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Enhancing Engineering Faculty's Use of Online Databases for Improved Academic Performance: A Comprehensive Study

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Abstract

In this era of rapid technological advancement, the use of online databases has become indispensable for faculty members in engineering colleges. These databases, offering a wealth of information in the form of full-text articles, e-books, e-journals, and more, are pivotal to keeping pace with the ever-evolving landscape of technology and innovation. This study set out to explore the utilization, awareness, and availability of online databases, shedding light on their impact on the academic performance of faculty members in Sree Buddha college of Engineering, Alappuzha. To attain a comprehensive understanding, a structured questionnaire was meticulously prepared and distributed among faculty members. They were afforded a two-day window to respond, after which the collected data were subjected to rigorous statistical analysis. It is evident from the study that faculty members actively engage with online databases, leveraging them as vital resources to augment their research and teaching endeavours as well as exhibit a high level of awareness concerning the diverse databases accessible through the library .Inadequate training programs, untimely database renewals, limited database collections, and a shortage of access terminals pose notable hindrances to the full utilization of these resources.

Keywords: Online databases, search strategies, electronic journals

1. Introduction

Due to the outburst of electronic technologies diverse systems of data storage and retrieval have introduced a new term database. In general terms a database is an organized collection of data. An organized set of data stored in a computer called a database which can be searched automatically. It is a computer-based record keeping system which records and retains information in a manner that supports individuals to get very quick information. It comprises serviceable raw data such as physical properties, statistical/numerical data, bibliographical information or non-bibliographical information etc. It comprises a field and each field contains words and numbers which help in searches through words in a specific field. Databases are set up so that one set of software programs provides access to all the data to all users. Nowadays due to technological advancement and artificial intelligence, libraries are drastically changed into digital ones with the help of the internet where the user can easily get relevant information.

Engineering is the backbone of technological development with the use of various scientific principles, theories and practical research which leads to various technical innovations. Online databases provided up-to-date information related to various constraints. Online databases provide accurate access to relevant information from a comprehensive collection of journals, articles, books, newsletters, etc. Most of the databases in the engineering colleges are subscribed for accessing up-to-date information on specific subjects. So, online databases play a vital role in the field of engineering educational systems. In this digital era online databases provide information relating to technological innovations in the engineering field through various subscriptions to databases in the form of full text articles, e-books, e-journals, etc. The familiarity in the use of online databases in the library leads to rapid development which is necessary and important in the engineering colleges.

This study focuses on the importance of online databases in academic institutions for the development of future generations. Right information to the right user at the right time has a great word value in this digital scenario, and also reveals the utilization of online databases by the faculty of the institution for various activities in their professional as well as academic purpose. A wide band of online databases are provided by different consortiums in the field of engineering. This online database provides full text articles, journals, e-books, conference proceedings, research papers, etc. which helps in their lecturing pattern and research works. Engineering involves the innovation of various technologies. For this the faculties should provide relevant guidance for their students and become a leader for future generations. This study aims to analyze

the use of online databases, helps to find out the hindrances and the utilization pattern of online databases by the faculty of Sree Buddha College of Engineering, Alappuzha.

2. Unleashing Online Databases

A library database is a structured collection of information used in library science to efficiently organize, store, and retrieve various types of materials, such as books, articles, journals, and multimedia resources. These databases offer search and retrieval tools, controlled vocabularies, and often provide access to full-text content, allowing users to find and access relevant materials with ease. Subscription-based and accessible remotely, library databases are valuable resources for both library professionals and patrons, supporting research and information retrieval in academic and public libraries.

An online database is a database accessible via a network, now generally the internet. It differs from a local database, held in an individual computer or its attached storage, such as a CD – ROM.

1. According to Merriam Webster dictionary (n.d.) ―online database is usually large collection of data organized especially for rapid search and retrieval (as by a computer)‖ (Definition of database, 2023).
2. According to Cambridge dictionary (n.d.), ―a large amount of information stored in a computer system in such a way that it can be easily looked at or changed‖ (Database, 2023).

