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# The Opportunities and Challenges of using Electronic Information Resources in Higher Education Teaching and Learning: A Case Study

**Salah Alkhafaji**

Associate Professor, Department of Information Systems & Technology  
Sur University College, Sur, Sultanate of Oman

 <https://orcid.org/0000-0002-9817-6498>

**Laila Sayed Samea**

Assistant Professor, Department of Information Systems & Technology  
Sur University College, Sur, Sultanate of Oman

## Abstract

*This study aimed to investigate the usage patterns of the electronic information resources in Sur University College to highlight the importance of these resources in the higher education environment. The descriptive research methodology was adopted using the questionnaire technique; a total number of 232 valid questionnaires were analyzed based on Kronbach Alpha test to measure the stability of the questionnaire content ( $\alpha = 0.817$ ) using SPSS. The study revealed the high impact of the e-resources in the teaching and learning process among SUC community. There is an overall satisfaction of the e-resources and the related services; the users are generally satisfied with the library support; however, the study outlined some of the challenges that may affect the effective use, such as the insufficient number of e-resources in Arabic, user preference of print form, the complexity of the search techniques and interfaces. The study recommends the library staff to conduct more workshops using innovative learning techniques, such as the gaming technique, to motivate the users to utilize the e-resources in the coursework and research extensively and to enhance their information literacy skills in dealing with them.*

**Keywords:** Electronic Information Resources, Teaching & Learning Resources, Information Literacy Instruction, Academic Libraries and Oman

## Introduction

The higher education institutions (HEIs) are challenged by the rapid development of information and communications technology (ICT) and its applications and services in the digital age; These technologies play a key role to support the HEIs in achieving their goals by enhancing the teaching and learning processes. One of the featured outputs of these technologies is the accessibility to the electronic information resources (EIRs), which can provide more opportunities to overcome many barriers comparing with the printed forms. Because of this ICT revolution, the technological developments and the day-to-day changes in the e-resources availability have amplified the teaching and learning processes to higher degrees. The technology has changed the educational processes to develop and use innovative and contemporary methodologies; the learning processes have become easier due to this development. Many resources can be accessed freely and referred for teaching and learning purposes (Andreou, 2001). However, these developments are surrounded by some challenges and obstacles that the HEIs may face, such as the technological infrastructure and the financial issues (Sife, Lwoga & Sanga, 2007).

## Goal & Objectives

The main goal of this study is to highlight the role of the EIRs in enhancing the learning process among Sur University College faculties, postgraduate, and undergraduate students, to conclude its opportunities and challenges in higher education. The study aimed to achieve the following objectives:

- Investigate the use of EIRs in daily coursework and activities.
- Evaluate the appropriateness of the information literacy training and workshops provided by the library in enhancing search and retrieval skills in the electronic databases.
- Identify the user's satisfaction with the relevance of the EIRs available at the Sur University College library.
- Articulate the opportunities and challenges which affect the access and usage with possible suggestions.

## Literature Review

The relevant literature reveals the great interest in the impact of the digital forms of information resources on the higher education processes. By exploring the research, which was carried out in this field, we identify some key areas and perspectives, such as the user awareness, expects, the attitudes towards the E-resources vs. print forms, assessing the use and satisfaction levels of specific categories of the users such as undergraduates, postgraduates and faculties, the impact on the teaching & learning process, the assessment and challenges and other constraints.

The level of awareness and usage of electronic information resources available were measured at two medical colleges at Al-Jouf University. According to the results, the undergraduate students use e-books more than the other forms; the students who are dissatisfied with the electronic databases prefer to use the general internet resources. It was recommended to provide medical students with needed information literacy skills to improve the level of awareness and usability of electronic information resources (Ahmed & Al-Reyae, 2017). In the same way, another research was conducted to investigate the usage of electronic information resources by the academic staff of Umm Al-Qura University. The

findings showed that the academic staffs depend on these resources on the research and teaching process as well, the challenging issues were mainly related to the internet speed in downloading the resources and the insufficient number of computers, the study recommended providing training programs to maximize the effective use of the e-resources (Alzahrani, 2016).

