

Use of INDEST E-Resources by the Faculty of IITs: Factor Analysis with Designation

*Harish H.T.**

Librarian, Sai Vidya Institute of Technology, Bengaluru, Karnataka, India

Abstract

This study examines the use of INDEST E-Resources by designation wise by Indian Institutes of Technology (IIT) faculty. It also highlights the testing of analysis of variance (ANOVA) basic advantages, disadvantages, augmented purpose, availability and accessibility, limitation of accessing, strength in accessing, expected facilitation, core purpose, value addition, satisfaction, importance, reading pattern with designation wise using INDEST E-Resources by faculty of top seven IITs. The F value is 2.11 and significant value is 0.123 since it is >.05 the mean difference is not significant which implies that respondents of different designation. The analysis found that Associate Professors of top seven IITs have positive attitudes about the use of INDEST E-Resources.

Keywords: INDEST Consortium, AICTE Consortium, IITs, E-Resources, IIT Faculty, INDEST E-Resources

***Author for Correspondence** E-mail: drharishht19@gmail.com

INTRODUCTION

The present day society is characterized with rapid innovations and technological changes in all fields of activities. Libraries are not an exception to this phenomenon. The concept of 'paperless society' (Lancaster, 1999) was announced to mark the early emergency of paperless age. We are now in the electronic age. This age is marching ahead giving rise to the numerous digital and web resources.

Many libraries across the globe are the beneficiaries of unlimited electronic resources. The users of academic libraries are able to access electronic resources as easily as print information. The libraries of IITs are the pioneers in embracing this change. They are the first and foremost institutions to initiate INDEST library consortia. The INDEST library Consortia has tremendously expanded and has led to the provision of different kinds of services to the users. The issues of lack of funds and the struggle to cope with purchase of books and other resources and the budget cuts is very easy to solve due to the optimum utilization of consortia.

Consortium is very important for the libraries for solving the today's burning problems like information explosion, diversity of users need,

financial crunch and so on. Some of the examples of library consortia initiatives in India are INDEST-AICTE Consortium, UGC INFONET Consortium, FORSA Consortium, CSIR Consortium, the electronic journals are the sources of original and updated information mainly covering studies of science and technology.

Arora and Kruti (2010) The INDEST-AICTE Consortium, launched in 2003, provides differential access to 12,000 electronic journals and six bibliographic databases from a number of publishers and aggregators to 48 centrally-funded technical institutions, 60 government and government-aided engineering colleges and 820 private engineering colleges, and other organisations. The article describes major functions, activities and services of the INDEST-AICTE Consortium. It briefly touches upon resources subscribed, terms of licenses, policies and practices for archival back-ups, membership programmes including core members, AICTE-supported institutions, and self-supported category of membership. They outline governing structures of the Consortium and their roles. It elaborates on strategies used for effective implementation of Consortia amongst member institutions. It briefly

touches upon the economics of the Consortium and spells out its future endeavours [1].

LITERATURE REVIEW

Some of the similar studies carried out in this area of work are reported here. Srivastava and Verma (2015) [2] are of the view that consortium based library subscription to e-journals and electronic full-text databases are picking up good momentum in India. INDEST-AICTE consortium, CSIR consortium, IIM consortium, INFLIBNET's, UGC-INFONET consortium, DRDO consortium and so on are successful ones to name a few. Khan (2015) [3] portray that users are the key component of a library. An attempt was made to study the use of e-resource by the users with specific reference to INFLIBNET N-LIST. Khaparde and Ambedkar (2014) [4] discuss the developments in ICTs, the growth of ETDs, history of ETD in India. Further the paper presents an account of UGC Regulations 2005 and 2009, INDEST Consortium, ICSSR-NASSDOC and National Knowledge Commissions.

Present study is new compared to the previous studies and no such study has been conducted on the status of use of INDEST E-Resources by the faculty of IITs. Therefore, in this study an attempt is made to study the Designation Wise Using of INDEST E-Resources by the Faculty of IITs: An Analytical Study.

Harish and Nikam (2015). They examine the purposes (both core and augmented) of accessing INDEST e-resources by the faculty members of IITs. It also highlights the basic advantages/disadvantages of accessing e-resources. The availability and accessibility, expected facilitation and value addition of accessing INDEST e-resources. The investigators distributed 1050 questionnaire through e-mail to faculty members of top seven IITs and received 411 filled questionnaires making a moderate response rate of 39%. The analysis found that faculty has positive attitudes about the use of INDEST e-resources [5].

Chauhan and Mahajan (2014) UGC is providing access to scholarly electronic resources (e-resources) to Indian universities through the UGC-Infonet Digital Library

Consortium. Access to subscribed e-resources is being provided free of cost to member universities. The whole program is funded by the UGC and executed by the INFLIBNET Centre. Now, the UGC-Infonet Digital Library Consortium is in its 11th year and it has been expected that privileged academicians are utilizing available e-resources extensively and optimally. In this paper an effort is being made to assess, how social science faculty working in Indian universities have been using e-resources, what are the problems they are facing in accessing them, and what are the efforts made by INFLIBNET to spread awareness about such an ambitious initiative of UGC among social science faculty members. They also highlight some important issues with respect to use, acceptance and planning of this consortium [6].

Choudhury (2015) Due to crunching financial assistance and explosion of information resources, it is not possible to serve all information in printed form by academic libraries. But the main goal of any library is to meet the requirement of users at right time, in right place, at right price and in right format. Therefore the e-resources play a vital role to fulfill this goal. The main objective of this study is to know how the e-resources are using by the students and teachers of engineering college (Both Private and Government) of Assam, and to know what are the problems they faced by using e-resources. They help others to solve the problems and take benefits of e-resources. The data are collected from four government and two private engineering colleges of Assam [7].

OBJECTIVES OF THE STUDY

The main objectives of the study are:

1. To know the advantage and disadvantages of using INDEST E-Resources by designation.
2. To know the core purpose and augmented purpose of using INDEST E-Resources by designation wise.
3. To know the availability, strength, limitation, value addition, expected in using INDEST E-Resources by designation wise.
4. To know the reading pattern and importance of INDEST E-Resources by designation wise.

