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## Examining the Similarities and Differences among Postgraduate Students and Research Scholars' use of E-Resources in Agricultural Universities

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### Abstract

Present users access information exponentially on the web, and to be relevant today libraries must become digital. A survey of 218 postgraduate students (PG) and the research scholars (RS) was conducted and analyzed using percentage, chi-square ( $\chi^2$ ) test and rank to score conversion, wherever necessary. The study found that PG students and the research scholars (RS) show a favourable and positive attitude towards e-resources. Most of the PG students and research scholars preferred e-journals followed by databases. The study identifies similarity in the usage of e-resources among PG students and research scholars access e-resources for research work. Majority of PG students access e-resources for the project work while research scholars access them for writing publications. E-books are more popular among the PG students than the research scholars of PAU and HPAU; e-journals are popular among the research scholars. Larger population was satisfied and reveal good interest with the library facilities available to them, but the university library at PAU needs to understand the preferences, interests, and needs of the users. This study would benefit the researchers by exploring the impact of usage of electronic information resources on academic performance.

**Keywords:** E-resources, Agricultural Universities, PAU, HAU, HPAU

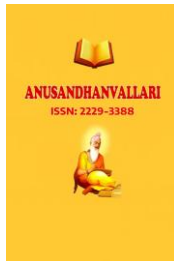
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### Introduction

Globalization and technological innovations have brought an unprecedented change in the higher education framework, providing new avenues for creativity, innovation, and collaborations. Library, the integral component of the universities are progressing through digital platforms by evolving their collections, adding new information resources and enhancing the academic prospects of young students, scholars, and faculty members. Indeed, the changing landscape of information has put the librarians under siege, focusing on the challenges to integrate both print and digital resources. This study is conducted at the three oldest agricultural universities in Punjab, Haryana, and Himachal Pradesh: Punjab Agricultural University (PAU), Haryana Agricultural University (HAU), and Himachal Pradesh Agricultural University (HPAU). The study aims to explore the similarities and differences between postgraduate students and research scholars in their utilization of library resources and facilities. It also examines the use of digital resources to enhance learning processes and how these resources can contribute to a better experience for both library users and faculty members.

### Literature Review

The advancements in information and communication technologies have not only transformed the way people access information but have also changed the entire body of knowledge available to individuals at any given



time and place. Several significant studies related to this topic have been discussed here. Tamrakar & Garg (2016) emphasize that e-journals are more popular than print journals. Majority of users are aware of e-journals and can explore the e-resources pertaining to their interest. Wang, Sufang & Bai (2016) discusses the differences in the awareness and adoption rate of the e-books among students. The undergraduate students tend to use e-books for leisure purposes, while the postgraduate students use them for academic purposes. Most students prefer to read e-books by taking printouts. Tripathi, Sonkar & Rajbanshi (2016) observes that e-resources have become an essential part of the academic community. 85 percent of the research scholars are aware of the e-resources. 47.5 percent research scholars use e-resources for the research purpose and 40 percent use for study and learning. Majority of the research scholars prefer e-journals over any other e-resources. Bhat & Ganaie (2017) highlights the impact of e-resources on the satisfaction of the faculty members, the research scholars, and the postgraduate students of the seven northern universities. Most of the users are satisfied with e-abstract databases (87.92%) and e-journals (89.67%), whereas satisfaction with the e-books (69.08%) and e-theses (60.33%) is low. All the universities under study do not subscribe e-books. The only database available in the libraries is Krishiprabha. The study demonstrates the positive impact of electronic resources on the user satisfaction. Bhat (2018) in another study finds that e-resources are popular and widely used by the students, there is no remarkable difference among different categories of students in terms of the frequency of the use of e-resources and the time spent on the e-resources. Bhat & Ganaie (2018) assess the preferences of the users for different information resources and found that nearly equal number of users preferred both print (85.5%) and electronic (89.60%) formats. Nearly 96 percent of the users prefer online access of resources. Users find the easy search and retrieval facility of e-resources to be the most significant reason for their greater accessibility. Singh<sup>7</sup> emphasizes the challenges and constraints regarding the popularity of e-resources and the role of librarians and academicians in promoting reliance on e-text. Mohammed Tukur & Kannan (2020) highlights the use of information resources and facilities by undergraduate students from three agricultural university libraries in Northern Nigeria, finding that the available information resources and facilities are underutilized.

The studies conducted so far indicates that agricultural libraries have embraced digital resources, and users are overwhelmed in using e-books, e-journals, e-databases, etc. This study aims to enrich the understanding of the utilization of electronic resources in agricultural libraries and to see whether the prevalence of digital resources has reduced the usage of print resources in contemporary times."