The user satisfaction of the services provided by the academic libraries in Pakistan was examined to leverage the use of electronic information resources in 8 university libraries; the results showed that the Pakistani university libraries provide effective electronic information resources (Mirza & Mahmood, 2012). On the other hand, the case of electronic information resource sharing among the research community of the University of Peshawar was studied. The preferred forms of resources to share were the online thesis, research papers, and conference papers, respectively. The study recommended the university library to provide additional facilities such as the online discussion forums and to provide more PCs in the computer lab (Ahmad, Ahmad & Kamran, 2019).

The usage behavior was investigated and discussed in seven Chinese universities, which provide access for their users to the "National Science and Technology Library." The study indicated that the majority of the e-resources users are from graduate students and staff members; also, it showed that the research work, teaching, and staff development are the main purposes of the usage (Zhang, Ye & Liu, 2011). The behavior of the postgraduate students in using the e-resources was examined at the Eastern University in Sri Lanka using the "Unified Theory of Acceptance and Use of Technology Model," which showed that postgraduate students are aware of this electronic form and its importance to their research work. Also, the research model stated that the students have the intention to use the electronic information resource based on some factors such as the availability of the related facilities and services (Jayakanathan & Jeyaraj, 2019).

A model was developed to study the factors which affect the use of electronic information resources from the ICT self-efficiency perspective among final year undergraduate students of four state

universities in Sri Lanka in the context of the self-efficacy theory. The results pointed to the direct and negative relationship between the ICTSE and the use of the EIRs; the results indicated the role of the training in improving the use of EIRs (Alahakoon & Somaratne, 2018).

Some other studies focus on the analysis of the services and facilities related to the e-resources, for example, the purpose of e-resources usage at Dhaka University Library was studied to examine the user satisfaction and to identify the problems and barriers that are surrounding the users while accessing the service (Habiba & Chowdhury, 2012). The usage and level of satisfaction of electronic information resources among the students of the Postgraduate Institute of Medicine Library at the University of Colombo were investigated, the study stated that, the majority were using the electronic information resources for their research purposes (98.6%). The level of satisfaction was relatively high (Sritharan, 2018).

The union subscription on the e-resources services through the academic library consortia is one of the important approaches nowadays for many reasons, not only because of the financial matters, but also for the benefit of the resource sharing, e.g., the diversity in the coverage and the vast amount of resources and electronic databases. A remarkable number of studies were done in this regard to identify the opportunities and challenges of this approach, e.g., the application of a strategic marketing approach of e-resources of the “Kenya Libraries and Information Services Consortium was surveyed” in a 29 university libraries in Kenya. The researchers indicated that most of the academic librarians don’t apply this approach to maximize the usage and satisfaction of the e-resources (Ndungu & Gikandi, 2018).

The growing interest of the university library to provide access to the EIRs was highlighted in a study about the Nigerian university Libraries, the majority of postgraduate students are aware of the availability of the resources, they depend on them in their research work; (35%) of them are unaware of that; one of the recommendations was to provide interactive information literacy programs about the electronic information resources to highlight their

impact and benefits on the research work. By that, the method of learning how to use the EIRs was considered as an important factor for the awareness and effective utilization; from their point of view, it indicates the extent to which the library users can utilize and benefit from the EIRs (Chimah & Udo, 2015).

The emerging issue of the availability and use of electronic information resources in the academic libraries, which is related to the financial crisis and the shrinking of library budgets, was raised in the case of recessed economy among undergraduate students in the Federal University of Technology. The findings revealed high usage of electronic information resources in the coursework concerning their positive impact on the students’ learning abilities. At the end of the findings, the researchers outlined the challenges that the university library faces in this regard, such as the weak internet connections (Fabunmi, 2017).

The challenges and issues which affect the use of e-resources should be managed through effective, and the proper actions of the university management are to provide the appropriate number of computers connected to the internet, Internet speed with high bandwidth, subscribing in relevant resources (Olajide & Folasade, 2018). The awareness programs are considered from the barriers to the effective use of the EIRs (Karunathna, 2015). Assigning an electronic resources librarian is one of the recommendations to leverage the opportunity for optimal use as one of the suggested solutions to the challenges (Ugwu & Orsu, 2017).