- To know the level of satisfaction in using INDEST E-Resources by designation wise.

SCOPE AND LIMITATION OF THE STUDY

The present study focuses on the designation wise use of INDEST e-resources by the faculty of top seven Indian Institute of Technology (IITs). This study is limited to top seven Indian Institute of Technology and all of them are governed by the Institutes of Technology Act, 1961 which has declared them as institutions of national importance and further lays down their powers, duties, and framework for governance. The top seven IITs are IIT Kharagpur (IIT Kgp), IIT Bombay (IITB), IIT Madras (IITM), IIT Kanpur (IITK), IIT Delhi (IITD), IIT Guwahati (IITG) and IIT Roorkee (IITR).

METHODOLOGIES

The survey method was considered most appropriate for this study because it can measure Faculty' background, experience and what they know about electronic information, and it was well suited to the research questions taken up for this study. The data has been obtained by using questionnaires; this data has been standardized for comparison. The questionnaire was designed, keeping in view the objectives of the study for collecting usage data from faculty of different departments of seven IITs. Along with averages, percentages, mean SD, several advanced statistical tools like Analysis of Variance (ANOVA), were used for the purpose of analysis and interpretation.

RESULT AND DISCUSSION

Designation

The designation of the respondents is taken as one of the variables for studying the use of INDEST e-resources by faculty of top seven IIT's in the study. The designation wise breakup of responses is shown in Table 1. It observed from the Table 1 that, majority of the respondents accounting to 174 (42.2%) are Professors, whereas 143 respondents representing 34.9 percent are Assistant Professors and Associate Professor represent 94 (22.9%).

Table 1: Designation.

S/N	Designation	No of Responses	Percentage
1	Professor	174	42.2
2	Associate Professor	94	22.9
3	Assistant Professor	143	34.9
Total		411	100.0

Designation wise Basic Advantages in using INDEST E-Resources

To prove the above said hypothesis a mean based statistical test used for testing the significance of the Hypothesis, when there are one dependent variable and more than two levels or groups of Independent variable. In other words, to understand statistical significance differences between or among two or more groups or level of independent variables on dependent variables. In this case, the five attributes of 'Basic Advantages' that are the dependent variables such as 'User-friendly interface', 'Retrieval possibilities', 'Searchability/search capabilities', 'Currency (Up-to-date information)' and 'Convenience' are computed to understand the perception of respondents classified based on the Designation ('Professor', 'Associate Professor' and 'Assistant Professor) which are Independent variables.

Table 2 shows the perception of the respondents categorized based on the designation. The average score of 'User-friendly interface' given by the respondents who are Professors is 4.28, Associate Professors is 4.33 and Assistant Professor is 4.17. The F value is 1.278 and significant value is 0.28 since it is $>.05$ the mean difference is not significant which implies that 'User-friendly interface' does impact across different level of designation.

To ascertain the impact of 'Retrieval possibilities' in the perception of the respondents' categorized based on their designation. The average score given by the respondents who are Professors is 4.25, Associate Professor is 4.24 and Assistant Professor is 4.19. The F value is 0.186 and significant value is 0.831 since it is $>.05$ the mean difference is not significant which implies that respondents with different designation perceive in similar ways with regard to 'Retrieval possibilities'.

Table 2: Designation wise Basic Advantages in using INDEST E-Resources.

S/N			Designation			F value	P value
			Professor	Associate Professor	Assistant Professor		
			N=174	N=94	N=143		
1	User-friendly interface	Mean	4.28	4.33	4.17	1.28	0.28
		SD	0.82	0.77	0.74		
2	Retrieval possibilities	Mean	4.25	4.24	4.19	0.19	0.83
		SD	0.82	0.84	0.84		
3	Searchability/search capabilities	Mean	4.36	4.38	4.19	2.24	0.11
		SD	0.8	0.79	0.77		
4	Currency (Up-to-date information)	Mean	4.36	4.22	4.21	1.45	0.24
		SD	0.81	0.86	0.74		
5	Convenience	Mean	4.31	4.48	4.19	3.54	0.030*
		SD	0.87	0.64	0.81		
6	Basic Advantages	Mean	4.32	4.34	4.18	2.11	0.12
		SD	0.69	0.6	0.66		

*Significant at 5% level

The mean value for 'Searchability/search capabilities' given by the respondents who are Professors is 4.36, Associate Professors is 4.38 and Assistant Professor is 4.19. The F value is 2.242 and significant value is 0.108 since it is $>.05$ the mean difference existing between respondents with different designation is statistically not significant at 5% level. This shows that a significant effect was not evident on the targeted outcome based on 'Searchability/search capabilities'.

The average score for the perception of respondents on 'Currency (Up-to-date information)' as given by the respondents who are Professors is 4.36, Associate Professors is 4.22 and Assistant Professor is 4.21. The F value is 1.446 and significant value is 0.237 since it is $>.05$ the mean difference is not significant which implies that 'Currency (Up-to-date information)' does not impact across different level of designation.

The average score of 'Convenience' given by the respondents who are Professors is 4.31, Associate Professors is 4.48 and Assistant Professor is 4.19. The F value is 3.54 and significant value is 0.030 since it is $<.05$ the mean difference is significant which implies that 'Convenience' does impact across different level of designation.

To ascertain the impact of 'Basic Advantages' in the perception of the respondents'

categorized based on the Designation. The average score for 'Basic Advantages' as given by the respondents whose designation is 'Professor' is 4.32, Associate Professor is 4.34 and Assistant Professor is 4.18. The F value is 2.11 and significant value is 0.123 since it is $>.05$ the mean difference is not significant which implies that respondents of different designation perceive in similar ways with regard to 'Basic Advantages'.

Designation wise Disadvantages in Accessing INDEST E-Resources

To prove the above said hypothesis a mean based statistical test used for testing the significance of the Hypothesis, when there are one dependent variable and more than two levels or groups of Independent variable. In other words, to understand statistical significance differences between or among two or more groups or level of independent variables on dependent variables. In this case, the five attributes of 'Disadvantages' that are the dependent variables such as 'Perishable citation', 'Format that a large proportion of e-journal use', 'Lack of standardized formats', 'Authenticity' and 'Search engines ignores PDF files' are computed to understand the perception of respondents classified based on the Designation ('Professor', 'Associate Professor' and 'Assistant Professor') which are Independent variables.

