

A Comparative Study Of The Attitudes Of Science Faculty Members Towards Academic Research And Teaching In Saudi Arabia And Jordan

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Abstract

Universities in Middle East have relaised the significance of research publication. Therefore, universities have allocated incentives and requirements for faculty members to publish their academic works. However, faculty members believes their main job is teaching which impose the need for a study to investigate the attitudes of faculty members twoards teaching and scientific publication which is in line with the aim of the study to identify the attitudes of science faculty members in Saudi Arabia and Jordan towards scientific research and teaching. The study used a quantitative research dsign to collect the data from 50 members from Umm Al-Qura University in Saudi Arabia and 40 members from the University of Applied Sciences in Jordan. Survey questionnaire was used to collect the data. The findings revealed that lecturers have positive attitudes towards scientific research and teaching. The respondent showed high agreement on the significance role of research and teaching functions as they have a complementary relationship. Furthermore, this study also showed that most of the faculty members believe that their main job is teaching. However, more inclined towards research publishing incentives, promotion, and salary increasment as well as reputation and scientific status. Morover, no statistically significant differences between the attitudes towards scientific research and teaching and rank or gender. On th other hand, there were a statistically significant difference between attitudes towards scientific research and university and in favor of the University of Applied Sciences. This study contributes to the limited number in the field of modern education requirements. The study offers implications to the ministries of education to allocate more incentives and conduct training workshops for faculty members.

Keywords: directions, scientific research, teaching, science faculty members.

1. INTRODUCTION

Universities seek to achieve their goals and mission in building and developing society, depending on their ability to perform their various functions, which can be summed up in three main functions, which are knowledge transfer through teaching, knowledge production through scientific research, and community development and service (Okiki, 2013). The educational process is a significance field for enriching research, and at the same time it works on preparing students that take responsibility for working in the various sectors of production in society, while aiming to Scientific research aims to improve the educational process on the one hand and seeks

to contribute to the development of society and solve its problems on the other hand, and then the university employs study and research to address and develop social problems (Sampson Jr, Driscoll, Foulk, & Carroll, 2010). The first function of the university is teaching and education where specialized and qualified graduates are prepared to fulfill the requirements of comprehensive national development, and it also provides the qualitative and quantitative needs required by the labor market (Guglielmo et al., 2011). The second function of the university is: scientific research, and it is one of the most important functions of universities. Without scientific research, the university becomes just an

educational school for science and knowledge produced by others, and not a center for scientific creativity, knowledge development, enrichment and dissemination, and seeking to employ it to solve the various problems facing society. This requires close cooperation between universities and various institutions to determine the capabilities of scientific and technical universities on the one hand, and to identify the needs of various community institutions in general, and production institutions in particular, on the other hand, with the aim of identifying clear research paths that can contribute to the advancement and advancement of their societies, and coordination among them to achieve goals and objectives. The research carried out by universities is one of the most important indicators of quality and distinction in the ranking of universities locally, regionally and internationally (Hesli & Lee, 2011). This research has become an important financial source for financing the activities of universities through grants and grants obtained from various institutions. If universities do not achieve their role in serious and sober scientific research, significant negative consequences for society will be achieved, and this will not contribute to the progress and advancement of countries. In this sense, universities in developed countries have given research and development programs special attention, by providing the appropriate scientific environment in which scientific research can grow and flourish, and for this purpose, funds have been allocated to provide laboratory devices and scientific equipment needed by researchers in their various specializations. Academic research has become an essential part of the tasks of faculty members and a prerequisite for their promotion and leadership positions in universities and higher education institutions in developed countries. Therefore, faculty members make every effort to complete solid scientific research and seek to publish it in refereed scientific journals and periodicals of prestigious international reputation and wide spread among researchers in various universities around the world (Alnajjar, 2022). Faculty members are the cornerstone of universities development as the source of knowledge scientific creativity. Given the importance of the role that a faculty member

plays in the educational process at the university, and in order to be able to carry out their educational role effectively, a set of professional competencies such as assessment, teaching, human, technological, and research competencies, which will be positively reflected on the level of professional performance, thus affecting the outcomes of the educational process. (Ismail, 2014). It has been believed that teaching and scientific research represent one professional role for faculty members (Hardré, 2012). However, many studies in the educational literature that dealt with the professional roles of faculty members confirm that these two positions represent, in fact, two different roles in tasks, obligations, expectations and responsibilities, where their performance requires different skills, abilities and experiences, and fulfilling them requires a great deal of faculty time and effort (Athubaiti, 2003).