The role of the training and awareness in promoting the electronic information resources was investigated among the undergraduate students of the University of Venda in South Africa. The study found that the level of usage is relatively low and limited to a few numbers of electronic databases, according to the findings the students have confusion between the Internet resources and the electronic Information resources, so it was recommended to increase the awareness of the students of this form to enhance the usage (Tlakula & Fombad, 2017).

### **Research Methodology**

The study was based on the descriptive research methodology using the questionnaire technique. The

questionnaire was distributed during the academic year 2018-2019, using the quota sampling technique; the sample selection process considered the different levels and specializations of the participants to get a representative sample from the SUC community (faculties, postgraduates, and undergraduates). Out of 300 questionnaires given out, 232 valid returned questionnaires were analyzed. The questionnaire was divided into three sections.

I The demographic information of the respondents and their background.

II Information about the usage of electronic information resources.

III Information about the students' opinions and general satisfaction feedback of the EIRs and service.

The Likert five-point scale was used to measure the respondents' satisfaction levels for section III using the following parameters: 5 = (4.21-5.00) Very Satisfied; 4= (3.41-4.20) Generally Satisfied; 3 = (2.61-3.40) Moderately Satisfied; 2 = (1.81-2.60) Generally Dissatisfied; 1 = (1.00-1.80) Very Dissatisfied. The analysis was done using the statistical program (SPSS). The Cronbach's alpha coefficient value was used to measure the internal reliability of the data ( $\alpha = 0.863$ ), which means that the internal consistency is good, and the data are valid for further analysis (Gliem & Gliem, 2003).

### Sample Demographic Information

To achieve the objectives of the study, the demographic information of the sample was concluded in Table (1) as follows:

- The majority of the respondents are female (77.2%), while (22.8%) are male.
- The majority of the respondents (86.6%) were in the age group of 18-30, and (8.2%) were in the age group of 30-40, and (3.9%) were in the age group of 40-50, and (1.3%) of the respondents were in the age group of above 50.
- The distribution of the respondents according to their categories shows that, the majority are undergraduate students; (64%) are bachelor students, and (25%) are diploma students. The postgraduate students represent (2%) of the total sample.

**Table 1: Sample Demographic Information**

	Category	Frequency (n=232)	%
Gender	Male	53	22.8
	Female	179	77.2
		232	100
Age	18 – 30	201	86.6
	30 – 40	19	8.2
	40 – 50	9	3.9
	Above 50	3	1.3
		232	100
Respondent's Category	Instructor	20	9
	PG Student	5	2
	Diploma Student	58	25
	Bachelor Student	149	64
		232	100
Department	Business Dep.	125	53.9
	IST Dep.	99	42.7
	Engineering Dep.	6	2.6
	Foundation Dep.	2	0.9
		232	100
Major	Accounting	88	38
	Finance	5	2
	Management & Marketing	36	16
	Information Systems	61	26
	Information Technology	36	16
	Mechanical Eng.	2	1
	Architectural Eng.	4	2
		232	100

- (54%) of the respondents are from the Business Administration Department, (43%) are from the Information Systems & Technology Department, (3%) are from the Engineering Department, and (1%) are from General Foundation department,
- Concerning the specialization, the table shows that, (38%) of the respondents are from Accounting specialization, (26%) from Information Systems specialization, (16%) from Management & Marketing specialization, (16%) from Information Technology specialization, (2%) from Finance specialization, (2%) from

Architectural Engineering specialization, and finally (1%) from Mechanical Engineering.