Table 3 shows the perception of the respondents categorized based on the

designation. The average score of 'User-friendly interface' given by the respondents who are Professors is 4.28, Associate Professors is 4.33 and Assistant Professor is 4.17. The F value is 1.278 and significant value is 0.28 since it is $>.05$ the mean difference is not significant which implies that 'User-friendly interface' does impact across different level of designation.

To ascertain the impact of 'Perishable citation' in the perception of the respondents' categorized based on their designation. The average score given by the respondents who are Professors is 2.42, Associate Professor is 2.37 and Assistant Professor is 2.2. The F value is 1.662 and significant value is 0.191 since it is $>.05$ the mean difference is not significant which implies that respondents with different designation perceive in similar ways with regard to 'Perishable citation'.

The mean value for 'Format that a large proportion of e-journal use' given by the respondents who are Professors is 2.51, Associate Professors is 2.4 and Assistant Professor is 2.18. The F value is 3.65 and significant value is 0.027 since it is $<.05$ the mean difference existing between respondents with different designation is statistically significant at 5% level. This shows that a significant effect was evident on the targeted outcome based on 'Format that a large proportion of e-journal use'.

The average score for the perception of respondents on 'Lack of standardized formats' as given by the respondents who are Professors is 2.43, Associate Professors is 2.69 and Assistant Professor is 2.58. The F value is 1.366 and significant value is 0.256 since it is $>.05$ the mean difference is not significant which implies that 'Lack of standardized formats' does not impact across different level of designation.

The average score of 'Authenticity' given by the respondents who are Professors is 2.25, Associate Professors is 2.24 and Assistant Professor is 2.14. The F value is 0.436 and significant value is 0.647 since it is $>.05$ the mean difference is not significant which

implies that 'Authenticity' does not impact across different level of designation.

To ascertain the impact of 'Disadvantages' in the perception of the respondents' categorized based on the Designation. The average score for 'Disadvantages' as given by the respondents whose designation is 'Professor' is 2.26, Associate Professor is 2.36 and Assistant Professor is 2.26. The F value is 0.371 and significant value is 0.69 since it is $>.05$ the mean difference is not significant which implies that respondents of different designation perceive in similar ways with regard to 'Disadvantages'.

Designation wise Augmented Purpose of using INDEST E-Resources

To prove the above said hypothesis a mean based statistical test used for testing the significance of the Hypothesis, when there are one dependent variable and more than two levels or groups of Independent variable. In other words, to understand statistical significance differences between or among two or more groups or level of independent variables on dependent variables. In this case, the six attributes of 'Augmented Purpose' that are the dependent variables such as 'To be up-to-date in the subject', 'Preparing for seminars, workshops etc', 'To get latest facts and statistics', 'To know the trends in Technical field' and 'To get comprehensive knowledge and be competitive in the field' and 'To write Articles' are computed to understand the perception of respondents classified based on the Designation ('Professor', 'Associate Professor' and 'Assistant Professor') which are Independent variables.

Table 4 shows the perception of the respondents categorized based on their designation. The average score of 'To be up-to-date in the subject' given by the respondents who are Professors is 4.43, Associate Professors is 4.73 and Assistant Professor is 4.19. The F value is 9.51 and significant value is 0.00 since it is $<.05$ the mean difference is significant which implies that 'To be up-to-date in the subject' does impact across different level of designation.

Table 3: Designation wise Disadvantages in accessing INDEST E-Resources.

S/N		Designation			F value	P value	
		Professor	Associate Professor	Assistant Professor			
		N=174	N=94	N=143			
1	Perishable citation	Mean	2.42	2.37	2.2	1.662	0.191
		SD	1.17	1.08	0.88		
2	Format that a large proportion of e-journal use	Mean	2.51	2.4	2.18	3.65	0.027*
		SD	1.09	1.1	0.86		
3	Lack of standardized formats	Mean	2.43	2.69	2.58	1.366	0.256
		SD	1.2	1.3	1.14		
4	Authenticity	Mean	2.25	2.24	2.14	0.436	0.647
		SD	1.11	1.24	1.02		
5	Search engines ignores PDF files	Mean	1.93	2.07	2.16	1.682	0.187
		SD	1.01	1.17	1.04		
6	Disadvantages	Mean	2.26	2.36	2.26	0.37	0.69
		SD	1.01	0.95	0.79		

*Significant at 5% level

To ascertain the impact of 'Preparing for seminars, workshops, etc.' in the perception of the respondents' categorized based on their designation. The average score given by the respondents who are Professors is 4.09, Associate Professor is 4.35 and Assistant Professor is 3.87. The F value is 6.639 and significant value is 0.001 since it is <.05 the mean difference is significant which implies that respondents with different designation seem to perceive in different ways with regard to 'Preparing for seminars, workshops etc'.

The mean value for 'To get latest facts and statistics' given by the respondents who are Professors is 4.11, Associate Professors is 4.34 and Assistant Professor is 3.94. The F value is 4.048 and significant value is 0.018 since it is <.05 the mean difference existing between respondents with different designation is statistically significant at 5% level. This shows that a significant effect was evident on the targeted outcome based on 'To get latest facts and statistics'.

The average score for the perception of respondents on 'To know the trends in Technical field' as given by the respondents who are Professors is 4.22, Associate Professors is 4.49 and Assistant Professor is 3.99. The F value is 5.839 and significant value is 0.003 since it is <.05 the mean difference is significant which implies that 'To

know the trends in Technical field' has an impact across different levels of designation.

The average score of 'To get comprehensive knowledge and be competitive in the field' given by the respondents who are Professors is 4.2, Associate Professors is 4.49 and Assistant Professor is 3.93. The F value is 8.741 and significant value is 0.000 since it is <.05 the mean difference is significant which implies that 'To get comprehensive knowledge and be competitive in the field' does impact across different levels of designation.