Despite what universities affirm in their public policies and official goals that teaching and scientific research are two complementary functions that have a similar degree of importance and priority. However, middle eastern universities has given more importance to scientific and research publication than teaching especially in terms rank promotions (Ministry of Education, 2015). This is justified by the goals of excelling in the field of knowledge and scientific contribution that can only be achieved through scientific research. Although teaching requires a great deal of time and effort from faculty members, an average of 30-50 hours and office work, teaching is not rewarded like scientific research. In addition, distinguished researchers are rewarded by reducing the teaching load, teaching in graduate programs, appointment to academic administrative centers, membership in scientific councils, chairing the editorial boards of scientific journals, running for advisory positions, and others (Mägi & Beerkens, 2016; Alnajjar, 2020).

Despite what universities affirm in their public policies and official goals, that teaching and scientific research are two complementary functions and have a similar degree of importance and priority. However, Anderson et al. (2011) stated that faculty members believe that the system of rewards and promotion in

universities motivates faculty members to direct their most activity towards scientific research, despite the importance of teaching and education, especially in STEM disciplines. The study found that the science specialization has a special nature because of the teaching burden and practical aspect it includes. These researchers demanded a balance between teaching and scientific research, and a modification of the culture of science education in universities oriented towards scientific research.

The Global Monitoring Report on Education for All (UNESCO) confirms that despite the wealth enjoyed by Arab countries, these countries lack a solid base in the field of science and technology. Also, the efficiency and performance of their systems for higher education is still weak, especially with regard to the generation of knowledge, and the ranking systems of universities in the world depend in their indicators on the publications of faculty members or indicators of citation in research, and give about half of the points on that, and we do not find universities Arabic occupies advanced positions in these classifications (UNESCO, 2019).

Previous Studies

Mousa and Alotaibi (2011) identified the reality of the performance of faculty members at Najran University and they found that the majority of the sample members saw the importance of scientific research in developing and modernizing the educational process and various aspects of society. In another study regarding the attitudes for publication, Athubaiti, (2003) found that majority of faculty members recognise the importance of the teaching and publication. The requirements of scientific research do not conflict with the requirements of teaching, and they are two complementary roles so that they reinforce each other. In terms of promoting, lecturers believe that promotion is the main motivating factor for research publication. However, a significant difference was found based on academic rank. In the western context, Mamiseishvili & Miller & Lee (2016) found that faculty members at the rank of associate professor are less satisfied than professors and assistant professors with regard to their jobs, including their service to the university and society, as well as the teaching load, work equality, and institutional support for research, as they see that the

incentives provided for community service are few, and do not play a role Main in promotion criteria. Bentley & Kyvik (2013) found that faculty members spend different time on teaching and publication due to several factors such as the university's policy in allocating worktime for research, motivation and incentives, lack of time available for research, no significant differences between gender and time spent in scientific research.

The length of service had a significant impact on the attitudes of faculty members regarding research publication as found by Tang & Chamberlain (2010). However, there were no statistically significant differences to the faculty, as the study revealed that faculty members who have 20 years or more of service, and their rank are lower from a professor they have the slightest tendency towards scientific research.

The review of the literature revealed that there are studies that dealt with faculty members' attitudes towards scientific research and teaching and the impact of some variables on them, such as academic rank, length of service, and the nature of the college, including: a study (Athubaiti, 2003) and a study (Tang & Chamberlain, 1997), And a study (Tang & Chamberlain, 2010), and a study (Mamiseishvili & Miller & Lee, 2016). These studies showed the following: A study (Athubaiti, 2003) showed that the relationship between scientific research and teaching is complementary, and the higher scientific rank positively affects the trend towards research activity. While the study (Tang & Chamberlain, 1997) showed that it is a conflictual relationship, and that the source of this conflict is the limited time. As for the study (Tang & Chamberlain, 2010), it showed that the length of service had a negative impact on the attitudes of the faculty members regarding the orientation towards scientific research. As for the study (Mamiseishvili & Miller & Lee, 2016), it was shown that faculty members at the rank of associate professor are less satisfied than professors and associate professors with regard to their university roles. Also, there are studies that dealt with the time spent in scientific research and other university activities, including the study ((Bentley & Kyvik, 2013), which showed that there is a great discrepancy in the time spent in scientific research in many universities, and the most important reason for this is family

commitments. As for the study of Mousa and Alotaibi (2011) has shown that the university activities of a faculty member are complementary, and all have a great degree of importance. Most of these studies agreed on the importance and vitality of the scientific research and teaching jobs in universities. These studies showed that these two jobs represent two professional roles, each with different requirements and obligations, and that interest in scientific research is due to the positive effects of this activity related to job promotions and academic reputation. This does not diminish the importance and importance of teaching.