**Results and Analysis**

**Electronic Information Resources Usage**

The main goal of this section is to identify the EIR usage rate and purposes among the SUC community. To achieve this goal, the following sets of questions were addressed:

- **Access to the Electronic Databases**

Table (2) shows that (70.3%) of the respondents know how to access the Electronic Databases, while

(29.7%) don't know how to access by themselves and need help from the library staff. The results indicate that (69%) of the respondents use the EIRs in the teaching & learning process, while (31%) don't use it. (40%) of the respondents strongly agree that they can access the EDBs easily in the library, (35%) agree that they can access the EDBs off-campus, (28%) strongly agree that they have Internet access so they can use the EDBs at home, while (34%) of the respondents agree that they can recover their passwords in case of login problems.

**Table 2: Electronic Information Resources Accessibility**

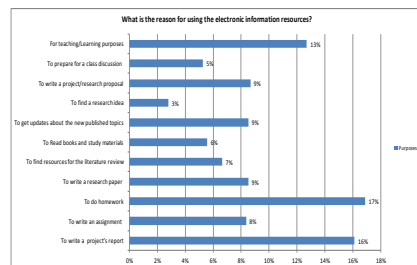
	Category	Frequency (n=232)	Percentage
Access to databases	Yes	163	70.3
	No	69	29.74
		232	100
Do you use the library databases to support your learning/teaching?	Yes	160	69.0
	No	72	31.0
		232	100
How often do you use the electronic databases available through SUC library website? (n=160)	Daily	27	17
	Several times a week	30	19
	Weekly	51	32
	Once a month	36	23
	Rarely	16	10
		160	100
How did you learn how use and search the electronic databases? (n>160)	Library staffs, Guides and workshops	64	21.6
	Course Instructor	75	25.3
	Self Learning	77	26.0
	My Colleagues	80	27.0
		296	100

It was also revealed that, the usage frequency ratios of the EDBs through SUC library website are relatively high; where (32%) of the respondents use the EDBs weekly, (23%) use them once a month, (19%) use them several times a week, (17%) use the EDBs daily, while (10%) rarely use them.

Concerning the methods of learning how to use and search EDBs, the respondents stated that various methods were used; (27%) learn to use EDBs from their colleagues, (26%) by self-learning, (25%) from the course instructor and (22%) from the library staff and guidelines, as shown in table (2).

- **The Purposes of Using Electronic Information Resources (EIRs)**

There is a diversity in the purposes that motivate the respondents to use the EIRs as shown in fig. (1):

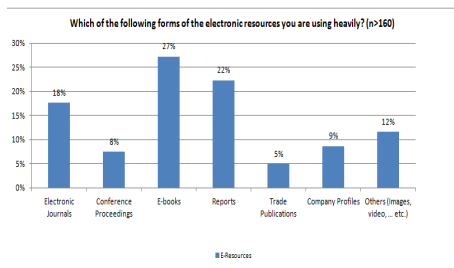


**Figure 1: The purposes that motivate the users to use the electronic information resources**

The purpose of doing homework was ranked as the 1st with a percentage of (17%), followed by the usage to write project reports (16%), for teaching/learning processes (13%).

**• The Types of Electronic Information Resources (EIRs)**

The respondents were asked to indicate the types of e-resources which they use heavily in their teaching/learning; the responses are as follows:



**Figure 2: The forms of electronic information resources with heavy use**

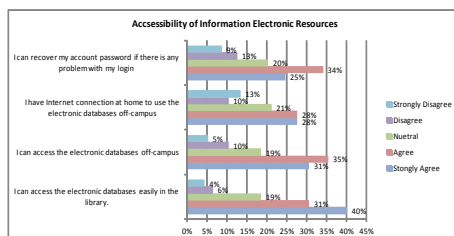
According to figure (2), the respondents use various types of EIRs, such as (E-journals, E-books, Conference proceedings, reports... etc.). The respondents heavily use the e-books among the other forms with a ratio of (27%).

**Users' Attitudes and Level of Satisfaction of the Electronic Information Resources**

This section aims to identify the attitude of the respondents towards the EIRs, using Likert five-point scale.