To ascertain the impact of 'To write Articles' in the perception of the respondents' categorized based on the Designation. The average score for 'To write Articles' as given by the respondents whose designation is 'Professor' is 4.33, Associate Professor is 4.52 and Assistant Professor is 4.36. The F value is 1.966 and significant value is 0.141 since it is >.05 the mean difference is not significant which implies that respondents of different designation perceive in similar ways with regard to 'To write Articles'.

The average score of 'Augmented Purpose' given by the respondents who are Professors is 4.23, Associate Professors is 4.52 and Assistant Professor is 4.07. The F value is 10.574 and significant value is 0.000 since it is <.05 the mean difference is significant which implies that 'Augmented Purpose' does impact across different levels of designation.

Table 4: Designation wise Augmented Purpose of using INDEST E-Resources.

S/N			Designation			F value	P value
			Professor	Associate Professor	Assistant Professor		
			N=174	N=94	N=143		
1	To be up-to-date in the subject	Mean	4.43	4.73	4.19	9.51	0.000*
		SD	0.88	0.56	1.1		
2	Preparing for seminars, workshops, etc.	Mean	4.09	4.35	3.87	6.64	0.001*
		SD	0.91	0.73	1.14		
3	To get latest facts and statistics	Mean	4.11	4.34	3.94	4.05	0.018*
		SD	1.03	0.72	1.12		
4	To know the trends in Technical field	Mean	4.22	4.49	3.99	5.84	0.003*
		SD	1.06	0.87	1.2		
5	To get comprehensive knowledge and be competitive in the field	Mean	4.2	4.49	3.93	8.74	0.000*
		SD	0.94	0.59	1.22		
6	To write Articles	Mean	4.33	4.52	4.36	1.97	0.14
		SD	0.78	0.66	0.84		
7	Augmented Purpose	Mean	4.23	4.52	4.07	10.6	0.000*
		SD	0.68	0.51	0.89		

*Significant at 5% level

Designation wise Availability and Accessibility of INDEST E-Resources

To prove the above said hypothesis a mean based statistical test used for testing the significance of the Hypothesis, when there are one dependent variable and more than two levels or groups of Independent variable. In other words, to understand statistical significance differences between or among two or more groups or level of independent variables on dependent variables. In this case, the four attributes of 'Availability and Accessibility' that are the dependent variables such as 'Prompt accessibility (7/24 hours a day)', 'Desktop availability', 'Free access' and 'Multiuser access' are computed to understand the perception of respondents classified based on the Designation ('Professor', 'Associate Professor' and 'Assistant Professor) which are Independent variables.

Table 5 shows the perception of the respondents categorized based on the designation. The average score of 'Prompt accessibility (7/24 hours a day)' given by the respondents who are Professors is 4.15, Associate Professors is 4.64 and Assistant Professor is 4.13. The F value is 8.514 and significant value is 0.000 since it is <.05 the mean difference is significant which implies that 'Prompt accessibility (7/24 hours a day)' does impact across different levels of designation.

To ascertain the impact of 'Desktop availability' in the perception of the respondents' categorized based on their designation. The average score given by the respondents who are Professors is 4.31, Associate Professor is 4.6 and Assistant Professor is 4.06. The F value is 8.706 and significant value is 0.000 since it is <.05 the mean difference is significant which implies that respondents with different designation seem to perceive in different ways with regard to 'Desktop availability'.

The mean value for 'Free access' given by the respondents who are Professors is 4.06, Associate Professors is 4.1 and Assistant Professor is 4.03. The F value is 0.13 and significant value is 0.878 since it is >.05 the mean difference existing between respondents with different designation is statistically not significant at 5% level. This shows that a significant effect was not evident on the targeted outcome based on 'Free access'.

The average score for the perception of respondents on 'Multiuser access' as given by the respondents who are Professors is 3.46, Associate Professors is 3.49 and Assistant Professor is 3.52. The F value is 0.096 and significant value is 0.908 since it is >.05 the mean difference is not significant which implies that 'Multiuser access' does not impact across different levels of designation.

Table 5: Designation wise Availability and Accessibility of INDEST E-Resources.

S/N			Designation			F value	P value
			Professor	Associate Professor	Assistant Professor		
			N=174	N=94	N=143		
1	Prompt accessibility (7/24 hours a day)	Mean	4.15	4.64	4.13	8.51	0.000*
		SD	1	0.66	1.22		
2	Desktop availability	Mean	4.31	4.6	4.06	8.71	0.000*
		SD	0.95	0.74	1.1		
3	Free access	Mean	4.06	4.1	4.03	0.13	0.88
		SD	1.07	0.92	1.1		
4	Multiuser access	Mean	3.46	3.49	3.52	0.1	0.91
		SD	1.29	1.26	1.16		
5	Availability and accessibility	Mean	4.01	4.21	3.94	2.76	0.07
		SD	0.82	0.64	1.01		

*Significant at 5% level

The average score of 'Availability and accessibility' given by the respondents who are Professors is 4.01, Associate Professors is 4.21 and Assistant Professor is 3.94. The F value is 2.756 and significant value is 0.065 since it is $>.05$ the mean difference is not significant which implies that 'Availability and accessibility' does not impact across different levels of designation.

Designation wise Limitation of Accessing INDEST E-Resources

To prove the above said hypothesis a mean based statistical test used for testing the significance of the Hypothesis, when there are one dependent variable and more than two levels or groups of Independent variable. In other words, to understand statistical significance differences between or among two or more groups or level of independent variables on dependent variables. In this case, the three attributes of 'Limitation of accessing system' that are the dependent variables such as 'Difficulty reading computer screens', 'Limitations of computer monitor' and 'Often not included in indexing and abstracting services' are computed to understand the perception of respondents classified based on the Designation ('Professor', 'Associate Professor' and 'Assistant Professor') which are Independent variables.

Table 6 shows the perception of the respondents categorized based on the

designation. The average score of 'Difficulty reading computer screens' given by the respondents who are Professors is 2.66, Associate Professors is 2.49 and Assistant Professor is 2.46. The F value is 0.903 and significant value is 0.406 since it is $>.05$ the mean difference is not significant which implies that 'Difficulty reading computer screens' does not impact across different levels of designation.

