



# **The Degree of the Graduate Students' usage of the Internet in Scientific Research from their Perspectives at the Jordanian Universities**

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### **Authors' contributions**

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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## **ABSTRACT**

This study aimed at identifying the degree of graduate students' usage of the internet in scientific research from their perspectives at the Jordanian universities. The researchers used the survey method and developed the instrument of the study, a questionnaire consisted of (40) items. Its validity and reliability were confirmed. The questionnaire was distributed to the sample which consisted of (440) students from Jordanian universities. The findings revealed that students' usage of the internet in scientific research and in identifying statement of the problem was at a medium degree; and their usage of the internet was high in preparing the chapter of the literature review and previous studies and in publishing scientific research papers, too and low in conducting team research. The results indicated that there are statistical significant differences attributed to gender on the four domains in favor of the females. No statistical significant differences were indicated attributed to the type of the college (scientific, literary) on the four domains of the instrument. The results also indicated that there are significant statistical differences attributed to the graduate program level in favor of the doctoral students.. The conclusion emphasized the necessity to hold training courses for the graduate students in the usage of the internet and data bases in scientific research.

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## 1. INTRODUCTION

The scientific and technological progress imposed a new framework for the concept of searching for information and methods of storing and retrieval. As a result of this progress, scientific research has moved from the stage of searching for information in traditional libraries to the stage of searching for it on the Internet, and the so-called digital or electronic libraries have appeared (Al-Qudah 2015). Thus, multimedia information has replaced paper text information, and the researcher is freed from geographical, linguistic and cultural restrictions to obtain Information quickly, easily and conveniently.

The Internet is one of the most modern sources in obtaining knowledge, as it allows the researcher to obtain information very quickly from different parts of the world, and it also enables him or her to view all that has been written in his field of research and specialization, and allows him or her to refer to various information sources, without spatial restrictions , or cultural, or geopolitical boundaries (Al-Qudah 2015) .The multiple and advanced search engines, with their tremendous speed, and the ability to refer to various sources of knowledge, make it easier for the researcher to move from one site to another to access the required information through the search. The search engines provide the researcher with access to the required information through many entrances such as the word, the topic, the author, the writer, the authority of the publication and publication, the university, the country, or so on. The Internet is also distinguished in the field of research by its ability to update and develop its information at a high speed, in which it greatly outperforms the updating of books and paper research.

In fact, the Internet is the largest library in human history, open to everyone from all over the world and in different languages and cultures. Books, journals and scientific periodicals that publish refereed research in all academic disciplines are available in this library. It also includes the latest research and scientific publications in specialized refereed scientific journals [1]. The Internet has become a familiar tool for postgraduate students to access electronic information and scientific messages in different universities. It also enables researchers to exchange electronic messages,

exchange experiences, dialogue and debate on scientific research topics [2].

The Internet has become the most important research tool for most researchers and graduate students to complete their research and studies, because this network is a repository of previous studies in various fields of research, working to spread the culture of scientific research and benefiting from Internet technologies, and creating websites for universities, colleges, institutions and research and scientific forums (Hamdawi and Bendaoud, 2012).

**Study Problem and Questions:** The researchers considered that this topic is worthy of study to identify the degree to which these students use the network for scientific research purposes. The researchers browsed the previous studies through the search engines Yahoo, Google, AltaVista, Lycos, and they conducted a survey of previous studies and master's and doctoral theses in the libraries of the Jordanian universities but they did not find any study that dealt with this topic.

The previous justifications reinforced the researchers' desire to conduct this study, which aimed to identify the degree to which graduate students in Jordanian universities use the Internet in scientific research from their point of view through the answers to the following study questions:

1. What is the degree to which postgraduate students in Jordanian universities use the Internet in scientific research from their point of view?
2. Are there statistically significant differences in the degree to which graduate students in Jordanian universities use the Internet from their point of view due to the variables of gender (male, female), college type (scientific, literary) and program level (Master's, PhD)?

### 1.1 Objectives of the Study

This study aimed to achieve the following objectives:

1. Identifying the degree to which graduate students in Jordanian universities use the Internet in scientific research from their point of view.