2.1 Sree Buddha College of Engineering, Alappuzha

Sree Buddha College of Engineering, Alappuzha campus is spread over 29 acres, the college building all are aesthetically designed with top quality facilities. The sermons of Lord Buddha and environment friendly campus atmosphere provides a refreshing ambiance for both mind and soul. Separate blocks are earmarked for different buildings. SBCE has excellent and top quality classrooms, with digital teaching aids tutorial rooms, library, seminar halls, well equipped laboratories with modern equipment‘s, conference hall, seminar hall, computer center, stores, workshops and drawing class, a full- fledged basketball court available in the campus, and also a state of art gym, short for gymnasium is available with all fitness equipment, sufficient area is available in the campus for the students to engage in games and sports activities such as football & cricket ground, along with indoor facilities for table tennis and badminton are available to ensure world class education and to develop extra curriculum activities.

3. Review of Literature

1. **Frempong and Samuel (2023)** conducted a study on the usage of Electronic Databases in Academic Library. The main objective of this study is to examine electronic database usage in academic libraries in Ghana, specifically at the Ghana Communication Technology University library, Accra campus. The results showed that most faculty members were aware of the availability of databases in the library. Additionally, the findings revealed that availability and accessibility is highly ranked. The study identified problems such as difficulty in downloading information as well as poor internet connectivity. Based on the results, the study recommended that library management should address all the challenges that users encounter as soon as possible. This result should be a timely and relevant commodity for policymakers and stakeholders in private and public academic libraries.

2. **Ivwighreghweta and Eireyi-Fidelis (2022)** conducted a study on the usage of electronic academic databases resources by lecturers and postgraduate students in Western Delta University(WDU), Oghara, Delta State, Nigeria.This study successfully achieved its objectives by revealing the awareness levels, usage patterns, purposes, and challenges associated with electronic academic databases among lecturers and postgraduate students. The findings showed that there was a high level of awareness of the electronic academic database by the lecturers and postgraduate students and they equally made use of them. However, NUC Virtual library, HINARI, Research4life, AGORA and EBSCO Host were not being used as such. JSTOR, Elsevier, DOAJ, ProQuest, Science direct, and LexisNexis were put to maximum usage. Research, writing of seminar/conference paper, assignments/seminar presentations and getting up-to-date information with subject areas were the purpose of their usage of the electronic academic databases. Based on the findings of the study, it was concluded that electronic academic databases are vital information resources that need to be available in academic libraries for use by lecturers and students in the pursuit of their academic advancement.

3. **Gaikwad and Bilawar (2021)** studied the role of access to online databases as the basis for faculty research output of seventeen _A' grade colleges run by Rayat Shikshan Sanstha, Satara (Maharashtra) affiliated with three Maharashtra state universities in India. Findings of the study revealed that H.W. Wilson, Indian Journals, Cambridge University Press, JSTOR, American Institute of Physics and Royal Society were the most regularly accessible databases. Access to these online databases has a positive impact on research activity in the form of quality and quantity. Unavailability of archival and difficulty in searching required information are the greatest threats to access online databases. Similarly, the study found that the provision

of more high quality full text databases, organizing training on acquisition of online information resources were the most effective ways of addressing online databases access constraints. Accordingly, the study recommended adequate funding for college libraries to subscribe to more required online databases, and increased user education for maximum exploitation of subscribed online databases.

4. **Mohammed Tukur and Kannan, (2021)** conducted a study on awareness, availability and utilization of databases among undergraduate students of Federal University of Agriculture (FUAM) Makurdi Benue state. The main objectives are to find out the types of databases available in university under study, to find awareness about the databases, level of utilization of the databases by the undergraduate students in the university and identify the constraints affecting the utilization of the databases. The findings of this study revealed that the types of online subscribed databases available and known by undergraduate students of FUAM are EBSCOhost, Nigerian virtual library, Sciencedirect, Jstor, Oare, Hindawi, MathSciNet, Hinary and Biolin. Majority of the Undergraduate students are not aware of the databases in the library. The study concluded that undergraduate students in FUAM do not make adequate use of the available databases in the library, however, many of the undergraduate students lack ICT skills and this may limit their ability to access and utilize the available databases in the library.