To ascertain the impact of 'Limitations of computer monitor' in the perception of the respondents' categorized based on their designation. The average score given by the respondents who are Professors is 2.4, Associate Professor is 2.52 and Assistant Professor is 2.24. The F value is 1.217 and significant value is 0.297 since it is $>.05$ the mean difference is not significant which implies that respondents with different designation perceive in similar ways with regard to 'Limitations of computer monitor'.

The mean value for 'Often not included in indexing and abstracting services' given by the respondents who are Professors is 2.59, Associate Professors is 2.44 and Assistant Professor is 2.35. The F value is 1.2 and significant value is 0.302 since it is $>.05$ the mean difference existing between respondents with different designation is statistically not significant at 5% level. This shows that a significant effect was not evident on the targeted outcome based on 'Often not included in indexing and abstracting services'.

Table 6: Designation wise Limitation of Accessing INDEST E-Resources.

S/N			Designation			F value	P value
			Professor	Associate Professor	Assistant Professor		
			N=174	N=94	N=143		
1	Difficulty reading computer screens	Mean	2.66	2.49	2.46	0.9	0.41
		SD	1.4	1.52	1.14		
2	Limitations of computer monitor	Mean	2.4	2.52	2.24	1.22	0.3
		SD	1.33	1.55	1.19		
3	Often not included in indexing and abstracting services	Mean	2.59	2.44	2.35	1.2	0.3
		SD	1.53	1.22	1.18		
4	Limitation of accessing system	Mean	2.52	2.52	2.35	0.91	0.4
		SD	1.27	1.33	0.95		

*Significant at 5% level

The average score for the perception of respondents on 'Limitation of accessing system' as given by the respondents who are Professors is 2.52, Associate Professors is 2.52 and Assistant Professor is 2.35. The F value is 0.91 and significant value is 0.403 since it is $>.05$ the mean difference is not significant which implies that 'Limitation of accessing system' does not impact across different levels of designation.

Designation wise Strength in Accessing INDEST E-Resources Network

To prove the above said hypothesis a mean based statistical test used for testing the significance of the Hypothesis, when there are one dependent variable and more than two levels or groups of Independent variable. In other words, to understand statistical significance differences between or among two or more groups or level of independent variables on dependent variables. In this case, the three attributes of 'Strength in accessing network' that are the dependent variables such as 'Accuracy', 'Credibility' and 'Connecting people' are computed to understand the perception of respondents classified based on the Designation ('Professor', 'Associate Professor' and 'Assistant Professor) which are Independent variables.

Table 7 shows the perception of the respondents categorized based on the designation. The average score of 'Accuracy' given by the respondents who are Professors is 3.98, Associate Professors is 4.11 and Assistant Professor is 3.98. The F value is 0.906 and

significant value is 0.405 since it is $>.05$ the mean difference is not significant which implies that 'Accuracy' does not impact across different levels of designation.

To ascertain the impact of 'Credibility' in the perception of the respondents' categorized based on their designation. The average score given by the respondents who are Professors is 3.95, Associate Professor is 4.27 and Assistant Professor is 3.87. The F value is 6.434 and significant value is 0.002 since it is $<.05$ the mean difference is significant which implies that respondents with different designation seem to perceive in different ways with regard to 'Credibility'.

The mean value for 'Connecting people' given by the respondents who are Professors is 3.45, Associate Professors is 3.62 and Assistant Professor is 3.2. The F value is 3.49 and significant value is 0.032 since it is $<.05$ the mean difference existing between respondents with different designation is statistically significant at 5% level. This shows that a significant effect was evident on the targeted outcome based on 'Connecting people'.

The average score for the perception of respondents on 'Strength in accessing network' as given by the respondents who are Professors is 3.8, Associate Professors are 4.00 and Assistant Professor is 3.68. The F value is 4.607 and significant value is 0.011 since it is $<.05$ the mean difference is significant which implies that 'Strength in accessing network' does impact across different levels of designation.

Table 7: Designation wise Strength in Accessing INDEST E-Resources.

S/N			Designation			F value	P value
			Professor	Associate Professor	Assistant Professor		
			N=174	N=94	N=143		
1	Accuracy	Mean	3.98	4.11	3.98	0.91	0.41
		SD	0.86	0.85	0.76		
2	Credibility	Mean	3.95	4.27	3.87	6.43	0.002*
		SD	0.84	0.8	0.95		
3	Connecting people	Mean	3.45	3.62	3.2	3.49	0.032*
		SD	1.11	1.18	1.27		
4	Strength in accessing	Mean	3.8	4	3.68	4.61	0.011*
		SD	0.76	0.8	0.78		

*Significant at 5% level

Designation wise Expected Facilitation in accessing INDEST E-Resources

To prove the above said hypothesis a mean based statistical test used for testing the significance of the Hypothesis, when there are one dependent variable and more than two levels or groups of Independent variable. In other words, to understand statistical significance differences between or among two or more groups or level of independent variables on dependent variables. In this case, the two attributes of 'Expected Facilitation' that are the dependent variables such as 'Requiring special equipment' and 'Requiring training' are computed to understand the perception of respondents classified based on the Designation ('Professor', 'Associate Professor' and 'Assistant Professor') which are Independent variables.

Table 8 shows the perception of the respondents categorized based on the designation. The average score of 'Requiring special equipment' given by the respondents who are Professors is 2.01, Associate Professors is 2.1 and Assistant Professor is 2.42. The F value is 4.682 and significant value is 0.010 since it is <.05 the mean difference is significant which implies that 'Requiring special equipment' does impact across different levels of designation.

To ascertain the impact of 'Requiring training' in the perception of the respondents' categorized based on their designation. The average score given by the respondents who are Professors is 1.99, Associate Professor is 2.11

and Assistant Professor is 2.35. The F value is 4.408 and significant value is 0.013 since it is <.05 the mean difference is significant which implies that respondents with different designation seem to perceive in different ways with regard to 'Requiring training'.

The mean value for 'Expected Facilitation' given by the respondents who are Professors is 2, Associate Professors are 2.11 and Assistant Professor is 2.39. The F value is 5.435 and significant value is 0.005 since it is <.05 the mean difference existing between respondents with different designation is statistically significant at 5% level. This shows that a significant effect was evident on the targeted outcome based on 'Expected Facilitation'.