2. Identifying the effect of gender variables (male, female), college type (scientific, literary) and program level (Master's, PhD) and checking if there are statistically significant differences for any of these variables in the degree to which graduate students in Jordanian universities use the Internet in research from their scientific point of view, these variables are attributed.

## 2. PROCEDURAL DEFINITIONS

**Graduate students (procedural):** All students enrolled in postgraduate programs in Jordanian universities, whether scientific or non-scientific programs for the 2016/2017 academic year.

**Jordanian Universities (procedural):** They include Jordanian public universities that offer graduate programs at the master's or doctoral level or both in literary and scientific disciplines for the first semester of the 2016/2017 academic year.

**Scientific Research (procedural):** It is the efforts made by graduate students to conduct research and studies using the scientific methodology to reach scientific results to research a problem and explain it in the light of previous studies and the scientific scoop reached by man.

**Electronic Research (procedural):** It is a search in the library carried out by the researcher or one of the library workers through the computer instead of searching in hand-printed sources of information, where it is possible to search the library index and databases carried out by specialized companies. **Electronic databases (procedural):** It is an organized list of sources of information that gives the researcher citations, i.e. a reference citation that enables the researcher to find complete information or provide it with its full text.

**The Internet: (procedural):** It is the connection to the global communications network, which includes millions of computers connected to each other through telephone lines that work around the clock, and through which the student can obtain the information required in order to support the scientific research process.

**Previous Studies:** Many previous studies related to the subject of the study have been

conducted, and the following is a presentation of some of them:

Ealy's study results [3] indicated that graduate students (PHD) suffer from the weakness in the skills of using the Internet in scientific research. Al-Matrif's study results (2000) indicated that graduate students showed more interest than undergraduate students in using the Internet for scientific research purposes. Al-Sharhan's study results (2002) indicated that the tremendous speed in obtaining the most recent information in various search engines is among the most important reasons for Saudi graduate students to use the Internet. Refaat's study results (2002) revealed the superiority of males over females in the use of the Internet and for educational and scientific research purposes represented the most important motives for use followed by entertainment purposes. Jagboro's study results (2003) revealed that the use of the Internet ranked fourth among the sources of the scientific research and it is statistically significant through the provision and availability in the use of the Internet for scientific research. The study of Al-Mousa [4] emphasized the importance of using the Internet in scientific research. Al-Jurf's study results [5] indicated that (65) of King Saud University faculty members and (4%) of graduate students were able to extract research from the Internet. This emphasized the necessity of holding training courses for them.

Saleh and Matar's study results [6] indicated that most graduate students in the faculties of education in Gaza use the Internet in scientific research. Adam's study results [7] indicated that graduate student's attitudes are positive towards using the Internet in scientific research. Abdul Hakim and Shamal's study (2013) indicated that the graduate students' dependence on electronic publishing amounted to (80.29 %) at Al-Mustansirya University in Baghdad, and the most used search engine was the google search engine. Al-Hajj's study results [8] revealed that (62%) of the graduate students at the University of Kasidi Merbah in Algeria believe that the Internet meet all their research needs and (58%) of them lack skills to search information through the Internet.

**Commenting on Previous Studies:** This study is distinguished from previous studies in that it aims to show the degree to which graduate students in Jordanian universities use the Internet in scientific research from their point of view, noting that the previous studies, which the

researchers reviewed in this context, did not address this subject, according to the researchers' knowledge. The researchers referred to databases such as EBESCO / ERIC and used search engines Google, Yahoo, Infoseek, Altavista as electronic sources. She also went to the traditional university libraries and searched in periodicals, scientific journals and paper books available in them, but they did not find any study that dealt with the subject of this study. The current study agreed with most of the previous studies in the approach followed by those studies, which is the descriptive survey method, such as the study of Al-Matrif (Al-Matrif, 2000), the study [2], the study [9], and the study (Abdul Hakim and Shamal 2013). This study agreed with most of the previous studies in using the questionnaire as a tool for data collection. Most studies also emphasized in their recommendations the need to train graduate students and faculty members on the use of the Internet in scientific research.

### 3. METHODOLOGY

This study aimed to identify the degree to which graduate students use the Internet in Jordanian universities from their point of view.