5. **Eiriemiokhale and Arebamen (2020)** conducted a study on frequency of use and awareness of electronic databases by university lecturers in South-west Nigeria. It revealed the extent of awareness among university lecturers regarding electronic databases for teaching and research. Findings of the study revealed that university lecturers in South-west, Nigeria are aware of the usefulness of most of the electronic databases for teaching and research; university libraries in South-west, Nigeria use different promotional methods to create awareness of the usefulness of databases; and the frequency at which University lecturers in South-west, Nigeria use electronic databases was very low. It can be concluded from the study that the frequency at which university lecturers in South-west, Nigeria, use electronic databases is very low.
6. **Jabeen and Ganaie (2019)** conducted a study on awareness and usage of e-databases by faculty members and library professionals of the university of Kashmir. This study focuses on the approach of faculty members and library professionals of the university towards the e-databases subscribed to by the University of Kashmir. The result shows that the use of e-resources are very common among the faculty members and library professionals of University of Kashmir. It also shows that the majority of faculty and professionals) members are dependent on e-resources to get desired and relevant information. Although information has been embedded in a variety of ways and forms in various kinds of electronic resources. It is clear from the study that the younger generation has accepted the electronic resources, but training programs are essential

for better use of electronic resources campus-wide. The availability of resources in the campus is almost sufficient for all the existing disciplines but the inability of users to use the resources is actually hindering the ability to meet the requirements of users.

The absence of any recent study on the use of online databases by the faculty at Sree Buddha College of Engineering is a notable gap in the literature. Therefore, by investigating the faculty's usage patterns and preferences, it has the potential to guide engineering libraries in enhancing their subscription strategies for online databases. This research can play a pivotal role in improving the access and availability of digital resources, ultimately benefiting the academic and research endeavors of the faculty and the institution as a whole.

4. Objectives

1. To determine the use and awareness of online databases by the faculty of Sree Buddha College of Engineering, Alappuzha.
2. To identify the available online databases provided by the library.
3. To determine the use and impact of online databases in the academic performance of the faculty.

5. Scope and limitation

1. This research exclusively centers on Sree Buddha College of Engineering, with a dedicated focus on its faculty members and their utilization of online databases. The study aims to understand the patterns of online database usage within this specific academic institution, the most frequently employed databases, and their influence on academic performance.

2. It is limited to only faculties of eight departments in the college. It excludes the students and staff of the college due to the limitation of time.

5.1 Research Methodology

1. A closed-ended survey was prepared for the faculty members to facilitate effective data collection. This survey proved to be beneficial for both the faculty members and the researcher.

2. Population: Forty-two faculty members from eight departments at Sree Buddha College of Engineering were chosen for the study.

5.2 Questionnaire Design

Two different sets of questionnaires is prepared for the study. First set of question was distributed for gathering the information regarding use of online database among the faculty of Sree Buddha College of Engineering, Alappuzha. The second set was prepared in order to gather the information from the librarian.

5.3 Data Collection

The investigator visited the institution and distributed the questionnaire to the faculty of Sree Buddha College of Engineering, Alappuzha. While distributing the question, the investigator explained about the purpose and content of the questions. Their doubts were cleared during the time itself.

5.4 Data Analysis

45 questionnaires were distributed and the 42 filled questionnaire were returned by the faculty during the month of February. Collected data were analysed both quantitative and qualitative to reach conclusion. The percentage method was used for the analysis. The percentage of response is 93.33%.

Table1: Population and Percentage of Response

Sl. No	**Category of users**	**Number of questionnaires distributed**	**Number of questionnaires received**	**Percentage**
1	Faculty	45	42	93.33%

5.5 Use and Awareness

Level of Awareness

most of the faculty (45.23%) is extremely aware about online databases that are available in the library followed by (43.9%) slightly aware, (11.9%) neutrally aware about the online databases.

Frequency of Use

most of the faculty (35.71%) use the online databases monthly followed by (33.33 %) use weekly, (16.66%) respondents use daily and (14.28%) less often.

Location of Access

more than half of the faculty (59.53%) access the online databases using their personal computer followed by (28.57%) from the central library, and only a few (11.90%) accesses from the department library.

