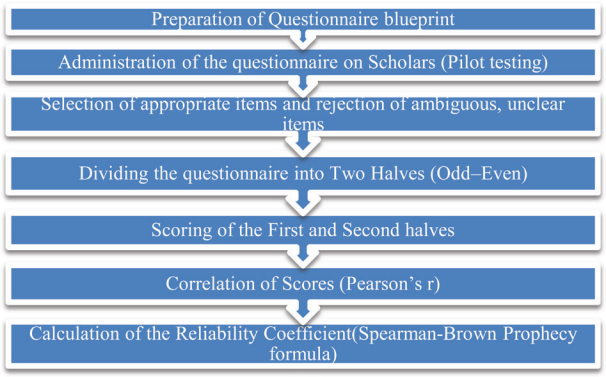

Figure 1: Flowchart of the Research Process in Questionnaire Development

The tool's validity was established through face and content validity, and subject-matter expert opinion was sought, demonstrating that the items appropriately measured both awareness and use of digital resources among research scholars.

Table 1: Categorization of Obtained Marks for DRA and UDR

Category	**1**	**2**	**3**	**4**	**5**
Marks Interval for DRA	0 – 9	10 – 18	19 – 27	28 – 36	37 – 45
Mark's Interval for UDR	0 – 17	18 – 34	35 – 52	53 – 69	70 – 86
Level	Very Low	Low	Average	High	Very High

3. Findings and Discussion

3.1. Digital Resources Awareness

The table below presents the percentage distribution of research scholars on digital resources awareness across five levels (Very Low, Low, Average, High, and Very High) based on selected demographic variables: gender, subject stream, locality, and family economic status.

Table 2: Percentage Distribution of Respondents on Digital Resources Awareness

Level			**Very Low**	**Low**	**Average**	**High**	**Very High**
Percentage (%) Based on Demographic Variables	Gender	Male	0 %	0 %	22%	45%	33%
		Female	0 %	0 %	30%	37%	33%
	Subject Stream	Science	0 %	0 %	20%	33%	47%
		Humanities	0 %	0 %	30%	43%	27%
	Locality	Urban	0 %	0 %	20%	50%	30%
		Rural	0 %	0 %	32%	32%	36%
	Economic Status of Family	Family Income: Rs. 5Lakh or below	0 %	0 %	29%	42%	29%
		Family Income: Above Rs. 5Lakh	0 %	0 %	21%	36%	43%

- **Gender-wise Awareness:** The data reveal that none of the respondents, irrespective of gender, fall into the Very Low or Low categories. Among male scholars, the highest proportion is in the High category (45%), followed by Very High (33%) and Average (22%). This suggests that a majority of male scholars

demonstrate high-to-very-high levels of awareness. Similarly, female respondents are strongly represented in the upper categories. Thirty-seven percent of female scholars fall under the High level, and 33% under the Very High level; a comparatively higher percentage (30%) falls under the Average category.

- **Subject Stream-wise Awareness:** Scholars from the science stream demonstrate stronger representation at the highest level. Forty-seven percent of science scholars fall under the Very High category, followed by 33% in the High category and 20% in the Average category. This indicates that a majority of science scholars have a high-to-very-high level of awareness of digital resources. Whereas humanities scholars show a slightly different pattern, with the highest proportion in the High category (43%), followed by Average (30%) and Very High (27%). Humanities scholars also perform well overall, though their representation at the Very High level is comparatively lower than that of science scholars.
- **Locality-wise Awareness:** Urban scholars predominantly fall under the High level (50%), with 30% reaching the Very High level and 20% at the Average level. In contrast, rural scholars are distributed across the upper categories, with 36% at the Very High level and 32% each in the High and Average categories. Interestingly, rural respondents show a slightly higher proportion at the Very High level than urban respondents.
- **Income-wise Awareness:** With respect to the family's economic status, scholars from families earning Rs.5 lakh or less per annum show the highest concentration in the High category (42%), followed by Average (29%) and Very High (29%). On the other hand, respondents from families with an annual income above Rs.5 lakh are more likely to be in the Very High category (43%), followed by High (36%) and Average (21%).
- A similar level of awareness was observed among male and female scholars regarding digital resources. One possible reason is that educational institutions and families provide equal opportunities to male and female students. Among scholars, a greater need to access digital resources is evident among science scholars than among humanities scholars. The requirement of subject-specific applications and software seems to be a valid reason. Awareness of digital resources varies by locality, possibly due to improved digital infrastructure. Furthermore, scholars' economic backgrounds suggest that higher-income groups are likely to have greater awareness than lower-income groups.