**The Population of the Study:** The study population consisted of all graduate students in the following Jordanian public universities: Al al-Bayt University, the Hashemite University, and Yarmouk University, who were registered in the first semester of the academic year 2016/2017 and numbered (2052) male and female students.

**The Study Sample:** The study sample consisted of (440) male and female students, the sample was randomly selected from the three Jordanian universities that made up the study population. Table (2) shows the distribution of study sample members according to the study variables.

**The Instrument of the Study:** To achieve the objectives of the study, the researchers developed a questionnaire after reviewing previous studies such as Al-Sharhan's study

(2000), Kulaib's study (2002), Al-Jurf's study (2003), Saleh and Matar's study [6] and Hajj's study (2015). The study instrument is a two-part questionnaire. The first part which dealt with the study variables gender (male, female), type of college (literary, scientific), and the level of the graduate program (Master, PhD). As for the second section, it dealt with the degree to which graduate students in Jordanian universities use the Internet in scientific research from their point of view, as well as the obstacles they face in using the Internet in scientific research. The researchers used the triple Likert scale one score out of the three degrees (high, medium, and low), are digitally represented by 1, 2, 3, respectively.

The following scale was adopted for the purposes of analyzing the results: From 1.00-1.66 low;

1.67-2.33 medium

2.34 - 3.00 high

The scale was calculated by using the following equation:

$$\frac{\text{upper bound (3)} - \text{lower bound on the scale (1)}}{\text{Number of classes required (3)}} = 0.66$$

And then add the answer (0.66) to the final of each category.

**The Apparent Validity of the Instrument:** The apparent validity of the questionnaire was confirmed by presenting it to (8) referees from faculty members with specialization and experience in the universities of Al-al-Bayt, Yarmouk and Al-Hashimiya. They were asked to express their opinions and observations about the items of the questionnaire, in terms of the degree of suitability of each item to the field to which it belongs, the degree of clarity of each paragraph, the soundness of its linguistic formulation, its suitability to achieve the goal for which it was set, and the proposal of what each referee considers by deleting, adding or re-adding drafting.

**Table 1. The distribution of graduate students in the study community by university, gender, and type of college**

University	Collage Type		Gender		Program Level	
	Scientific	Literary	Male	Female	Masters	PHD
Al-al-Bayt	59	447	302	204	498	8
Hashemite	369	433	214	615	817	12
Yarmouk	98	619	285	432	508	209
Total	553	1499	801	1251	1823	229

**Table 2. Distribution of study sample members according to variables**

Variables	Categories	Frequency	Percentage
Gender	Male	280	63.6
	Female	160	36.4
Collage Type	Literary	320	72.7
	Scientific	120	27.3
Program	Masters	402	97.4
Level	PHD	38	8.6
Total		440	100.0

After restoring the refereed copies, some of the questionnaire's items were modified and some were deleted in the light of the referees' opinions, so that the number of items became (40), after it was (44) items. The researchers set an agreement percentage (80%) as a minimum to accept the items of the questionnaire, and the questionnaire obtained an agreement percentage (90%), which indicates a high agreement rate, and thus confirms the apparent validity of this performance.

**The Reliability of the Study Instrument:** To ensure the reliability of the instrument, it was applied to the test retest method on a 40 exploratory sample outside the study sample. The method involved administering the tool twice with an interval of two weeks between the first application and the second one. Alpha results were as follows:

It was found that the values of the reliability coefficients for the domains were high, as the value of the reliability coefficient for the first domain was (0.88), for the second domain it reached (0.91), for the third domain it was (0.86), and for the fourth domain it reached (0.90). This indicates that the questionnaire is highly reliable, reaching (0.91), which is an indication of its validity to achieve the objectives of the study and answer its questions. Therefore, its results can be relied on for analysis, interpretation and discussion.

## 4. STUDY VARIABLES

### 4.1 Independent Variables

- Gender: (male and female)
- College type: (literary, scientific)
- Graduate program level: (Masters, PhD)

**Dependent Variable:** The degree to which Graduate students in Jordanian universities

usage of the Internet in scientific research from their point of view.