Designation wise Core Purpose of using INDEST E-Resources

To prove the above said hypothesis a mean based statistical test used for testing the significance of the Hypothesis, when there are one dependent variable and more than two levels or groups of Independent variable. In other words, to understand statistical significance differences between or among two or more groups or level of independent variables on dependent variables. In this case, the two attributes of 'Core purpose' that are the dependent variables such as 'Teaching' and 'Research' are computed to understand the perception of respondents classified based on the Designation ('Professor', 'Associate Professor' and 'Assistant Professor') which are Independent variables.

Table 8: Designation wise Expected Facilitation in accessing INDEST E-Resources.

S/N			Designation			F value	P value
			Professor	Associate Professor	Assistant Professor		
			N=174	N=94	N=143		
1	Requiring special equipment	Mean	2.01	2.1	2.42	4.682	0.010*
		SD	1.08	1.08	1.29		
2	Requiring training	Mean	1.99	2.11	2.35	4.408	0.013*
		SD	1	0.99	1.12		
3	Expected Facilitation	Mean	2	2.11	2.39	5.435	0.005*
		SD	0.98	0.98	1.04		

*Significant at 5% level

Table 9: Designation wise Core Purpose of using INDEST E-Resources.

S/N			Designation			F value	P value
			Professor	Associate Professor	Assistant Professor		
			N=174	N=94	N=143		
1	Teaching	Mean	3.89	3.94	3.86	0.175	0.839
		SD	0.83	0.93	1.15		
2	Research	Mean	4.76	4.84	4.74	1.175	0.31
		SD	0.5	0.52	0.55		
3	Core purpose	Mean	4.33	4.44	4.3	1.556	0.212
		SD	0.52	0.55	0.8		

*Significant at 5% level

Table 9 shows the perception of the respondents categorized based on the designation. The average score of 'Teaching' given by the respondents who are Professors is 3.89, Associate Professors is 3.94 and Assistant Professor is 3.86. The F value is 0.175 and significant value is 0.839 since it is $>.05$ the mean difference is not significant which implies that 'Teaching' does not impact across different levels of designation.

To ascertain the impact of 'Research' in the perception of the respondents' categorized based on their designation, the ANOVA test was conducted. The average score given by the respondents who are Professors is 4.76, Associate Professor is 4.84 and Assistant Professor is 4.74. The F value is 1.175 and significant value is 0.31 since it is $>.05$ the mean difference is not significant which implies that respondents with different designation seem to perceive in similar ways with regard to 'Research'.

The mean value for 'Core purpose' given by the respondents who are Professors is 4.33, Associate Professors are 4.44 and Assistant

Professor is 4.3. The F value is 1.556 and significant value is 0.212 since it is $>.05$ the mean difference existing between respondents with different designation is statistically not significant at 5% level. This shows that a significant effect was not evident on the targeted outcome based on 'Core purpose'.

Designation wise Value Addition in Accessing INDEST E-Resources

To prove the above said hypothesis a mean based statistical test used for testing the significance of the Hypothesis, when there are one dependent variable and more than two levels or groups of Independent variable. In other words, to understand statistical significance differences between or among two or more groups or level of independent variables on dependent variables. In this case, the two attributes of 'Value Addition' that are the dependent variables such as 'Downloading possibilities' and 'Full text retrieval' are computed to understand the perception of respondents classified based on the Designation ('Professor', 'Associate Professor' and 'Assistant Professor') which are Independent variables.

Table 10: Designation wise Value Addition in accessing INDEST E-Resources.

S/N			Designation			F value	P value	R Sqr
			Professor	Associate Professor	Assistant Professor			
			N=174	N=94	N=143			
1	Downloading possibilities	Mean	4.42	4.45	4.34	0.86	0.424	0.004
		SD	0.69	0.58	0.71			
2	Full text retrieval	Mean	4.51	4.44	4.36	1.519	0.22	0.008
		SD	0.81	0.71	0.73			
3	Value addition	Mean	4.47	4.44	4.34	1.428	0.241	0.007
		SD	0.69	0.58	0.68			

*Significant at 5% level

Table 10 shows the perception of the respondents categorized based on the designation. The average score of 'Downloading possibilities' given by the respondents who are Professors is 4.42, Associate Professors is 4.45 and Assistant Professor is 4.35. The F value is 0.86 and significant value is 0.424 since it is $>.05$ the mean difference is not significant which implies that 'Downloading possibilities' does not impact across different levels of designation.

To ascertain the impact of 'Full text retrieval' in the perception of the respondents' categorized based on their designation. The average score given by the respondents who are Professors is 4.51, Associate Professor is 4.44 and Assistant Professor is 4.36. The F value is 1.519 and significant value is 0.22 since it is $>.05$ the mean difference is not significant which implies that respondents with different designation perceive in similar ways with regard to 'Full text retrieval'. The mean value for 'Value addition' given by the respondents who are Professors is 4.47, Associate Professors is 4.44 and Assistant Professor is 4.34. The F value is 1.428 and significant value is 0.241 since it is $>.05$ the mean difference existing between respondents with different designation is statistically not significant at 5% level. This shows that a significant effect was not evident on the targeted outcome based on 'Value addition'.

Designation wise Satisfaction of using INDEST E-Resources

To prove the above said hypothesis a mean based statistical test used for testing the

significance of the Hypothesis, when there are one dependent variable and more than two levels or groups of Independent variable. In other words, to understand statistical significance differences between or among two or more groups or level of independent variables on dependent variables. In this case, the seven attributes of 'Satisfaction' that are the dependent variables such as 'Required INDEST E-Resources subscribed by the library', 'Subject coverage of available INDEST E-Resources in your library', 'Number of INDEST E-Resources available in library', 'Back volumes of INDEST E-Resources available in library', 'How far INDEST E-Resources available in library enable you to meet your needs', 'Satisfaction obtained from using INDEST E-Resources' and 'Infrastructure available to Access INDEST E-Resources' are computed to understand the perception of respondents classified based on the Designation ('Professor', 'Associate Professor' and 'Assistant Professor) which are Independent variables.