Most Used Database

Table 2: Most Used Databases

Sl. No	Databases	Number of respondents	Percentage
1	Open access	31	73.80%
2	Subscribed by library	11	26.19%

majority of the faculty (73.80%) use open access databases, and (26.19%) of the faculty use the databases which are subscribed by the library.

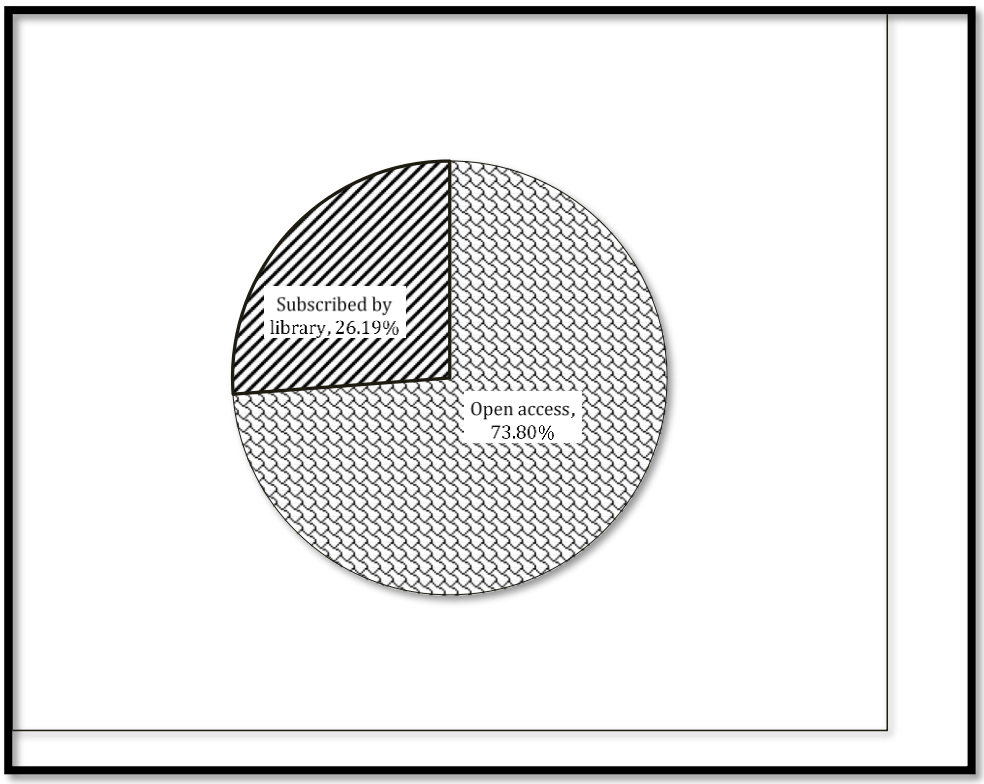

Fig 1: Pie diagram showing most used databases

Frequency of Database

Table 3: Frequency of Online Database

Sl. No	Databases	Most used	Less used	Not used
1	IEEE (POP)	17 (40.47%)	13 (30.95%)	6 (14.28%)
2	IEEE (ASP)	9 (21.42%)	15 (35.71%)	7 (16.66%)
3	Springer‘s link	16 (38.09%)	17 (40.47%)	4 (9.52%)
4	Science Direct	22 (52.38%)	13 (30.95%)	1 (2.38%)
5	NPTEL Facility	27 (64.28%)	10 (23.80%)	2 (4.76%)
6	ISO/IEC JTC 1	2 (4.76%)	9 (21.42%)	15 (35.71%)
7	DELNET	6 (14.28%)	9 (21.42%)	15 (35.71%)
8	JSSH	1 (2.38%)	4 (9.52%)	22 (52.38%)
9	NDLI	0	8 (19.04%)	18 (42.85%)

Most used

Majority of the faculty (64.28%) most used NPTEL Facility, followed by (52.38%) ScienceDirect, (40.47%) IEEE(POP), (38.09%) Springer‘s link, (21.42%) IEEE(ASP), (14.28%) DELNET, (4.76%) ISO /IEC JTC 1, (2.38%) JSSH and none of the faculty used NDLI mostly.