### 4.2 Statistical Treatment

1. The statistical program (SPSS) was used to extract the results of the questionnaires distributed to the study sample, where the arithmetic averages, standard deviations, analysis of multiple variance, and rank were used for each paragraph of the study tool and for each field of the tool, and the tool as a whole.
2. The researchers used a (t) test to test the significance of the difference between the averages of students' use in each application.
3. The two researchers used triple analysis of multiple variance to measure the effect of graduate students.

## 5. RESULTS AND DISCUSSION

Results related to the first question: What is the degree to which graduate students at Jordanian universities use the Internet in scientific research from their point of view?

Table (4) shows the arithmetic averages of the degree of use of the Internet by graduate students in Jordanian universities in scientific research from their point of view ranged between (2.45-2.54). The field of "degree of Internet use in preparing a chapter of review of literature and previous studies" came in the first place with the highest arithmetic mean of (2.54) and standard deviation of (0.370) and at a high degree, while the field of "degree of using the Internet in publishing scientific research" came in the second place with a mean of (2.52) and standard deviation of (0.349) and at a high degree. The field of "degree of using the Internet in defining the study problem and preparing a plan and research instrument" came in third place, with an arithmetic mean of (2.29) and a standard

deviation of (0.363) and a medium degree. The domain of using the Internet in carrying out joint research” came in the fourth place, with an arithmetic average of (1.57), a standard deviation of (0.326) with a low degree, and the arithmetic mean of the total degree (2.14) and a standard deviation of (0.289) with a medium degree.

Table (5) shows that the arithmetic averages of the paragraphs of the domain of the degree of Internet use in preparing the theoretical literature chapter and previous studies ranged between (2.65-2.42) Statement 9 on the Internet use for finding relevant periodicals and journals was the highest, with a mean of (2.65) and a standard deviation of (0.550) researching sources and references related to students scientific research came in the second place with an average of ( 2.59) a standard deviation of (0.554) and at a high degree. Thirdly, statement 10 on mobility and accessibility regardless of local geographical, temporal and linguistic limitations ranked in the third place with a mean of (2.4) a standard deviation of (0.561) and at a high degree. In the fourth place, statement on the

Internet support for quick preparation of theoretical literature chapter ranged with an arithmetic mean of (2.42) and a standard deviation of (0.525) at a high degree. Totally the arithmetic mean of the degree of the domain of using the Internet in preparing a chapter of theoretical literature and previous studies (2.54), a standard deviation of (0.370), and a high degree

**The Second Domain: The Degree of Internet Usage in Publishing Scientific Research:** To answer the items of this domain, the arithmetic averages and standard deviations of the degree of Internet usage in publishing scientific research were calculated.

Table (6) shows that the arithmetic averages of the paragraphs of the domain of the degree of the Internet usage in publishing scientific research ranged between (2.63-2.42) at a high degree. Two statements (22,28), on timely publication of research papers in comparison with traditional method and on benefiting from previous studies for preparing own paper, were

**Table 3. Cronbach's alpha internal consistency coefficient and the repeat invariance of the domains and the total score**

Domain	Re-Internal Reliability	Internal Consistency
Defining the study problem and preparing a plan and research instrument	0.88	0.76
Preparing a chapter on theoretical literature and previous studies	0.91	0.72
Conducting joint research paper	0.86	0.78
Publication of scientific research paper	0.90	0.71
Total Degree	0.91	0.89

**Table 4. Arithmetic averages and standard deviations of the use of the Internet in scientific research from their point of view, arranged in descending order according to the arithmetic averages**

Rank	Number	Domain	arithmetic averages	Standard deviation	Degree
1	2	The degree of using the Internet in preparing a chapter of theoretical literature and previous studies	2.54	0.370	High
3	4	The degree of using the Internet in publishing scientific research	2.52	0.349	High
3	1	The degree of using the Internet in defining the study problem and preparing a plan and research instrument	2.29	0.363	Medium
4	3	The degree of using the Internet in conducting joint research	1.57	0.326	Low
The Total Degree for All Domains			2.14	0.289	Medium

**Table 5. The arithmetic averages and standard deviations of using the Internet in preparing a chapter of review of literature and previous studies**