Table 11 shows the perception of the respondents categorized based on the designation. The average score of 'Required INDEST E-Resources subscribed by the library' given by the respondents who are Professors is 3.81, Associate Professors is 4.41 and Assistant Professor is 3.98. The F value is 11.768 and significant value is 0.00 since it is $<.05$ the mean difference is significant which implies that 'Required INDEST E-Resources subscribed by the library' does impact across different levels of designation.

Table 11: Designation wise Satisfaction of using INDEST E-Resources.

S/N		Designation			F value	P value	
		Professor	Associate Professor	Assistant Professor			
		N=174	N=94	N=143			
1	Required INDEST E-Resources subscribed by the library	Mean	3.81	4.41	3.98	11.77	0.000*
		SD	1.06	0.78	0.93		
2	Subject coverage of available INDEST E-Resources in your library	Mean	3.84	4.08	3.74	3.326	0.037*
		SD	1.04	0.82	1.01		
3	Number of INDEST E-Resources available in library	Mean	3.79	4.11	3.55	8.68	0.000*
		SD	1.01	0.77	1.03		
4	Back volumes of INDEST E-Resources available in library	Mean	3.58	3.82	3.42	3.909	0.021*
		SD	1.14	0.92	1.05		
5	How far INDEST E-Resources available in library enable you to meet your needs	Mean	3.78	4.11	3.54	7.975	0.000*
		SD	1.08	0.77	1.19		
6	Satisfaction obtained from using INDEST E-Resources	Mean	3.94	4.19	3.82	6.188	0.002*
		SD	0.92	0.6	0.73		
7	Infrastructure available to Access INDEST E-Resources	Mean	4.05	4.36	4.12	3.659	0.027*
		SD	0.94	0.89	0.85		
8	Satisfaction	Mean	3.83	4.16	3.74	7.451	0.001*
		SD	0.92	0.59	0.86		

*Significant at 5% level

To ascertain the impact of ‘Subject coverage of available INDEST E-Resources in your library’ in the perception of the respondents’ categorized based on their designation. The average score given by the respondents who are Professors is 3.84, Associate Professor is 4.08 and Assistant Professor is 3.74. The F value is 3.326 and significant value is 0.037 since it is <.05 the mean difference is significant which implies that respondents with different designation seem to perceive in different ways with regard to ‘Subject coverage of available INDEST E-Resources in your library’.

The mean value for ‘Number of INDEST E-Resources available in library’ given by the respondents who are Professors is 3.79, Associate Professors is 4.11 and Assistant Professor is 3.55. The F value is 8.68 and significant value is 0.000 since it is <.05 the mean difference existing between respondents with different designation is statistically significant at 5% level. This shows that a significant effect was evident on the targeted outcome based on ‘Number of INDEST E-Resources available in library’.

The average score for the perception of respondents on ‘Back volumes of INDEST E-Resources available in library’ as given by the

respondents who are Professors is 3.58, Associate Professors is 3.82 and Assistant Professor is 3.42. The F value is 3.909 and significant value is 0.021 since it is <.05 the mean difference is significant which implies that ‘Back volumes of INDEST E-Resources available in library’ does impact across different levels of designation.

The average score of ‘How far INDEST E-Resources available in library enable you to meet your needs’ given by the respondents who are Professors is 3.78, Associate Professors are 4.11 and Assistant Professor is 3.54. The F value is 7.975 and significant value is 0.000 since it is <.05 the mean difference is significant which implies that ‘How far INDEST E-Resources available in library enable you to meet your needs’ does impact across different levels of designation.

To ascertain the impact of ‘Satisfaction obtained from using INDEST E-Resources’ in the perception of the respondents’ categorized based on the Designation. The average score for ‘Satisfaction obtained from using INDEST E-Resources’ as given by the respondents whose designation is ‘Professor’ is 3.94, Associate Professor is 4.19 and Assistant Professor is 3.82. The F value is 6.188 and

significant value is 0.002 since it is $<.05$ the mean difference is significant which implies that respondents of different designation perceive in different ways with regard to 'Satisfaction obtained from using INDEST E-Resources'.

To ascertain the impact of 'Infrastructure available to Access INDEST E-Resources' in the perception of the respondents' categorized based on the Designation. The average score for 'Infrastructure available to Access INDEST E-Resources' as given by the respondents whose designation is 'Professor' is 4.05, Associate Professor is 4.36 and Assistant Professor is 4.12. The F value is 3.659 and significant value is 0.027 since it is $<.05$ the mean difference is significant which implies that respondents of different designation perceive in different ways with regard to 'Infrastructure available to Access INDEST E-Resources'.

The average score for the perception of respondents on 'Satisfaction' as given by the respondents who are Professors is 3.83, Associate Professors are 4.16 and Assistant Professor is 3.74. The F value is 7.451 and significant value is 0.001 since it is $<.05$ the mean difference is significant which implies that 'Satisfaction' does impact across different levels of designation.

Designation wise Importance of INDEST E-Resources

To prove the above said hypothesis a mean based statistical test used for testing the significance of the Hypothesis, when there are one dependent variable and more than two levels or groups of Independent variable. In other words, to understand statistical

significance differences between or among two or more groups or level of independent variables on dependent variables. In this case, the two attributes of 'Importance' that are the dependent variables such as 'Importance of the INDEST E-Resources for your research' and 'Do you think that the information content of INDEST E-Resources is useful' are computed to understand the perception of respondents classified based on the Designation ('Professor', 'Associate Professor' and 'Assistant Professor) which are Independent variables.

Table 12 shows the perception of the respondents categorized based on the Designation. The average score of 'Importance of the INDEST E-Resources for your research' given by the respondents who are Professors is 4.58, Associate Professors is 4.66 and Assistant Professor is 4.5. The F value is 1.191 and significant value is 0.305 since it is $>.05$ the mean difference is not significant which implies that 'Importance of the INDEST E-Resources for your research' does not impact across different levels of designation.