**• The Accessibility of the Electronic Databases**

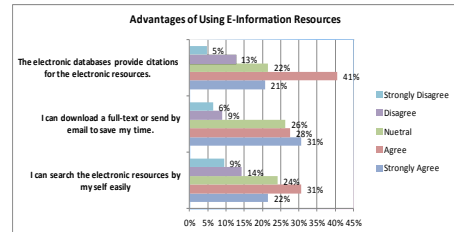
Figure (3) indicates that (40%) of the respondents strongly agree that they can access the EDBs easily in the library, (35%) agree that they can access the EDBs off-campus, (28%) strongly agree that they have Internet access to use the EDBs at home, while (34%) of the respondents agree that they can recover their passwords in case of login problems.



**Figure 3: The Accessibility of the Electronic Databases**

**• The Advantages of Using the Electronic Databases (EDBs)**

Figure (4) provides a detailed analysis of the respondents' satisfaction and awareness rates of the EDBs features and advantages.

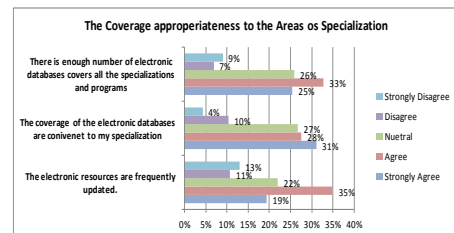


**Figure 4: The Advantages of Using the Electronic Databases**

(31%) of the respondents strongly agree about the advantages of downloading the full text or sending by email, (41%) agree with the citing and referencing options and features. Concerning the smooth self-search and use of the EIRs, the ratio of the respondents who agree is (31%).

**• Database Coverage Concerning the Areas of Specialization**

Figure (5) summarizes the satisfaction levels of the EDBs coverage. A total of (59%) of the respondents strongly agrees and agree about the convenience of the coverage to their specialization. Regarding the sufficiency of the number of e-resources available to their areas of specializations, a ratio of (33%) agrees according to the level of satisfaction.



**Figure 5: Databases coverage concerning the Areas of Specialization**

**• Library Support**

The analysis of the satisfaction levels of the library support as shown in figure (6) indicates that, (44%) of the respondents strongly agree that the workshops and training provided by the library support them, (37%) agree about the sufficient number of computers in the library to search the EIRs, (32%) agree that the library provides useful

EIRs and (36%) agree that they can find the links to the EIRs easily.

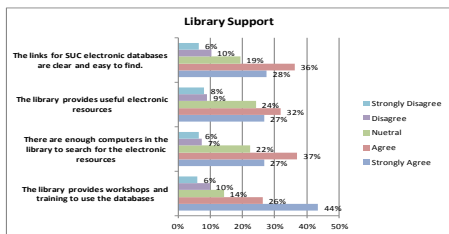


Figure 6: Library Support Services

• **E-Resources vs. Print Resources**

Figure (7) shows that (35%) of the respondents agree that they depend mainly on electronic journals. Concerning the preference of access to the databases through the mobile phones, (31%) of the respondents agree, and about the print form of electronic information resources, (29%) agree that they prefer the e-resources.

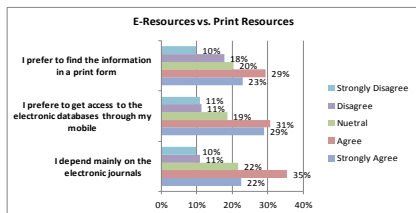


Figure 7: E-Resources vs. Print Resources

• **Challenges of Effective Utilization**

The respondents were asked to indicate their level of agreement regarding the problems that may challenge their use of the EIRs as shown in figure (8):

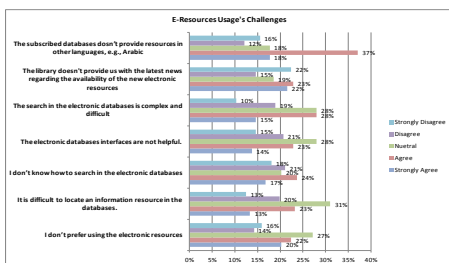


Figure 8: E-Information resources Challenges

(37%) agree about the lack of EIRs in languages other than the English language. (28%) agree about the complexity of the search techniques and retrieval tools in the EDBs. (27%) of the respondents stated that they are moderately satisfied (numeral) regarding the preference to use the print forms. (23%) agree that the library should provide updated news about the latest electronic resources. The difficulty of using the user interfaces scored the rate of (23%) for the respondents who agree with this statement. The respondents agree that they don't have the abilities and skills to search in the EDBs by themselves with a ratio of (24%).