Rank	Number	Items	arithmetic averages	Standard deviation	Degree
1	9	The Internet helps me find what is published in scientific journals and electronic periodicals.	2.65	0.550	High
2	8	The Internet helps me to search for research sources and references related to my scientific research.	2.59	0.554	High
3	10	The Internet helps me access what was published on the subject of my research electronically, without being bound by geographical, temporal and linguistic restrictions.	2.49	0.561	High
4	11	The Internet helps me to prepare the chapter of theoretical literature and previous studies in a short time	2.42	0.625	High
The arithmetic mean of the degree of Internet use in the preparation of the theoretical literature chapter and previous studies.			2.54	0.370	High

**Table 6. The arithmetic averages and standard deviations of the degree of the Internet usage in publishing scientific research**

Rank	Number	Items	arithmetic averages	Standard deviation	Degree
1	22	Internet helps me to publish my scientific research in a short time compared to the traditional method.	2.63	0.521	High
1	28	The Internet helps me refer to my research published online at anytime and anywhere quickly, easily and at a low cost.	2.63	0.547	High
3	26	26 The Internet helps me to follow the procedures for publishing my research and to inquire about any procedure easily and conveniently.	2.59	0.585	High
4	27	The Internet helps me to get an unlimited number of my scientific research published electronically, according to my need and desire.	2.52	0.552	High
5	29	The Internet helps me to watch conferences and discuss research through videoconferencing.	2.48	0.584	High
6	23	The Internet helps me submit my research to scientific journals.	2.46	0.527	High
7	24	The Internet helps me quickly and easily receive feedback from residents in electronic scientific journals.	2.44	0.537	High
8	25	The Internet helps me to make the modifications required by residents in scientific and electronic journals and periodicals quickly and easily.	2.42	0.631	High
Arithmetic averages for the degree of the internet usage in publishing scientific research			2.52	0.349	High

ranked the highest with a mean of (2.63) and a standard deviation of (0.521).The statement (28) on “The Internet helps me refer to my research published electronically at anytime and anywhere quickly, easily and at a low cost” was ranked in the second place with an average of (2.63) and a standard deviation of (0.547) Statement 25 on

“The Internet helps me to make the modifications requested by the residents in the journals And scientific and electronic periodicals quickly and easily” was ranked eighth and last with an average of (2.42) and a standard deviation of (0.631).The total arithmetic mean of the field of the degree of Internet use in publishing scientific

research was (2.52) and a standard deviation of (0.349) at a high degree classification.

**The Third Domain defining the study problem and preparing a plan and research instrument:** The third domain is the degree of using the Internet in defining the study problem and preparing a plan and research instrument as shown below in Table (7).

Table (7) shows that the arithmetic averages of the paragraphs of the domain of the degree of Internet usage in defining the study problem and preparing the plan and the research instrument ranged between (2.50-2.01), where paragraph No. (3) stated that "the Internet was used in preparing the research instrument through the benefit from the previous studies "in the first place with a mean of (2.50) and a standard deviation of (0.538) at a high degree, while paragraph No. (1) and its text " I Use the Internet to determine the problem of the study" came in the last place with a mean of (2.01) and a standard deviation which reached (0.527) at a medium degree, and the arithmetic mean for the domain of the Internet usage in determining the study problem and preparing the plan and the research instrument was with an arithmetic mean of (2.29) and a standard deviation of (0.363) at a medium degree.

**The Fourth Domain: The degree of internet usage in conducting joint research:** To answer the paragraphs of this field, the arithmetic averages and standard deviations of the degree of Internet use in carrying out joint research were extracted, and Table No. (8) below illustrates this.

Table (8) shows that the arithmetic averages for the domain of the degree of Internet use in carrying out joint research ranged between (2.40-1.07), where paragraph No. (20) came with the text "The Internet helps me communicate with my colleagues in my major by e-mail.", in The first rank with a mean of (2.40) and a standard deviation of (0.588) and a high degree, while paragraph No. (18) and its text "The Internet helps me participate in seminars and scientific conferences by preparing joint working papers and participating in discussions" ranked last with an average of (1.07), with a standard deviation of (0.645), at a low degree. The arithmetic mean of the degree of using the Internet in carrying out joint research was (1.57), with a standard deviation of (0.326), with a low degree.

## 9. RESULTS RELATED TO THE SECOND QUESTION

Are there statistically significant differences in the degree of graduate students in Jordanian universities using the Internet from their point of view due to gender variables (male, female), college type (literary, scientific), and program level (scientific, literary)?