### Research Questions

RQ1 What are the similarities and differences among the postgraduate students and the research scholars with respect to utilization of e-information resources?

RQ2 What are the trends of using electronic information resources?

### Methodology

A structured questionnaire divided into two parts is developed for the data collection. The first part includes demographic details of the respondents, while the second part covers constructs related to the use of electronic information resources, such as awareness, purpose of access, preference, and frequency of use. The questionnaire is distributed randomly to 150 postgraduate students and 150 research scholars. A total of 218 responses is received and analyzed using percentage, chi-square ( $\chi^2$ ) test, and rank to score conversion where necessary.

## Data Analysis

### Demographic Information

The demographic details of the respondents indicate that most of the postgraduate students and research scholars are male (Table 1A). Most postgraduate students fall within the 21 to 25 age group, while research scholars are predominantly in the 26 to 30 age group as shown in Table 1B.

**Table 1A Gender wise distribution**

Gender	Postgraduate			Research Scholars		
	PAU (%)	HAU (%)	HPAU (%)	PAU (%)	HAU (%)	HPAU (%)
<b>Male</b>	68.18	66.67	58.82	45.00	60.78	55.56
<b>Female</b>	31.82	33.33	41.18	55.00	39.22	44.44

**Table 1B Age wise distribution**

Age (in years)	Postgraduate			Research Scholars		
	PAU (%)	HAU (%)	HPAU (%)	PAU (%)	HAU (%)	HPAU (%)
<b>Up to 20</b>	2.27	0.00	0.00	0.00	0.00	0.00
<b>21-25</b>	81.82	92.31	100	45.00	33.33	40.74
<b>26-30</b>	15.91	7.69	0.00	52.50	62.75	55.56
<b>31-35</b>	0.00	0.00	0.00	0.00	3.92	3.70
<b>Above 35</b>	0.00	0.00	0.00	2.50	0.00	0.00

### Use of Library

Libraries have evolved from traditional knowledge repositories to dynamic facilitators of information. Students and research scholars are the primary users, and library plays a significant role in understanding their academic needs. With the proliferation of e-resources libraries have become a dynamic. Table 2 highlights the library visit wise distribution of the postgraduate students and the research scholars. It reveals that at PAU, postgraduate students and research scholars have different patterns of library visits. Most of the postgraduate students visit the library twice a week, while research scholars visit daily.

**Table2 Library Visit**

Frequency	Postgraduate				Research Scholars			
	PAU (%)	HAU (%)	HPAU (%)		PAU (%)	HAU (%)	HPAU (%)	
Daily	40.48	17.95	64.71	$\chi^2=34.78^{**}(\text{df:8}) C=0.51$	41.03	41.18	25.93	$\chi^2=11.22(\text{df:8}) C=0.30$
Twice a Week	47.62	33.33	29.41		38.46	27.45	51.85	
Fortnightly	7.14	0.00	0.00		12.82	9.80	0.00	
Monthly	2.38	2.56	0.00		0.00	5.88	7.41	
Occasionally	2.38	46.15	5.88		7.69	15.69	14.81	

Most of the postgraduate students of HAU visit library occasionally while the research scholars visit daily. On the other hand, the postgraduate students of HPAU visit library daily while the research scholars visit twice a week.

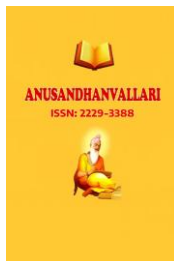
The postgraduate students of HPAU exhibit the highest level of regular participation, while HAU postgraduate students are relatively irregular in usage. However, research scholars across universities showed balanced distribution. It is thus evident that library plays a significant role in achieving the learning outcomes of the postgraduate students as well as for the research scholars. Also, daily visits to the library by the research scholars of HAU are significantly more as compared to the daily visit to the library by the postgraduate students.

Statistically, the  $\chi^2$  value shows a strong correlation between the postgraduate students and the frequency of library visit whereas the strength of association is medium in case of the research scholars, suggesting relatively similar frequency patterns across the universities.