As for the current study, it is distinguished from all previous studies as it deals with members of the science faculty in Saudi and Jordanian universities and their attitudes towards their roles in the university. Within the limits of the researcher's knowledge, the Saudi and Jordanian studies, especially in the field of science, about the attitudes of faculty members towards scientific research and teaching, were few. And due to the existence of a special nature for this specialization, as indicated by some researchers (Anderson et al., 2011); (Alnajjar, 2021) They emphasized that these scientific disciplines have a special nature because of the teaching burden they include, and a practical application aspect. Hence, this study comes to clarify the attitudes of the faculty members, and thus describes the university reality and compares between Saudi and Jordanian universities. This study seeks to describe the

reality of Saudi and Jordanian universities and the attitudes of the science faculty members in them. The two selected universities in Saudi Arabia and Jordan have focused on the research publication has become an essential part of the duties of faculty members and a prerequisite for their promotion and leadership positions in universities and higher education institutions. Although universities required the faculty members to publish in scientific journals, in these two selected universities, the research output still considered less than expected.

2. METHODOLOGY

This study uses the descriptive approach to describe the attitudes of science faculty members in Saudi Arabia and Jordan towards scientific research and teaching. The study population consisted of all members of the science faculties at Umm Al-Qura University in Saudi Arabia (168) members and at the University of Applied Sciences (40) members including assistant professor, associate professor, and professor. Random sampling was selected from Umm Al-Qura University (50 members, 30% of the community) (30 males and 20 females), and a sample from the University of Applied Sciences (40 members, 18 males and 22 females, and 100% of the community). It includes all scientific ranks for science faculty members, both male and female. Table (1) shows the distribution of the study sample members according to the study variables.

University	Gender		Ranki			Total
	Male	Female	Prof	Associate Prof	Prof Assisstance	
Umm AlQura	30	20	7	12	31	50
Applied Science	22	18	5	10	25	40

Data collection

Survey questionnaire was used to collect the data. This questionnaire was designed based on the literature review from Alnajjar (2021) and based on the study questions. Five-point Likert scale rang from strongly disagree to strongly agree. The survey was validated by faculty members specialized in educational assessment and evaluation, curricula and teaching methods. The experts were also interviewed and few items were modified. The questionnaire included in its final form (20) paragraphs. Intern

consistency ws calcualted uing cronbach Alpha with the total degree of the questionnaire was as follows: (0.83) for the domain of attitude towards scientific research, and (0.80) for the domain of trend towards teaching. This indicates that the internal consistency coefficient of the scale items is good, which indicates the validity of the questionnaire.

Reliability and Consistency:

The stability of the resolution was calculated using Cronbach's alpha coefficient, and the

alpha value of the tool as a whole was (0.82), which is a percentage that indicates the efficiency of the tool.

8.3.3. Statistical treatment and study variables:

The following statistical methods were used:

- Cronbach's alpha coefficient, and Pearson's correlation coefficient to calculate the stability of the resolution, and its internal consistency. Arithmetic averages, standard deviations, percentages, and frequencies for the attitudes of the teaching staff towards scientific research and teaching.

- Analysis of variance to indicate the differences between the attitudes of the sample members towards scientific research and teaching according to the variable of scientific rank and the variable of the university.

- t test to indicate the differences between the attitudes of science faculty members towards scientific research and teaching according to the gender variable.

The study dealt with the following independent variables:

- Academic rank, and it has three levels: Professor, Associate Professor, and Assistant Professor.

Gender, and it has two levels: male and female. The two universities are Umm Al-Qura University in Saudi Arabia and the University of Applied Sciences in Jordan.

The dependent variables of the study are as follows:

- Attitudes of the sample members towards scientific research, and their attitudes towards teaching.