To answer this question, the arithmetic averages and standard deviations of the degree to which graduate students in Jordanian universities use the Internet from their point of view were extracted according to the variables of gender (male, female), type of specialization in the graduate program (literary, scientific), and type of program (scientific, literary), and Table No. (9) below illustrates this.

In order to demonstrate the significance of the statistical differences between the arithmetic averages, a triple analysis of multiple variance was used on the domains in (Table (9) and a triple analysis of variance for the tool as a whole in Table (10).

Table (10) shows: There are statistically significant differences ( $\alpha = 0.05$ ) due to the effect of gender in all areas, and the differences are in favor of females. There are no statistically significant differences ( $\alpha = 0.05$ ) due to the effect of the type of specialization in all fields. There are statistically significant differences ( $\alpha = 0.05$ ) due to the effect of the program level in all fields except for the degree of using the Internet in carrying out joint research, and the differences came in favor of the PhD.

It is evident from Table (11) that: there are statistically significant differences ( $\alpha = 0.05$ ) due to the effect of gender, where the p-value was 9.463, with a statistical significance of 0.002, and the differences came in favor of females. There are no statistically significant differences ( $\alpha = 0.05$ ) due to the effect of the type of specialization, where the value of P is 1.114, and the statistical significance is 0.292. There are statistically significant differences ( $\alpha = 0.05$ ) due to the effect of the program level, where the value of P is 5.189, with a statistical significance of 0.023, and the differences are in favor of the PhD.

**Table 7. Arithmetic averages and standard deviations of Internet use in defining the study problem and preparing a plan and research tool arranged in descending order according to the arithmetic averages**

Rank	Number	Items	arithmetic averages	Standard deviation	Degree
1	3	I use the Internet in preparing the research tool by making use of previous studies.	2.25	0.538	High
2	6	The internet helps me in refereeing my scientific research tools by sending them to arbitrators via e-mail.	2.38	0.585	High
3	5	Using the Internet, I was able to see many research plans, which helps in preparing the research plan.	2.33	0.552	Medium
4	2	I use the Internet to prepare the research plan	2.30	0.584	Medium
4	7	The Internet helps me access the tools of previous studies for preparing scientific research.	2.30	0.527	Medium
6	4	The Internet provides me with justifications for determining the problem of the study by looking at the recommendations of previous studies to determine the problem of the study.	2.20	0.627	Medium
7	1	I use the Internet to determine the study problem.	2.01	0.674	Medium
The arithmetic average of the degree of using the Internet in determining the study problem and preparing a plan and research instrument			2.29	0.363	Medium

**Table 8. Arithmetic averages and standard deviations of the items related to the domain of the degree of Internet use in carrying out joint research, arranged in descending order according to the arithmetic means**

Rank	Number	Items	arithmetic averages	Standard deviation	Degree
1	20	The Internet helps me communicate with my colleagues in the field by e-mail.	2.40	0.556	High
2	13	The Internet helps me shorten the time required to prepare a scientific research.	2.37	0.548	High
3	12	The internet helps me to get new information about my scientific research.	2.30	0.588	High
4	17	The Internet helps me to download and exchange files with specialists in my scientific research.	1.50	0.569	Low
5	21	The Internet helps me collect research data by asking Internet users to fill out a research questionnaire.	1.26	0.628	Low
6	14	The Internet helps me to conduct joint scientific research with specialists.	1.25	0.575	Low
6	16	The Internet helps me advance my scientific research by seeing and sharing the research work of others.	1.25	0.604	Low
8	18	The Internet helps me increase my research skills by cooperating with the largest number of specialists.	1.23	0.645	Low
9	19	The Internet helps me to learn about the statistical methods of other researchers that can be used in scientific research.	1.10	0.615	Low
10	18	18 The Internet helps me to participate in seminars and scientific conferences by preparing joint working papers and participating in discussions.	1.07	0.645	Low
The arithmetic mean of the degree of Internet use in conducting joint research			1.57	0.326	Low

**Table 9. Arithmetic averages and standard deviations of the use the Internet from their point of view according to the variables of gender, type of college, and program level**