**The Overall Satisfaction of the EIRs & Related Services**

About the overall satisfaction, figure (9) reveals the following:

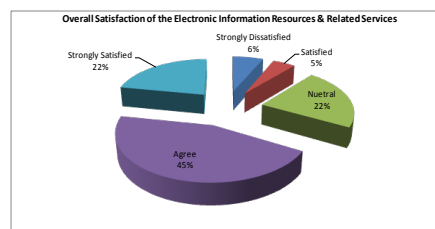


Figure 9: Overall Satisfaction of the E-Resources & Related Services

A percentage of (19.1%) of the respondents are strongly satisfied, (45.1%) of the respondents are satisfied, (23.5%) are moderately satisfied, while (4.9%) are dissatisfied and (7.4%) are strongly dissatisfied.

Concerning the average value of each statement, the respondents are generally satisfied with the 17 statements related to the accessibility of the electronic databases, while they are moderately satisfied with eight statements which are related to the challenging issues as included in the consolidated table (3).

Table 3: Average Values of Users' Attitudes and Level of Satisfaction of the E-Resources

Category	Statement	Average	Degree	Mode	Median	SD
Accessibility of Information Electronic Resources	I can access the electronic databases easily in the library.	4.0	Generally Satisfied	5	4	1.112
	I can access the electronic databases off-campus	3.8	Generally Satisfied	4	4	1.148

Accessibility of Information	I have Internet connection at home to use the electronic databases off-campus	3.5	Generally Satisfied	5	4	1.348
	Electronic Resources	I can recover my account password if there is any problem with my login	3.5	Generally Satisfied	4	4
Advantages of using E-Resources	I can search the electronic resources by myself easily	3.4	Generally Satisfied	4	4	1.238
	I can download a full-text or send by email to save my time.	3.7	Generally Satisfied	5	4	1.187
	The electronic databases provide citations for the electronic resources.	3.6	Generally Satisfied	4	4	1.093
The Coverage appropriateness to the Areas of Specialization	The electronic resources are frequently updated.	3.4	Generally Satisfied	4	4	1.273
	The coverage of the electronic databases is convenient to my specialization	3.7	Generally Satisfied	5	4	1.14
	There are enough number of electronic databases covers all the specializations and programs	3.6	Generally Satisfied	4	4	1.199
Library Support	The library provides workshops and training to use the databases	3.9	Generally Satisfied	5	4	1.231
	There are enough computers in the library to search for the electronic resources	3.7	Generally Satisfied	4	4	1.133
	The library provides useful electronic resources	3.6	Generally Satisfied	4	4	1.206
	The links to electronic databases are clear and easy to find.	3.7	Generally Satisfied	4	4	1.17
E-Resources vs. Print Resources	I depend mainly on the electronic journals	3.5	Generally Satisfied	4	4	1.231
	I prefer to get access to the electronic databases through my mobile	3.6	Generally Satisfied	4	4	1.305
	I prefer to find the information in a print form	3.4	Generally Satisfied	4	4	1.283
Challenges of Effective Utilization	I don't prefer using the electronic resources	3.2	Moderately Satisfied	3	3	1.34
	It is difficult to locate an information resource in the databases.	3.1	Moderately Satisfied	3	3	1.212
	I don't know how to search in the electronic databases	3	Moderately Satisfied	4	3	1.361
	The electronic database interfaces are not helpful.	3	Moderately Satisfied	3	3	1.257
	The search in the electronic databases is complex and difficult	3.2	Moderately Satisfied	3	3	1.202
	The library doesn't provide us with the latest news regarding the availability of the new electronic resources	3.1	Moderately Satisfied	4	3	1.462
	The subscribed databases don't provide resources in other languages, e.g., Arabic	3.3	Moderately Satisfied	4	4	1.319
	There are no more electronic resources relevant to my specialization	3.1	Moderately Satisfied	4	3	1.355