- Final application of the questionnaire: After verifying that the questionnaire has a good degree of validity and reliability, it was applied by the researcher in the first week of April, the second semester of the academic year 2021/2022 AD, in the faculties of science, and on the study sample. Then the researcher converted the sample answers for the questionnaire items into numbers, and they were processed statistically by appropriate means.

3. FINDINGS AND RESULTS

First: To answer the first question of the study, which is: What are the attitudes of the science faculty members at Umm Al-Qura University towards scientific research and teaching? Table (2) shows data related to the sample members' attitudes towards scientific research, and Table (3) shows data related to the sample members' attitudes towards teaching at Umm Al-Qura University.

Table (2)

Arithmetic averages, standard deviations, and percentage of science faculty members' attitudes toward scientific research

Rank	Frequency %	Standar Deviation	Mean	Item no
1	95.6	0.60	4.78	5
2	86.6	0.73	4.33	1
3	84.2	0.81	4.21	3
4	80.2	0.60	4.01	8
5	79.4	0.72	3.97	16
6	78.2	0.30	3.91	10
7	76.0	0.81	3.80	6
8	58.2	1.21	2.91	14
9	54.0	0.93	2.70	20
10	43.9	0.90	2.19	13
	74.42	0.52	3.88	الكل

Table (2) shows that the mean of the responses to the items of the trend towards scientific

research was (3.88), with a standard deviation of (0.52). In other words, most of the sample

members indicated that their attitudes towards scientific research were positive, and their approval rate ranged from Trend paragraphs between 43.9 - 95.6%.

These paragraphs were arranged in descending order according to the degree of appreciation from the point of view of the faculty members as follows:

My research activity increases if references and scientific periodicals are available at the university (4.78) by 95.6%, my scientific standing and my academic reputation depend on my research activity and scientific output (4.33) by 86.6%, I see that scientific research is one of my most important jobs as a faculty member at the university (4.21) with a percentage 84.2%, I have a desire to conduct more scientific research, which makes me feel accomplished (4.01) by 80.2%. I see that scientific promotions depend mainly on scientific output. Therefore, I direct most of my efforts towards scientific research and scientific publishing (3.97), at a rate of 79.4%. The most important factors that make me focus my efforts and attention on research and scientific publishing are incentives (which is meant to increase salaries and scientific promotions) (3.91) At 78.2%, I consider myself a researcher in the first place (3.80) with 76.0%, I would like to spend more time in scientific research than teaching (2.91) With 58.2%, my colleagues praise and praise them more than incentives (increased salaries and promotions) Scientific) (2.70) with a percentage of 54.0%, I am able to research and publish scientifically even if scientific materials and devices are not available (2.19) with a percentage of 43.9%.

Perhaps it is appropriate to discuss the paragraphs that obtained the highest average and the largest degree of approval, as well as the paragraphs that obtained the lowest average and disapproval, as follows:), where I got an arithmetic average (4.78), which is greater than (4.2) - the weighted average criterion that was previously adopted according to Likert scale - which means that the general trend strongly supports and agrees with this paragraph (95.6% of them), and this is something that almost all agree on. Science faculty members. If we want to accomplish and present distinguished scientific research, it is necessary to provide scientific references, periodicals, international journals and previous literature, which are

among the basics of research and its first steps. Where he said: (I stand on the shoulders of the scholars who preceded me). If a scientist wants to study and research a scientific problem, then he - of course - does not start from scratch, but starts his research from where those who preceded him ended. For this reason, the researcher returns to periodicals, references and previous literature to benefit from the research of others, and to work on solving his new research problem (Zaytoun, 2004; Alnajjar, 2022).

As for the paragraph that obtained the lowest degree of approval from the point of view of the sample members, it is the paragraph (I am able to research and publish scientifically even if scientific materials and devices are not available), and whose average was (2.19) with a percentage of 43.9% which is less than the weighted average (2.6), which It means that the general trend does not agree with this paragraph, and it is completely consistent with the general trend of the first paragraph. Almost all science faculty members believe that providing scientific materials and equipment is an important and necessary thing to accomplish serious scientific research. Almost all science specialists agree on this, as the article of Anderson & Others, 2011, published in the International Science Journal, indicated that there is a special nature of scientific research in the field of science, which includes a theoretical scientific aspect and a practical application. This is consistent with one of the characteristics of science, which is that science and scientific knowledge have their own tools, devices, and standards, which scientists trust to obtain accurate data and information. This is consistent with the findings of (Ismail, 2014) and (Hamid, 2007) that there is an absence in the Arab community of realizing the importance and necessity of supporting science and scientists, and the failure of most Arab countries to fulfill their responsibilities to carry out the burdens of funding scientific research and provide its requirements of tools, equipment and references.