			The degree of using the Internet in defining the study problem and preparing a plan and research tool	The degree of using the Internet in preparing a chapter of theoretical literature and previous studies.	The degree of using the Internet in carrying out joint research	The degree of using the Internet in publishing scientific research	Total Degree
Gender	Male	*x	2.45	2.5	2.43	2.49	2.46
		**p	0.369	0.397	0.347	0.359	0.305
	Female	x	2.55	2.6	2.49	2.58	2.55
		p	0.345	0.309	0.282	0.324	0.248
Type of colleges	Literary	x	2.48	2.53	2.45	2.51	2.48
		p	0.355	0.36	0.318	0.349	0.284
	Scientific	x	2.51	2.55	2.46	2.56	2.51
		p	0.386	0.396	0.348	0.347	0.299
Program Level	Masters	x	2.47	2.53	2.45	2.51	2.48
		p	0.355	0.363	0.319	0.346	0.28
	PHD	x	2.61	2.66	2.51	2.65	2.59
		p	0.428	0.429	0.388	0.355	0.357

\*x = arithmetic mean, \*\*p= standard deviation

**Table 10. Triangular multiple variance analysis of the effect of gender, type of colleges, and program level on domains**

	Source of variance	Domains	Sum of squares	Degrees of freedom	Mean of squares	P-value	Statistical significance
Gender	Hotelling = .028 H = .018	Defining the study problem and preparing a plan and research tool	1.108	1	1.108	8.603	0.004
		Preparing a chapter on theoretical literature and previous studies.	1.097	1	1.097	8.193	0.004
		Conducting joint research	0.413	1	0.413	3.912	0.049
		Publication of scientific research	0.853	1	0.853	7.215	0.008
Type of Colleges	Hotelling = .007 H = .586	Defining the study problem and preparing a plan and research tool	0.121	1	0.121	0.936	0.334
		Preparing a chapter on theoretical literature and previous studies.	0.067	1	0.067	0.503	0.479
		Conducting joint research	0.015	1	0.015	0.142	0.707
		Publication of scientific research	0.252	1	0.252	2.13	0.145
Program Level	Hotelling = .022 H = .053	Defining the study problem and preparing a plan and research tool	0.628	1	0.628	4.872	0.028
		Preparing a chapter on theoretical literature and previous studies.	0.601	1	0.601	4.485	0.035
		Conducting joint research	0.111	1	0.111	1.051	0.306
		Publication of scientific research	0.725	1	0.725	6.133	0.014
Total		Defining the study problem and preparing a plan and research tool	57.996	439			
		Preparing a chapter on theoretical literature and previous studies.	60.131	439			
		Conducting joint research	46.595	439			
		Publication of scientific research	53.367	439			

**Table 11. Three-way variance analysis of the effect of gender, major type, and program level on the overall score**

Source of variance	Sum of squares	Degrees of freedom	Mean of squares	P-value	Statistical significance
Gender	0.766	1	0.799	9.463	0.002
Type of colleges	0.090	1	0.090	1.114	0.292
Program Level	0.420	1	0.420	5.189	0.023
Error	35.283	436	0.081		
Total	36.540	439			

## 10. CONCLUSION

The results related to the first question showed that the overall degree of the use of the Internet by graduate students in Jordanian universities in scientific research was medium. The results of this study are in agreement with the results of Al-Sharhan study [2], Adam study (2001), Abdul Hakim and Shamal study (2013) and Al-Hajj study [8]. The researchers attribute this result to the fact that Jordanian universities provide graduate students with the ability to use databases that enable these students to refer to and use them for scientific research purposes, and they can obtain hard copies of the databases for the summaries of studies related to their studies, and that they can view the full version of the study that they find in databases. Note that referring to the electronic databases shared by Jordanian public universities facilitates access to a huge amount of studies and research related to the studies conducted by students and the master's theses they prepare, and it also enables them to keep abreast of the latest published electronically in the field of these students' research and studies quickly and easily, which is not provided by them. The traditional method is to search in traditional university libraries, which were limited to references and paper research.