Less used

Some of the faculty (40.47%) indicates that Springer‘s link is the less used database, followed by (35.71%) IEEE (ASP), (30.95%) Science Direct and IEEE (POP), (23.80%) NPTEL Facility, a small number of

faculty (21.42%) indicates the less use of ISO/IEC JTC 1 and DELNET, followed by (19.04%) NDLI and (9.52%) JSSH respectively.

Not used

Most of the faculty (52.38%) indicates that JSSH is not used by them, followed by (42.85%) NDLI, an equal number of faculty not used (35.71%) ISO/IECJTC1 and DELNET, (16.66%) IEEE (ASP), (14.28%) IEEE (POP), (9.52%) Springer's link, only a small number of faculty indicates that (4.76%) NPTEL facility and (2.38%) Science direct are not used by them.

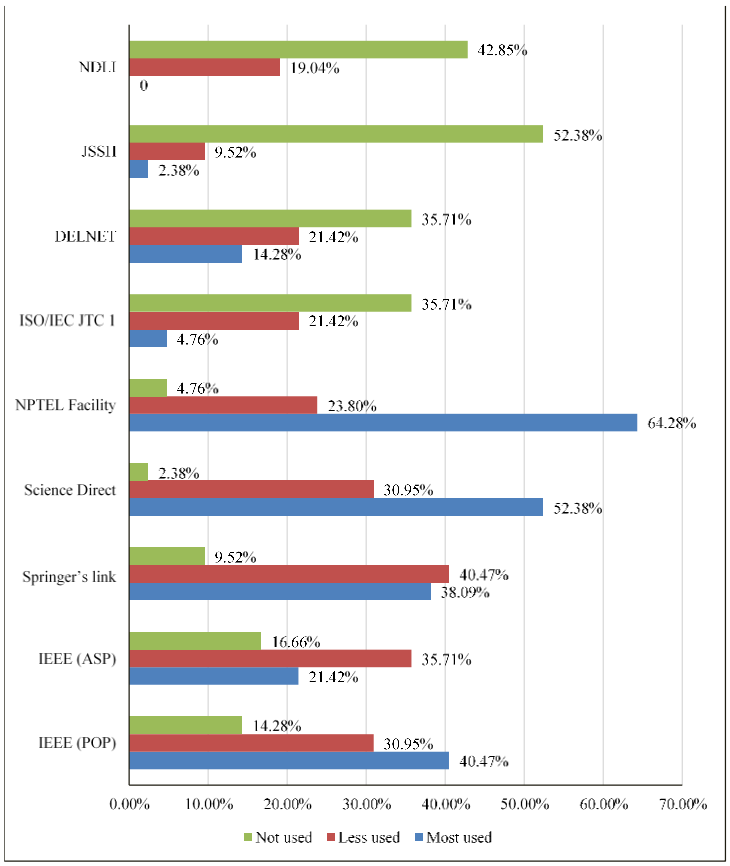

Fig 2: Bar diagram showing frequency of online database

Purpose of Using Online databases

Table 4: Purpose of Using Online database

Sl. No	Purpose	Number of respondents	Percentag
1	Research	24	57.14%
2	Up to date with subject	23	54.76%
3	Presentation/Teaching	25	59.52%
4	Seminars/Conference paper	11	26.19%