To ascertain the impact of 'Do you think that the information content of INDEST E-Resources is useful' in the perception of the respondents' categorized based on their designation. The average score given by the respondents who are Professors is 4.56, Associate Professor is 4.65 and Assistant Professor is 4.55. The F value is 0.531 and significant value is 0.588 since it is $>.05$ the mean difference is not significant which implies that respondents with different designation perceive in similar ways with regard to 'Do you think that the information content of INDEST E-Resources is useful'.

Table 12: Designation wise Importance of INDEST E-Resources.

S/N		Designation			F value	P value	
		Professor	Associate Professor	Assistant Professor			
		N=174	N=94	N=143			
1	Importance of the INDEST E-Resources for your research	Mean	4.58	4.66	4.5	1.191	0.305
		SD	0.9	0.58	0.61		
2	Do you think that the information content of INDEST E-Resources is useful	Mean	4.56	4.65	4.55	0.531	0.588
		SD	0.9	0.55	0.64		
3	Importance	Mean	4.57	4.66	4.53	0.886	0.413
		SD	0.88	0.52	0.56		

*Significant at 5% level

The mean value for ‘Importance’ given by the respondents who are Professors is 4.57, Associate Professors are 4.66 and Assistant Professor is 4.53. The F value is 0.886 and significant value is 0.413 since it is $>.05$ the mean difference existing between respondents with different designation is statistically not significant at 5% level. This shows that a significant effect was not evident on the targeted outcome based on ‘Importance’.

Designation wise reading pattern of INDEST E-Resources by faculty

To prove the above said hypothesis a mean based statistical test used for testing the significance of the Hypothesis, when there are one dependent variable and more than two levels or groups of Independent variable. In other words, to understand statistical significance differences between or among two or more groups or level of independent variables on dependent variables. In this

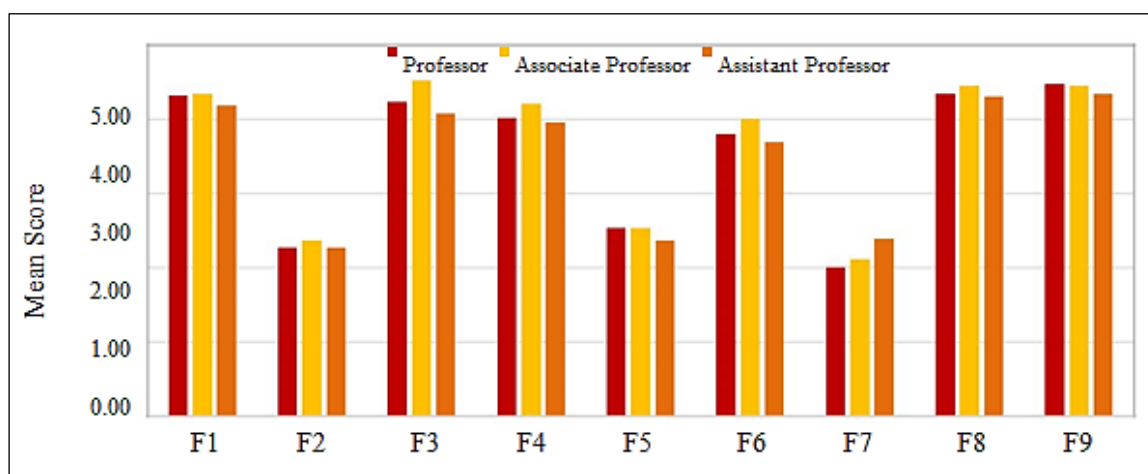
case, the two attributes of ‘Reading pattern’ that are the dependent variables such as ‘Read electronic (on monitor)’ and ‘Read print out’ are computed to understand the perception of respondents classified based on the Designation (‘Professor’, ‘Associate Professor’ and ‘Assistant Professor’) which are Independent variables.

Table 13 shows the perception of the respondents categorized based on the Designation. The mean value for ‘Read electronic (on monitor)’ given by the respondents who are Professors is 4.07, Associate Professors is 4.34 and Assistant Professor is 4.25. The F value is 3.063 and significant value is 0.048 since it is $<.05$ the mean difference existing between respondents with different designation is statistically significant at 5% level. This shows that a significant effect was evident on the targeted outcome based on ‘Read electronic (on monitor)’.

Table 13: Designation wise Read pattern of INDEST E-Resources by faculty.

S/N		Designation			F value	P value
		Professor	Associate Professor	Assistant Professor		
		N=174	N=94	N=143		
1	Read electronic (on monitor)	Mean	4.07	4.34	3.063	0.048
		SD	0.99	0.85		
2	Read print out	Mean	3.46	2.81	9.437	0.000*
		SD	1.16	1.27		

*Significant at 5% level



F1: Basic Advantage. F2: Disadvantages. F3: Augmented Purpose. F4: Availability and Accessibility. F5: Limitation of Accessing System. F6: Strength in Accessing Network. F7: Expected Facilitation. F8: Core Purpose. F9: Value Addition.

The mean value for 'Read print out' given by the respondents who are Professors is 3.46, Associate Professors is 2.81 and Assistant Professor is 3.26. The F value is 9.437 and significant value is 0.000 since it is <.05 the mean difference existing between respondents with different designation is statistically significant at 5% level. This shows that a significant effect was evident on the targeted outcome based on 'Read print out'.

CONCLUSION

The growth in electronic library systems has forced to review of the library services. Top seven Indian Institutes of Technology in India, imparting higher education in the field of Science and Technology. The findings reflects that IIT faculty associate professors opined that they get Up to date information from INDEST E-Resources, associate professors use INDEST to be up-to-date in the subject, associate professors opined that all the INDEST E-Resources are Desktop availability, they opined that Limitations of computer monitor is not a limitation in using INDEST e-resources. Associate professors use maximum INDEST e-resources compare to Professor and Assistant Professor. Compare to other faculty Associate Professors use INDEST to do research. Associate professors were very much satisfied with INDEST E-Resources compare to Professors and Assistant professor.

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AUTHOR'S BIOGRAPHY

Harish H.T. has been working as Librarian and Head at Sai Vidya Institute of Technology, Bengaluru for last 7 years. His area of interests includes library management, digital library, electronic resources, promotion of digital/electronic resources and promotion of usage of library resources. He has published 10 papers and 2 books. He has been associated with MULISSA and The Indian Science Congress Association.

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