The results of the study do not agree with the results of Ealey's study [3], which showed that graduate students (PhD) suffer from weakness in the skills of using the Internet in scientific research and do not agree with the results of the study of Jagboro [10], which resulted in the use of the Internet ranked fourth among the sources of scientific research with a rate of 17.2%, and it does not agree with the results of the Al-Jarf 's study [5], which showed that only 6% of faculty members and only 4% of graduate students at King Saud University were able to extract research from the Internet [11-14].

The statement that reads, "The Internet helps me to see what is published by scientific journals and electronic periodicals has the highest arithmetic average, and this item ranked first among the items of this field, noting that all the four statements that fall under this field had a high arithmetic average. The researchers attribute the reason for this is that the use of the Internet by postgraduate students provides them with an easy way to see what is published by scientific journals and electronic periodicals previous studies in a shorter time than usual.

The field of the degree of using the Internet in publishing scientific research ranked second in the four fields in the study tool. Note that all the eight paragraphs of this field were of a high degree. The results of the study in this field agree with the study of Abdel Hakim and Shamal (2013). The researchers attribute the reason for this to the fact that the Internet helps the graduate student and researcher in general to publish his scientific research in a shorter time than the traditional method, and the electronically published research enables researchers to refer to the published research at any time and any place with complete ease and speed. The internet authorizes. The scope of the degree of Internet use in defining the study problem and preparing a plan and research tool occupies the third rank, with a medium degree of use. The Internet enables the graduate student to view the study tools in previous studies, and helps him/her in preparing his/her study tool. It helps him/her to define the study problem as well. As for the degree of Internet use in conducting joint research, it ranked last among the four fields of the study tool and came with a low score. It is worth noting that the results of this study in this field are partially consistent with the results of previous studies.

The results related to the second question showed the statistical differences attributed to the variables of gender, type of colleges, and program level. The results of this study did not agree with the results of Rifaat's study (2002), which confirmed the superiority of males over females in using the Internet. Therefore, it is clear that there are statistically significant differences in the degree of Internet use in preparing the theoretical literature and previous studies chapter in favor of females. These differences also came in favor of females in the domains of the degree of Internet usage and the publication of scientific research and the degree of Internet usage in defining the problem of study and scientific research and in the degree of Internet use in carrying out joint research.

In the field of the degree of internet use in defining the study problem and preparing the research instrument, it was in favor of the females. This result contradicts with the results of Rifaat's study (2002), where the results of his study revealed the superiority of males over females in using the Internet for educational and research purposes. The researchers attribute the reason for this to the fact that graduate students

at the master's and doctoral levels are motivated by their eagerness to prove existence.

The researchers believe that female students are more keen and serious about pursuing the study than males, and not out of prejudice to their gender. The results of the study revealed that there were no statistically significant differences for the effect of the college type variable (literary, scientific) in all the four areas of the study instrument. The researchers attribute this to the fact that all categories of students, regardless of the type of college (literary, scientific) accept the use of the Internet, especially those who are busy preparing their university theses at the master's and doctoral levels. In fact, the use of the Internet has become a cultural and societal situation, regardless of the academic level. in Jordan.

The results also revealed that there were statistically significant differences due to the impact of the program level in all four areas of the tool, except for the degree of using the Internet in carrying out joint research, and the differences came in favor of doctoral students. The researchers attribute that this is consistent with the requirements of the doctoral program, which may require students to conduct joint research among themselves, in addition to the fact that some doctoral programs require students to publish some research in scientific fields before discussing doctoral theses.

## 11. RECOMMENDATIONS

Based on the results of the study that that have been revealed, the researchers recommend the following:

1. The researchers recommend holding courses in English language skills and translation for graduate students, and an advanced score in the TOEFL test is required for those who wish to enroll in graduate programs.
2. The necessity of holding training courses for graduate students on how to obtain information for the purposes of scientific research using the Internet and the need to develop the skills of using databases to obtain summaries of previous studies and to view the full copies of those studies.
3. The necessity of updating the content of scientific research courses for graduate students in scientific and literary faculties to match the development in information

technology so that students can employ it appropriately in scientific research, especially in the field of using the Internet in determining the problem of the study and preparing its tool.

4. The necessity of training graduate students to use the Internet to conduct joint research among these students, communicate with others, and follow up on scientific conferences.
5. Enhancing the internet service for graduate students in university libraries for the purposes of scientific research, and making it available to students free of charge.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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