It is also clear from Table (2) that the second paragraph, which is (my academic standing and academic reputation depends on my research activity and scientific output), which obtained

an arithmetic average of (4.33) with a rate of 86.6%, which indicates that the general trend of the sample members agrees and supports this paragraph. Perhaps this is due to the nature of universities as academic institutions concerned with reputation and scientific status, which depend primarily on the scientific output and knowledge creativity of its faculty members. Whenever a faculty member excels in the field of research, scientific publishing and authorship, this will reflect positively on his reputation and scientific standing, and this, in turn, has an impact on the university's reputation and scientific standing in academia. In addition, the third paragraph, which is (I see scientific research as one of my most important jobs as a faculty member at the university), with a mean of (4.21), meaning that most of the sample members (84.2%) see that scientific research is an essential function of universities. The university is now seen as a source of scientific and cognitive creativity in society. This can only be achieved through renewed scientific research.

The above interest in scientific research is supported by what was mentioned in the fourth and fifth paragraphs, and I have a desire to conduct more scientific research, which makes me feel accomplished (4.01) by 80.2%. I see that scientific promotions depend mainly on scientific output. Therefore, I direct most of my efforts towards scientific research and scientific publication (3.97), at a rate of 79.4%. The sample members believe that scientific productivity remains the most important factor

in the subject of job promotions. This is shared by most universities in the world. This is not very consistent with the penultimate paragraph, which is (it pushes me towards research and scientific publication to praise and praise my colleagues more than the incentive motive (increasing salaries and scientific promotions).), whose average was (2.70). Where the greatest motivation of the sample members towards scientific research was the prestigious academic reputation, scientific promotions and the consequent financial incentives, while the praise and praise of colleagues did not receive the approval of most of the sample members, and this may be attributed to the fact that the faculty member and after these years of hard work, science, experience and success He possessed an abundance of internal self-motivation that directs him towards achievement and scientific research more than the influence of colleagues' praise and praise. The nature of competitive relationships at work may have influenced this. This is consistent with the study (Athubaiti, 2003). And the study of Tang and Chamberlain (Tang & Chamberlain, 1997), where they showed that the greatest motivation towards the research activity of faculty members is incentives and rewards, not the praise of colleagues.

As for the attitudes of science faculty members towards teaching, Table (3) shows this general trend.

Table (3). Mean score, standard deviations, and percentage of science faculty members' attitudes toward teaching

Rank	Frequency %	Standar Deviation	Mean	Item no
1	90.4	0.81	4.52	12
2	86.2	0.67	4.31	7
3	83.4	0.78	4.17	11
4	81.6	0.81	4.08	4
5	78.4	0.77	3.92	18
6	76.6	0.91	3.83	17
7	68.2	0.82	3.41	19
8	64.4	0.98	3.22	2
9	58.2	0.71	2.91	9
10	44.2	0.83	2.21	15
	72.1	0.57	3.65	الكلبي

Table (3) shows that the arithmetic mean of the responses of the sample members to the items of attitude towards teaching is (3.65) with a standard deviation of (0.57). In other words, most of the sample members indicated that their attitudes are positive towards teaching as well. 44.2 - 90.4%.

These paragraphs were arranged in descending order according to the degree of appreciation from the point of view of the faculty members: I see that teaching and scientific research are two activities that complement each other (4.52) with a percentage of 90.4%, I see that teaching is one of my most important jobs as a faculty member at the university (4.31) with a percentage of 86.2%, I see that the first goal of employing university professors is teaching, but they advance scientifically on the basis of research and scientific publication (4.17) by 83.4%, my first job at the university is teaching (4.08) by 81.6%, I believe that the university should give equal degrees to teaching and scientific research when conducting scientific promotions (3.92) by 78.4%, my scientific standing and my academic reputation depend On my effectiveness and creativity in the classroom (3.83) with a percentage of 76.6%, I have a desire to spend more time in teaching, as this makes me feel accomplished (3.41) with a percentage of 68.2%. The most important factors that make me focus my efforts on teaching are the incentives (which are meant to increase salaries and academic promotions) (3.22) with a percentage of 64.4%, I look at creative researchers as - at the same time - distinguished teachers in the classroom (2.91) with a percentage of 58.2%, and the duties and requirements of scientific research conflict with the duties of effective teaching (2.21) by 44.2%. Perhaps it is appropriate to discuss the paragraphs that obtained the highest average and the largest degree of approval, as well as the paragraphs that obtained the lowest average and disapproval, as follows:

The paragraph that scored the highest weighted average, and its first rank was the paragraph (I see that teaching and scientific research are two activities that complement each other), where it obtained an arithmetic average (4.52) which is greater than (4.2) - the weighted average criterion that was previously adopted according to Likert scale - This means that the general trend strongly supports and agrees with this paragraph, and this is something that almost all

members of the science faculty (90.4% of them) agree on that the relationship between teaching and scientific research is a complementary relationship, and that each reinforces the other. This is consistent with the study (Athubaiti, 2003), which showed that the requirements of scientific research do not conflict with the requirements of teaching, and they are two complementary roles that reinforce each other; However, it differs with Tang and Chamberlain's study (Tang & Chamberlain, 1997), which showed that the relationship between scientific research and teaching is a conflictual relationship, and that the source of this conflict is the limited time, as the current study differs with the study of Bentley & Kyvik, 2013, which She saw that the family obligations of the university professor caused a great discrepancy in the time spent on scientific research in universities in 13 countries, and that the interest in research decreases with age at the expense of teaching.

As for the Item "I see that teaching as one of my most important jobs as a faculty member at the university", it came in second place, with an average of (4.31), and this indicates that the general trend of the sample members is 86.2% of them strongly agree with this paragraph. The fourth paragraph is consistent with it, which is (My first job at the university is teaching), with an average of (4). This is consistent with the reality of the university, where its efforts and function are still focused on university teaching, and this is what the researcher noticed through his experience in this college for many years, as he noticed the large teaching burdens for faculty members due to the large number of students in this faculty for faculty members, and therefore Increasing the teaching load. By comparing the average of these paragraphs with the average of the seventh paragraph in Table (2), which is (I consider myself a researcher in the first place), we can say: that the teaching function at the university ranked first among the functions of the university, and that the function of scientific research ranked second; However, they agreed on the importance of this function. Therefore, we find that this university pays a lot of attention to scientific research, and allocates a part of its annual budget to it. It also has centers for scientific research, and it publishes a number of specialized scientific periodicals. This functional duality is characteristic of

almost all universities in most countries of the world.

This is in line with what was confirmed by the National Commission for Academic Accreditation and Evaluation in the Kingdom of Saudi Arabia (The National Commission for Academic Accreditation and Evaluation, 2009), and the Jordanian Commission for Accreditation of Higher Education Institutions (Commission for Accreditation of Higher Education Institutions and Quality Assurance, 2022), that it is necessary to Develop a strategy for scientific research consistent with the nature and mission of the educational institution. All faculty members who teach in higher education programs should participate in scientific research activities in a sufficient and appropriate manner to ensure that they remain aware of developments in their field of specialization, with the importance that this is reflected in their teaching performance.

The sample members also indicated that the relationship between teaching and scientific research is a complementary relationship, not a conflict of roles, and that each reinforces the other. This agrees with the study (Athubaiti, 2003) and the study of Mousa and Alotaibi (2011), but it differs with the study (Tang & Chamberlain, 1997). It showed that faculty members see that the requirements of scientific research conflict with the requirements of teaching, and that teaching consumes a greater amount of The time and effort of faculty members, however, is not rewarded as well as research activity.

Although teaching is the primary job of science faculty members, most of the sample members (83.4% of them) believe that scientific productivity remains the most important when the subject of job promotions comes, as in the third paragraph, which is (I see that the first goal To employ university professors is to teach, but they advance scientifically on the basis of research and scientific publication), with an average of (4.17). This is the reality of most universities in the world, where research activity and scientific production are given more weight and importance than teaching when looking at promotions for faculty members.