Table 3: Mean, SD, and t-Ratio of Digital Resources Awareness Among Research Scholars Based on Demographic Variables

D.V.		**N**	**M**	**SD**	**t-value**
Gender	Male	18	34.11	7.49	0.49
	Female	30	33.03	7.13	
Subject Stream	Science	15	35.53	7.95	1.29
	Humanities	33	32.48	6.75	
Locality	Urban	20	33.95	5.85	0.44
	Rural	28	33.07	8.12	
Economic Status	Family Income: Rs. 5Lakh or below	34	32.91	7.28	1.23
	Family Income: Above Rs. 5Lakh	14	35.71	7.14	

The values obtained from the descriptive statistics in the above table indicate that, of the four demographic variables, two, viz., stream and economic status, show some differences in digital resources awareness. However, based on the inferential statistics, the first hypothesis—that there is no significant difference in digital resources awareness among research scholars based on demographic variables—is accepted at the 0.05 level of significance.

The lack of differences in digital resources awareness by gender, locality, and family income may be due to equal access to resources, including mobile phones, the internet, electricity, and educational tools, in both urban and rural areas. The slight 3% difference between science and humanities scholars may be attributed to the emphasis on digitalisation across all courses.

3.2. Usage of Digital Resources

The data presented below show the levels of digital resources usage among research scholars.

Table 4: Usage of Digital Resources among Research Scholars

Level			Very Low	Low	Average	High	Very High
Percentage (%) Based on Demographic Variables	Gender	Male	11 %	56 %	33%	0%	0%
		Female	10 %	53 %	20 %	10 %	7 %
	Subject Stream	Science	6.66 %	60 %	6.66 %	20 %	6.66 %
		Humanities	12 %	52 %	33 %	0 %	3 %
	Locality	Urban	5 %	60 %	25 %	5 %	5 %
		Rural	14 %	50 %	25 %	7 %	4 %
	Economic Status of Family	Family Income: Rs. 5 Lakh or below	15 %	56 %	23 %	6 %	0 %
		Family Income: Above Rs. 5Lakh	0 %	50 %	29 %	7 %	14 %

- **Usage (Gender-wise):** The percentage distribution reveals that male scholars are predominantly concentrated in the lower categories. A majority of males (56%) fall under the Low level, followed by 33% in the Average level and 11% in the Very Low level. Notably, no male respondents are represented in the High or Very High categories. In contrast, female scholars display a more diversified distribution. Fifty-three percent of females are categorised as Low, and 20% as Average; a significant proportion is in the higher categories, with 10% in the High level and 7% in the Very High level. The results indicate a comparatively better representation of female respondents at higher levels than male respondents.
- **Usage (Subject Stream-wise):** The data reveal that scholars from the science stream are primarily concentrated in the Low category (60%). Equal proportions (6.66%) are observed in the Very Low, Average, and Very High categories, while 20% of science scholars fall within the High category. For the humanities stream, the majority are distributed across the Low (52%) and Average (33%) categories. A smaller proportion (12%) falls within the Very Low category, while only 3% are represented in the Very High category. No respondents from the humanities stream are observed in the High category. The findings suggest that science stream scholars exhibit comparatively greater representation in the higher categories than humanities scholars.
- **Usage (Locality-wise):** The analysis based on locality shows that urban respondents are mainly placed in the Low category (60%), followed by the Average category (25%). Marginal proportions of urban respondents (5% each) are observed in the Very Low, High, and Very High categories. Rural scholars show a higher concentration in the Very Low category (14%) than urban scholars. Fifty percent of the rural scholars fall within the Low category, and 25% in the Average category. Only a small proportion is observed in the High (7%) and Very High (4%) categories. The locality-wise results indicate that urban scholars are relatively better represented in the higher categories than rural scholars.
- **Usage (Income-wise):** Based on economic status, scholars from families with an annual income of Rs.5 lakh or below are primarily concentrated in the Low category (56%), followed by the Average (23%) and Very Low (15%) categories. A minimal proportion (6%) falls under the High category, with no scholars represented in the Very High category. In contrast, scholars from families with an annual income above Rs.5 lakh demonstrate a more favourable distribution. While 50% are categorised as Low and 29% as Average, 7% and 14% are observed in the High and Very High

categories, respectively. The findings indicate that economic status significantly influences the distribution of respondents across usage levels.