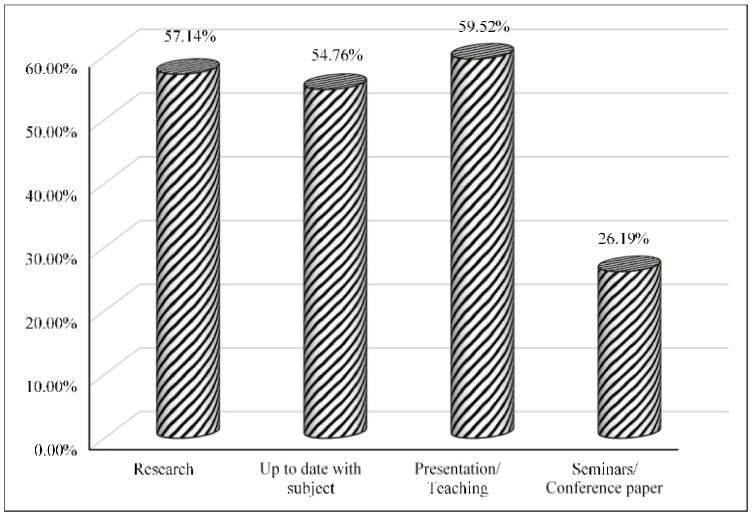

Fig 3: Cylinder diagram showing the purpose of using online database

5.6 Availability of Database

Sources of awareness

Table 5: Source of awareness

Sl. No	Source of awareness	Number of respondents	Percentage
1	From orientation classes	8	19.04%
2	From colleagues	26	61.90%
3	Through librarian	16	38.09%
4	Library website	6	14.28%

Majority of the respondents (61.90%) knew about the database from their colleagues, followed by (38.09%) through librarian, (19.04%) from orientation classes and a few (14.28%) from the library website.

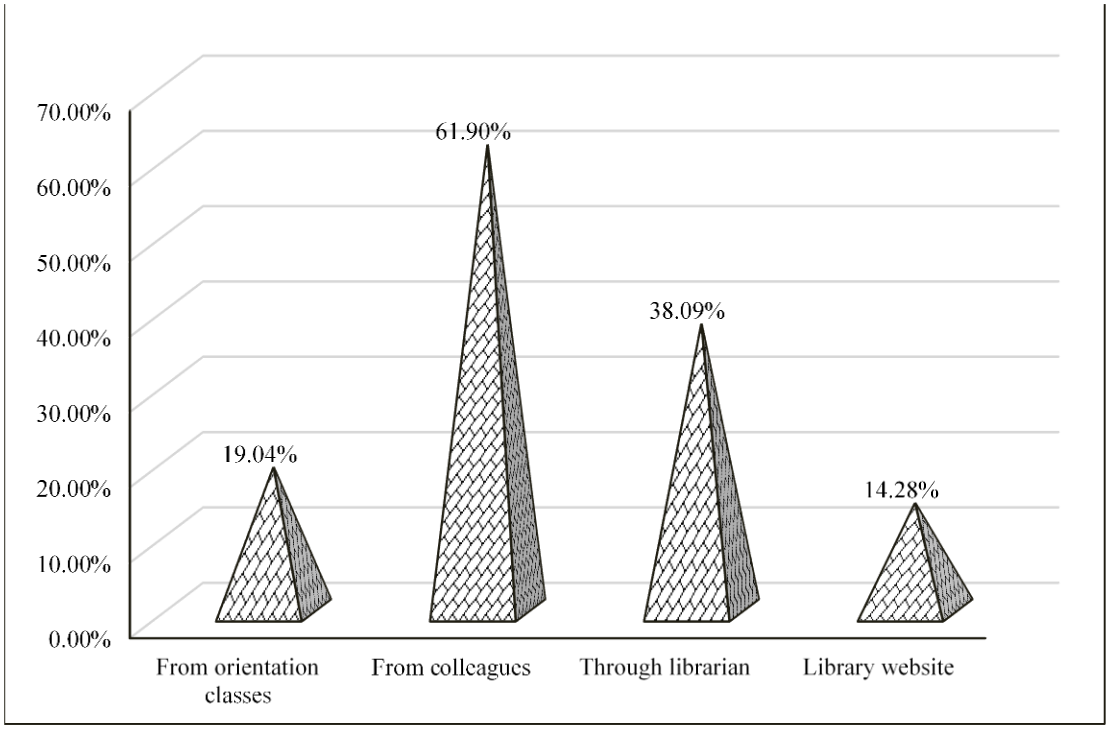

Fig 4: Pyramid diagram showing source of awareness

Format of information

Table 6: Format of information

Sl. No.	Format	Number of respondents	Percentage
1	Full text	9	21.42%
2	PDF	37	88.09%
3	HTML	6	14.28%