As for the paragraphs that obtained the lowest degree of approval from the point of view of the study sample, they are the paragraph (duties and requirements of scientific research inconsistent with the duties of effective teaching), with a mean of (2.21) by 44.2%, then the paragraph (look at the creative researchers as - at the same time Distinguished teachers in the classrooms, with a mean of (2.91), with a rate of 58.2%. Perhaps this indicates that the teaching function is closely related to the function of scientific research, as scientific research is an appropriate means for developing the scientific and knowledge level of members of the science faculty, and keeping pace with new knowledge and scientific developments. The requirements of the teaching job do not conflict and do not conflict with the duties and requirements of scientific research, and this is completely consistent with the first paragraph that they are complementary. Where they see their professional role as an integrative role between teaching and scientific research. However, excellence in research activity and scientific production does not mean affirming excellence in the field of teaching, meaning that they have no relational relationship. Therefore, (64%) of the respondents believe that the distinguished faculty members in the field of teaching are not necessarily creative in the field of scientific research, because each of them has different abilities and skills. Whenever a faculty member possesses these capabilities and skills and strives in that field, he excels in it.

Second: To answer the second study question, which is: Are there statistically significant differences between the attitudes of science faculty members towards scientific research and teaching according to the scientific rank variable?

The researcher calculated the analysis of variance to indicate the differences between the attitudes of the sample members towards scientific research and teaching for the variable of scientific rank (professor, associate professor, assistant professor), and table (4) illustrates this.

Table (4). Significance differences between the attitudes of the sample based on scientific rank

Variables	Source of variance	Sqs	F	M of Sq	p	Decision
	Between groups	0.513	2	0.256	0.152	
	Within groups	9.135	88	0.267		

Attitudes to academic research	Toal	9.648	90			No significance
Attitudes to teaching	Between groups	0.756	2	0.357	0.138	No significance
	Within groups	9.819	88	0.301		
	Toal	10.575	90			

It is evident from Table (4) that there are no statistically significant differences between the average trends of science faculty members towards the field of scientific research with respect to the scientific rank variable, where the calculated (P) value reached (1.608) and the critical (P) value (0.152), and this value is

Statistically significant at the level ($\alpha = 0.05$), due to the convergence of the arithmetic averages, and Table (5) shows this.

Table (5). Mean score and percentage of science faculty members' attitudes towards scientific research according to the scientific rank variable

Attitudes to academic research	Variable (Academic ranking)	No	Mean score	Frequency
	Prof	8	3.73	74.6
Attitudes to teaching	Associate Prof	16	3.71	74.2
	Prof assistance	66	3.74	74.8
	Prof	8	3.56	71.2
	Associate Prof	16	3.51	70.2
	Prof assistance	66	3.58	71.6

Table (5) shows that the arithmetic mean of the professor variable was (3.73), (3.71) for the associate professor variable, and (3.74) for the assistant professor variable. When comparing these averages using the one-way analysis of variance, no statistically significant differences appeared.

It also appears from Table (4) that there are no statistically significant differences between the averages of the science faculty members' attitudes towards the field of teaching with respect to the scientific rank variable, where the calculated (q) value reached (1.801) and the critical (q) value (0.138), and this value is not Statistically significant at the level ($.05 = \alpha$), due to the convergence of the arithmetic averages.

It also appears from Table (5) that the arithmetic mean for a professor variable was (3.56), (3.51) for an associate professor variable, and (3.58) for an assistant professor variable, and when comparing these averages using a one-way analysis of variance, no statistically significant differences appeared. This can be explained by the fact that the professional roles of a faculty member do not differ due to the scientific rank, but rather some teaching burdens are reduced. Even if a university professor has a different job rank, he must perform his professional role in teaching

and scientific research. This result is consistent in part with the study (Athubaiti, 2003), which showed that there were no significant differences in the attitudes of the sample members towards teaching, while there were significant differences towards scientific research in relation to the scientific rank and in favor of the higher rank. As for the study of (Mamiseishvili & Miller & Lee, 2016) showed that faculty members at the rank of associate professor are less satisfied than professors and assistant professors with regard to their jobs, including their service to the university and society, as well as teaching load, work equity, and institutional support for research. A study (Tang & & Chamberlain, 2010) also showed that faculty members with 20 or more years of service, at a rank lower than a professor, had the lowest tendency toward scientific research.

Third: To answer the third study question, which is: Are there statistically significant differences between the attitudes of science faculty members towards scientific research and teaching according to the gender variable? The researcher used a t-test to indicate the differences between the attitudes of science faculty members towards scientific research and teaching according to the gender variable, and table (6) illustrates this.