**Table 3 Hours Spent in the Library**

Time Spent (in hours)	Postgraduate				Research Scholars			
	PAU (%)	HAU (%)	HPAU (%)		PAU (%)	HAU (%)	HPAU (%)	
>1	9.09	2.56	5.88	$\chi^2=13.99^{**}(\text{df:6}) C=0.35$	10.00	1.96	18.52	$\chi^2=14.11^{**}(\text{df:6}) C=0.33$
1-2	38.64	17.95	47.06		50.00	35.29	33.33	
3-4	31.82	25.64	11.76		22.50	23.53	33.33	
<5	20.45	53.85	35.29		17.50	39.22	14.81	

In Table 3, the time spent in the library by postgraduate students and research scholars is examined. Most of the postgraduate students and research scholars at PAU and HPAU spend 1-2 hours while those at HAU spend more than 5 hours. A very small percentage of postgraduate students and research scholars spend less than one hour in the library. It appears that large number of postgraduate students and research scholars at HAU find the



resources and environment conducive for studying. Statistically, it shows a significant correlation among postgraduate students, research scholars, and the hours spent in the library. Overall, the findings suggest moderate and regular time utilization patterns among both postgraduate students and research scholars.

**Table 4 Purpose of the Library Visit**

Purpose	Postgraduate Students			Research Scholars		
	Avg. Rank	Avg. Score	Total Score	Avg. Rank	Avg. Score	Total Score
Issue/ Return of the Document	4.05	55.62	495	4.30	52.54	555
Consulting Books	3.39	63.88	561	3.55	61.86	643
Class assignments	3.86	58.00	514	4.57	49.15	523
Research	2.31	77.38	669	2.47	75.32	770
Access e-Resources	4.68	47.75	432	3.88	57.73	604
Recreation	6.28	27.75	272	6.81	21.08	258
Update Ourselves	5.14	42.00	386	4.83	45.87	492
Access Internet	6.29	27.62	271	5.58	36.55	404

The role of libraries in facilitating intellectual development and providing access to a wide range of information resources is immense. According to Table 4, both postgraduate students and research scholars primarily visit the library for research purpose which contrasts with the findings of Kumar (2016) and to consult books. This indicates that the library serves as a central hub for interdisciplinary research and as an academic hub for students and scholars.

**Table 5 Awareness of Electronic Information Resources**

Awareness	Postgraduate Students				Research Scholars			
	PAU (%)	HAU (%)	HPAU (%)		PAU (%)	HAU (%)	HPAU (%)	
Fully	47.73	25.64	52.94	$\chi^2=5.91$ (df:4) C=0.24	45.00	33.33	62.96	$\chi^2=10.46$ *(df:4) C=0.29
Partially	50.00	71.79	47.06		55.00	66.67	33.33	
Not Aware	2.27	2.56	0.00		0.00	0.00	3.70	

Most of the postgraduate students and research scholars at PAU and HAU have only partial awareness of electronic information resources. However, in comparison to the postgraduate students at HPAU, approximately 63 percent of the research scholars at HPAU are fully aware of these resources. Likewise, Kondamudi, Kumar & Tripathi (2018) also find that students are not fully aware This suggests that libraries need to prioritize the



development of user-driven services. Upon statistical testing, it indicates a significant correlation between the research scholars and the library awareness programs, while it is insignificant for the postgraduate students.

**Table 6 Purpose of Access**

Purpose	Postgraduate Students			Research Scholars		
	Avg. Rank	Avg. Score	Total Score	Avg. Rank	Avg. Score	Total Score
Teaching	4.82	28.00	218	5.03	24.44	232
Writing paper/Publication	3.11	56.50	389	2.54	65.96	526
Projects	3.04	57.67	396	3.75	45.90	384
Research work	2.08	73.67	492	1.86	77.40	607
Seminars/workshop, etc.	3.56	49.00	344	3.23	54.52	445
To update ourselves	4.39	35.17	261	4.59	31.78	284

Table 6 illustrates the purposes for accessing information resources, indicating that both postgraduate students and research scholars mainly use the resources for their research work obtaining the highest average scores and lowest average rank. Projects and writing papers/publications is also ranked second major purpose, indicating strong academic and research-oriented commitment. The research scholars, however, reflects professional demands of doctoral-level study.

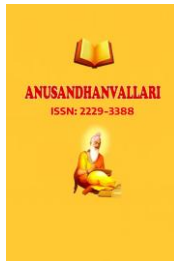
**Table 7 Preference of Electronic Information Resources**

Preference	Postgraduate Students			Research Scholars		
	Avg. Rank	Avg. Score	Total Score	Avg. Rank	Avg. Score	Total Score
e-Books	2.88	52.40	312	3.29	44.24	320
e-Journals	1.92	71.60	408	1.75	74.92	501
ETDs	3.00	50.00	300	3.05	48.98	348
e-Databases	2.88	52.40	312	2.46	60.85	418
e-Reference Sources	4.32	23.60	168	4.45	21.02	183

E-resources have become an integral part of the students and scholars. The proliferation of e-resources has greatly enhanced the student learning experience. They enable students and research scholars to access a wide range of information and encourage collaborations and knowledge sharing. According to Table 7, postgraduate students and research scholars most prefer e-journals, indicating that students and scholars rely on e-journals for their academic and research work. Research scholars rely more on e-databases as compared to postgraduate students.