- According to the table (3) also, most of the respondents are generally satisfied with the coverage of the subscribed EIRs that are related to their specialization area. Hence it is observed that, the frequent update of the e-resources scored an average level of satisfaction (3.4).
- We notice that, there is a general satisfaction of the library support. The satisfaction of the library workshops ranked as the first criterion in this category with an average (3.9), and it was ranked as the second criterion among the whole 25 criteria.
- It is evident that, the respondents prefer to get access to the EDBs from their mobiles (Average = 3.6), and still there are some users prefer the print form of the information resources (Average 3.4).
- According to the table (3), the respondents are moderately satisfied with the factors that may affect their use of the EIRs; the main problem is the unavailability of the EIRs in the Arabic language (Average = 3.3).

### Finding

From the previous results and analysis, we found the following:

- Various categories of users were included in the sample according to the analysis of the demographic information, most of the respondents are Bachelor students, and the majority of the respondents (86.6%) are in the age group (18-30), which implies that the majority of the EIRs users are from undergraduate students.
- The majority of the respondents (68%) agreed that the access and use of EIRs are easy, they use the EDBs on a daily and weekly basis. “This is similar to some other studies findings mentioned in the literature review.”
- The majority of the respondents (69%) are aware of the availability of the EIRs in the Learning Resources Center, most of them (68%) frequently use the EDBs.
- The respondents achieve their teaching/learning and research goals by using different forms of EIRs; E-books came in the first rank, The EIRs cover’s the specialization topics (AV = 3.7)
- There are multiple methods of how to use the

EDBs; among these methods, the library training and workshops which are playing an important role in this process with an average of (3.9). The students and the faculties are becoming more aware and self-dependent in dealing with the EIRs, and with the help of the library instruction, this will support especially the students to cope with any new technologies.

- The majority of the respondents have no issues accessing the EIRs through the different access methods (in-campus and off-campus).
- The EIRs provide useful features such as (citing and referencing services, search engine, downloading full text, sharing, printing, emailing the search results, etc.), the majority of the respondents are aware of that.
- The average rate of preferring the electronic forms of information resources is (AV=3.4).
- There is a general satisfaction of the EIRs Related Services.

### Conclusion & Recommendations

This study investigated the usage of electronic information resources (EIRs) among Sur University Community to outline the challenges they face and to reinforce the opportunities that can maximize the efficiency and effectiveness of the available resources. The findings revealed a general satisfaction of the EIRs and their related services among the respondents, especially the workshops and library guides and tutorials; they are used to support the coursework and the research work as well. However, there are some areas of improvement that have been identified for further enhancement to strengthen the role of the EIRs in higher education. So it is a shared responsibility among the SUC community and the HEI community to leverage the culture of using the EIRs and to integrate into the teaching, learning, and research process, which will add value and create a positive return on investment (ROI). Based on the findings, we recommend the following actions:

1. Enhance the EIRs techniques and tools by adding new resources.
2. TLRC should conduct more training, workshops and tutorials to enhance the user abilities and information literacy skills in dealing with the EIRs.

3. TLRC should deploy innovative and interactive learning techniques, such as gaming techniques.
4. TLRC center should devote its efforts to invest the content of the guidelines and tutorials regarding the self-use and search in the EDBs.
5. Increase the EIRs resources in the Arabic language.
6. Encourage the postgraduate students to use the EIRs as an important tool for them
7. Provide users with interactive media to strengthen the self-learning abilities.
8. Use various methods to announce the EIRs updates, news, and the related services.
9. Update the LRC website with the online chatting facility with the library staff for any support.

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### Author Details

**Salah Alkhafaji**, Associate Professor, Information Systems & Technology Department, Sur University College, Sur, Sultanate of Oman, **Email ID:** keats\_7771@yahoo.com

**Laila Sayed Samea**, Assistant Professor, Information Systems & Technology Department, Sur University College, Sur, Sultanate of Oman