Table (6) (T) test to indicate the differences between the attitudes of science faculty

members towards scientific research and teaching according to the gender variable.

Variablee	Male (48)		Female (42)		T	P	Decision
	M	SD	M	SD			
Attitudes to academic reearch	4.31	0.81	3.96	0.76	0.80	0.38	No significanc
Attitudes to teaching	4.42	0.73	4.08	0.56	0.36	0.65	No significant

It is clear from Table (6) that there are no statistically significant differences between the average trends of science faculty members towards scientific research and teaching with respect to the gender variable. The arithmetic mean of their tendency towards scientific research is (3.96) with a standard deviation of (0.76), and when comparing these two averages using the (t) test for pairwise comparisons, and given that the significance level is equal to (0.38) greater than (0.05), this means that there are no statistically significant differences Among the attitudes of the sample members towards scientific research.

As for their attitudes toward teaching, the arithmetic mean of males' attitude toward teaching was (4.42) with a standard deviation (0.73), while for females, the arithmetic mean of their attitude toward teaching was (4.08) with a standard deviation of 0.56, and because the value of the significance level is (0.65).) greater than (0.05), then this means that there are no statistically significant differences between the sample members' attitudes towards teaching.

Perhaps this is due to the similarity of requirements and professional burdens for faculty members. Most of the regulations and instructions of Saudi and Jordanian universities do not differentiate between males and females

in what is required of a faculty member in terms of teaching load, working hours, promotion system and scientific research. The job of a university professor, whether it is in scientific research or teaching, and their attitudes towards it, is not related to the gender of the faculty member, male or female, as much as it is related to the circumstances and skills possessed by the faculty member. This result is similar to the Bentley & Kyvik study (2013), which showed that there were no significant differences attributable to the gender of the participants in terms of the time spent in scientific research.

Fourth: To answer the fourth question of the study, which is: Are there statistically significant differences between the attitudes of science faculty members towards scientific research and teaching according to the university variable?

The researcher calculated the analysis of variance to indicate the differences between the attitudes of the sample members towards scientific research and teaching according to the university variable, and Table (7) illustrates this.

Table (7)

Analysis of variance to indicate the differences between the attitudes of the sample members towards scientific research and teaching according to the university variable

Variables	Source of variance	Sqs	F	M of Sq	p	Decision
Attitudes to academic research	Between groups	0.466	2	0.371	0.02	Significance
	Within groups	9.847	88	0.342		
	Toal	10.313	90			
Attitudes to teaching	Between groups	0.656	2	0.313	0.196	No significance
	Within groups	10.819	88	0.397		
	Toal	11.475	90			

It is clear from Table (7) that there are no statistically significant differences between the averages of the science faculty members' trends towards the direction of teaching in relation to the university variable, where the calculated (q) value reached (1.962) and the critical (q) value (0.196), and this value is not Statistically significant at the level ($\alpha = 0.05$). While there were statistically significant differences between their attitudes towards scientific research according to the university variable. To determine the degree of differences between the averages of their attitudes towards scientific research, the Scheffe test was used. It appears that the study sample from the University of Applied Sciences had an average of their attitudes towards scientific research (3.85), which is higher than that of Umm Al-Qura University (3.36). Perhaps this is due to the fact that the University of Applied Sciences grants research rewards and incentives to increase research activity at the university. Therefore, the sample's attitudes from the University of Applied Sciences were more positive towards scientific research.

4. RECOMMENDATIONS OF THE STUDY:

In light of the results obtained, the study suggests the following:

- That the university administration and its competent deanships provide more material support for scientific research, by providing tools, devices, scientific laboratories and scientific libraries to encourage research activity.
- That the university administration hold special programs for faculty members aimed at developing and improving their level of teaching performance, where effective teaching requires certain skills and experiences that can be developed.
- That the university administration works to raise the efficiency of faculty members in scientific research skills, by holding research workshops and scientific courses.
- That the university administration activate the issue of scientific sabbaticals for members of the science faculty, to encourage them to excel in research activity.
- That the university administration honors the creative faculty members in their teaching and praising their efforts, by holding special

meetings and seminars, and this can be adopted as points in scientific promotions.

Honoring distinguished researchers in colleges in general and scientific colleges in particular, encouraging researchers to continue their research activity, and granting them financial rewards.

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