From the table above, it is observed that female and science scholars are integrating digital resources more than their male counterparts. Three times as many rural scholars report very low usage, despite being aware of the resources, which may be due to issues with internet stability, electricity, and other factors. The higher-income group of scholars has easy access to laptops and high-speed data plans, while the low-income group usually relies on institutional infrastructure, leading to 0% 'Very High' usage.

Table 5: Mean, SD And T-Ratio of Usage of Digital Resources Between Research Scholars Based on Demographic Variables

D.V.		N	M	SD	t-value
Gender	Male	18	31.78	11.41	0.80
	Female	30	35.13	17.59	
Subject Stream	Science	15	36.87	18.83	0.79
	Humanities	33	32.58	13.88	
Locality	Urban	20	34.05	15.95	0.07
	Rural	28	33.75	15.50	
Economic Status	Family Income: Rs. 5 Lakh or below	34	30.74	12.39	1.89
	Family Income: Above Rs. 5Lakh	14	41.5	19.81	

The values obtained from descriptive statistics in the above table indicate that, among the four demographic variables, three—namely gender, subject stream, and economic status—show some differences in the usage of digital resources. However, based on inferential statistics, the hypothesis that there is no significant difference in the use of digital resources among research scholars based on demographic variables is accepted at the 0.05 level of significance.

Data analysis shows minimal differences in technology usage by gender, subject stream, and locality, likely because technology is essential across subjects, academic levels, and regions. However, differences were observed in mean and standard deviation scores based on family income, possibly due to limited access to technology and digital resources in lower-income households.

3.3. Comparison Between Digital Resources Awareness and Usage of Digital Resources

Table 6: Percentage of Digital Resources Awareness and Usage of Digital Resources Among Research Scholars

Level		Very Low	Low	Average	High	Very High	Total %
Dimensions	Digital Resources Awareness	0 %	0 %	27%	40%	33%	100%
	Usage of Digital Resources	11 %	54 %	25%	6%	4%	100%

Table 6 clearly shows that 33% of research scholars represent a very high level of awareness of digital resources, but only 4% use them at this level. Similarly, 40% have high awareness, yet only 6% utilize them accordingly. Those with average awareness mostly use digital resources at an average level. Additionally, 54% and 11% of scholars have low and very low usage, respectively. The limited use of digital resources may be due to a greater focus on theory over practice, insufficient digital infrastructure at institutes, and minimal integration of new educational software in classrooms or training.

Table 6 clearly shows a significant gap between awareness and actual use of digital resources (very high awareness: 33%; very high use: 4%) among scholars. The reasons may include insufficient digital

infrastructure at higher education institutions, insufficient training, an emphasis on theoretical knowledge, and the unavailability of advanced research and digital tools.

4. Conclusion

The study concludes that while the digital revolution has successfully raised awareness among research scholars, it has not yet been widely adopted. The "Low" usage reported by the majority (over 50% in every category) suggests that digital resources are perhaps being used for basic tasks (such as email or search) rather than advanced research activities (such as data mining with specialised software or collaborative digital platforms). Scholars seem to be aware of digital tools but rarely use them.

To bridge this gap, institutions must extend beyond providing merely access and focus more on integration. This includes providing better campus infrastructure for rural and low-income scholars and discipline-specific training that demonstrates how to use digital tools to enhance research quality, rather than just knowing they exist.

Rural scholars are prepared for digitalization, but infrastructure barriers (connectivity, power, hardware) prevent actual use. Therefore, better technological infrastructure and facilities should be developed for the proper integration of digital resources. Female scholars were more persistent in integrating digital resources into their research, despite having a similar level of awareness. In technical fields such as sciences, the complexity and high cost of specialized software, and limited access to paid databases, may limit the use of digital resources among science scholars. The findings align with those of Krishnamurthy & Shettappanavar (2019), who also found a lack of awareness among students of various search strategies for efficient information retrieval. Therefore, institutions must focus on integrating specialized software and paid databases.

It is recommended that HEIs focus on:

- providing high-end infrastructural facilities for targeted learners (rural and low-income scholars);
- functional integration of digital technologies;
- shifting from awareness seminars to usage labs;
- peer-to-peer mentoring;
- incorporation of flexible learning hours, as female scholars might have different time-use patterns; and
- policy interventions focusing on digital proficiency and adopting innovative approaches to classroom teaching and research.

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Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of this paper.

Data Availability Statement

The authors declare that the data supporting the conclusions of this study can be obtained upon request from the corresponding author (M.A.).

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