5.7 Impact of Online Databases

Level of impact

Sl. No.	Impact	Maximum	Medium	Minimal
1	Save the time spend in searching materials	8 (19.04%)	28 (66.66%)	4 (9.52%)
2	Save the time on reading	8 (19.04%)	28 (66.66%)	7 (16.66%)
3	Access amount of information sources	19 (45.23%)	22 (52.38%)	4 (9.52 %)
4	Keep up to date with information	23 (54.76%)	22 (52.38%)	2 (4.76%)
5	Learning or teaching efficiency	29 (69.04%)	12 (28.57%)	1 (2.38%)
6	Money spend on buying reading materials	6 (14.28%)	12 (28.57%)	18 (42.85%)

7	Access relevant information	23 (54.76%)	14 (33.33%)	5 (11.90%)
8	Keep efficiency in accomplishment of academic work	19 (45.23%)	18 (42.85%)	4 (9.52%)
9	Access of information for research	22 (52.38%)	17 (40.47%)	2 (4.76%)

Maximum

Most of the faculty (69.04%) improved learning or teaching efficiency after using online databases, followed by equal number of faculty (54.76%) on keep up-to-date with information as well as to access relevant information, (52.38%) in access of relevant information of research papers, equal number of faculty (45.23%) access amount of information sources as well as keep efficiency in accomplishment of academic work, (19.04%) save the time spent in searching the materials and on reading, and a few of (14.28%) have maximum impact on money spent on buying reading materials.

Medium

Most of the faculty (66.66%) save the time spend in searching materials as well as on reading when using online databases, followed by equal number of faculty (52.38%) on access amount of information sources as well as keeping up-to-date with information, (42.85%) on keeping efficiency in accomplishment of academic work, (40.47%) of users have access of relevant information of research papers, (33.33%) on access relevant information, (28.57%) on learning or teaching efficiency as well as money spend on buying reading materials.

Minimal

(42.85%) of faculty can save money spend on buying reading materials, followed by (16.66%) save the time on reading, (11.90%) accessing relevant information, (9.52%) time spent in searching information as well as access amount of information sources and keeping efficiency in accomplishment of academic work,

(4.76%) keeping up- to- date with information and helps in access of relevant information of research papers and a few (2.38%) learning or teaching efficiency.

5.8 Major Findings

Use and Awareness

The study findings highlight that a significant portion of the faculty members are highly aware of the online databases available in the library, while some have only a slight awareness. In terms of usage, some faculty utilize these online databases on a monthly basis, while others engage with them more frequently, on a weekly basis. Notably, over half of the faculty access these resources through their personal computers, underscoring the importance of remote access for convenience. Additionally, a smaller number of faculty members opt to access online databases through the central library or the digital library. Among the various databases, open access databases are the most commonly used, with some faculty members also utilizing subscription-based ones. Specifically, the NPTEL facility is the database of choice for the majority of faculty, while Springer's link sees less use, and there is limited usage reported for the JSSH database. The analysis further indicates that the online databases are predominantly employed for academic purposes, including presentations, teaching, research, and staying up-to-date with subject matter. However, their utilization for preparing seminars or conference papers appears to be less common among the faculty. These findings collectively emphasize the need to tailor library resources to accommodate the varying awareness levels and preferences of the faculty, promoting the effective use of online databases for a wide range of academic activities.

Availability of databases

The analysis indicates that faculty members primarily become aware of the library's online databases through their colleagues, with only a small number actively seeking assistance from librarians. Additionally, the majority of faculty express a preference for collecting information from these databases in PDF format as opposed to HTML or full text. This suggests a reliance on peer networks for database discovery and a clear preference for a specific format for information retrieval.

Impact

The analysis highlights that the majority of faculty members experience a significant positive impact from using the online databases available in the library, with very few reporting no impact. This underscores the profound and beneficial influence these databases have on their academic and personal growth.

Conclusion

The study clearly indicates that faculty members at Sree Buddha College of Engineering, Alappuzha, frequently utilize online databases and possess a high level of awareness regarding the various databases offered by the library. However, the findings also reveal several challenges, including inadequate training programs, limited awareness, outdated databases, issues related to database collections, and insufficient terminal availability. It is crucial for both library professionals and management to recognize the importance of online databases and take proactive steps to address these challenges, thereby enhancing faculty productivity. This study is expected to serve as a catalyst for the implementation of more comprehensive training programs and increased awareness about online database access, ultimately leading to greater faculty satisfaction with the current library database offerings.

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