**Table 8 Frequency of Use of Information Resources**

Resources	Frequency	Postgraduate Students				Research Scholars			
		PAU (%)	HAU (%)	HPAU (%)		PAU (%)	HAU (%)	HPAU (%)	
<b>E-books</b>	Daily	34.09	10.26	35.29	C=0.34.24 $\chi^2=13.10(df:8)$	30.00	15.69	7.41	(df:10) $\chi^2=16.90$ C=0.35
	Weekly	25.00	28.21	29.41		17.50	15.69	37.04	
	Fortnightly	22.73	20.51	5.88		25.00	47.06	22.22	
	Rarely	13.64	38.46	23.54		25.00	15.69	29.63	
	Do not Use	4.54	2.56	5.88		2.50	3.92	3.70	
	Unaware	0.00	0.00	0.00		0.00	1.95	0.00	
<b>E-journals</b>	Daily	9.09	5.13	17.65	$\chi^2=16.15*(df:8)$ C=0.37	20.00	15.69	11.11	$\chi^2=8.85(df:8)$ C=0.26
	Weekly	38.64	28.21	52.94		50.00	39.22	55.56	
	Fortnightly	38.64	53.85	5.88		22.50	41.18	25.93	
	Rarely	13.63	12.81	17.65		7.50	3.91	3.70	
	Do not Use	0.00	0.00	5.88		0.00	0.00	3.70	
	Unaware	0.00	0.00	0.00		0.00	0.00	0.00	
<b>ETDs</b>	Daily	6.82	2.56	5.88	$\chi^2=24.99**(df:10)$ C=0.45	12.50	3.92	0.00	$\chi^2=21.60*(df:10)$ C=0.39
	Weekly	50.00	12.82	47.06		32.50	21.57	51.85	
	Fortnightly	25.00	41.03	29.42		15.00	43.14	29.63	
	Rarely	11.36	43.59	11.76		27.50	21.57	11.11	
	Do not Use	4.55	0.00	5.88		12.50	5.88	7.41	
	Unaware	2.27	0.00	0.00		0.00	3.92	0.00	
<b>E-database</b>	Daily	6.82	2.56	0.00	$\chi^2=27.01**(df:10)$ C=0.46	12.50	19.61	18.52	$\chi^2=5.64(df:10)$ C=0.21
	Weekly	34.09	7.69	17.65		20.00	15.69	29.63	
	Fortnightly	31.82	61.54	23.53		42.50	39.22	33.33	
	Rarely	13.64	28.21	47.06		20.00	19.61	14.81	



	Do not Use	9.09	0.00	11.76		5.00	3.92	0.00	
	Unaware	4.55	0.00	0.00		0.00	1.96	3.70	
<b>E-reference sources</b>	Daily	6.82	7.69	11.76	$\chi^2=35.20^{**}$ (df:10) C=0.51	7.50	9.80	14.81	$\chi^2=7.15$ (df:10) C=0.24
	Weekly	43.18	7.69	41.18		20.00	17.66	18.51	
	Fortnightly	29.55	12.83	0.00		35.00	35.29	25.93	
	Rarely	11.36	66.67	41.18		22.50	31.37	25.93	
	Do not Use	6.82	2.56	5.88		12.50	5.88	7.41	
	Unaware	2.27	2.56	0.00		2.50	0.00	7.41	

Table 8 shows the frequency of using electronic information resource among the postgraduate students and the research scholars. It indicates that all postgraduate students and research scholars are familiar with e-books and e-journals. E-books are more popular among postgraduate students than research scholars 'at PAU and HPAU. Majority of postgraduate students at PAU and HPAU use e-books daily. However, most of the research scholars of PAU use e-books daily, weekly at HAU and HPAU research scholars use them rarely. Statistically, it indicates no significant correlation between postgraduate students, research scholars, and the frequency of using e-books. Most of the postgraduate students and research scholars at PAU and HPAU use e-journals weekly, while those at HAU use them fortnightly. Statistically, it shows a significant correlation between postgraduate students and the frequency of e-journal usage but shows no significant correlation for research scholars.

Meanwhile, in case of ETDs, majority of postgraduate students and research scholars at PAU and HPAU use them weekly, while research scholars at HAU use them fortnightly. However, postgraduate students at HAU use ETDs rarely. The value shows a strong correlation between postgraduate students and the frequency of ETD usage whereas it is significant for research scholars.

The research scholars at PAU, HAU, and HPAU use e-databases fortnightly, while postgraduate students at PAU, HAU and HPAU using them weekly, fortnightly and rarely respectively. The value shows no correlation in case of research scholars and frequency of use while it is highly significant in case of postgraduate students and e-database usage.

Thus, it exhibits that among the postgraduate students, significant differences exist among universities in the use of e-journals, ETDs, e-databases, and e-reference sources, while e-book usage does not differ significantly. In contrast, among research scholars, significant variation is observed only in the use of ETDs, whereas the usage patterns of other electronic resources remain statistically similar across universities.

### User Satisfaction

The increasing use of e-resources has significantly influenced user satisfaction. The diverse needs of information and factors such as accessibility, ease of use, speed of access, and reliability of information are the key-pointers in determining user satisfaction. In Table 9, majority of the postgraduate students and research

scholars are satisfied with the library collection. However, one fourth of the postgraduate students at PAU expressed discontentment with it. Statistically it shows no significant correlation among the variables. This indicates that the level of satisfaction is relatively uniform across PAU, HAU, and HPAU. This suggests that e-resources are effectively supporting the academic and research needs of users in all three universities.

**Table 9 Satisfaction with Library Collection**

Satisfaction	Postgraduate Students			$\chi^2=3.83$ (df:2) C=0.19	Research Scholars			$\chi^2=0.47$ (df:2) C=0.06
	PAU (%)	HAU (%)	HPAU (%)		PAU (%)	HAU (%)	HPAU (%)	
Yes	77.27	92.31	88.24		87.50	90.20	92.59	
No	22.73	7.69	11.76		12.50	9.80	7.41	

**Table 10 Rating of Electronic Information Resources**

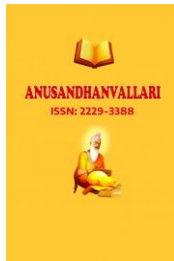
Information Resources	Postgraduate Students			Research Scholars		
	Avg. Rank	Avg. Score	Total Score	Avg. Rank	Avg. Score	Total Score
e-Books	1.59	78.20	441	1.76	74.75	500
e-Journals	1.71	75.80	429	1.53	79.32	527
e-Theses and Dissertations	1.66	76.80	434	1.76	74.75	500
e-Databases	1.79	74.20	421	1.95	71.02	478
e-Reference Sources	1.94	71.20	406	2.03	69.32	468

The Table 10 highlights how students and scholars perceive e-resources. It shows that postgraduate students rank e-book collections as their top choice, followed by ETDs and e-journals. On the other hand, research scholars rank e-journals as their top choice, followed by ETDs, e-books, and e-databases. This suggests that databases and reference sources are not as popular among postgraduate students and research scholars. Overall, it shows that information needs vary as per their academic needs.

**Table 11 Satisfaction with Library Facilities**

Satisfaction	Postgraduate Students			$\chi^2=5.98$ (df:2) C=0.24	Research Scholars			$\chi^2=2.71$ (df:2) C=0.51
	PAU (%)	HAU (%)	HPAU (%)		PAU (%)	HAU (%)	HPAU (%)	
Yes	79.55	92.31	100.0		90.00	92.16	100.0	
No	20.45	7.69	0.00		10.00	7.84	0.00	

Majority of the postgraduate students and research scholars are satisfied with the facilities. However, 20 percent of the postgraduate students at PAU expressed disappointment. This suggests that the university library at PAU needs to better understand the preferences, interests, and needs of its users. Statistically, the value for the postgraduate students and research scholars is insignificant, indicating no correlation.



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## Conclusion

The advancement in technology has prompted libraries to adapt and grow in a world that is increasingly digital, upholding the core values of library services. The survey results indicate the widespread use of the library by the postgraduate students and the research scholars of the university. The postgraduate students and research scholars visit the library primarily for the purpose of research and to access information for their academic work. The research scholars and postgraduate students make use of various types of electronic resources. Most of the postgraduate students and scholars are partially aware of e-resources highlighting the need to enhance awareness campaigns at the university. Overall, the study infers that postgraduate students and research scholars possess a positive attitude towards e-resources and recognize their significance in academic and research activities. However, there remains a strong need for systematic training programmes, orientation sessions, and awareness campaigns at the ground level to improve the effective utilization of e-resources, especially databases and ETDs. Strengthening digital literacy and user education initiatives will enable students and scholars to make optimum use of available electronic resources and thereby achieve greater academic and research excellence.

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