



Impact of Crises on Scientific and Research Activities of Faculty Members: a Comparative Study (Iraq and Jordan)*

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Abstract

The occupation of Iraq since 2003, terrorist attacks, dismissal of a number of faculty members in various universities, and the so-called "brain drain" have all had a major impact on scientific research. This study seeks to identify the negative repercussions of crises on scientific research in Iraq, through comparing the level of scientific and research activity of faculty members working in Iraqi universities with that of Iraqi faculty members working in Jordanian universities during the period 2006 - 2008.

Descriptive analysis of the results of a questionnaire administered to 500 faculty members is employed. Indicators of performance of Iraqi universities for the academic year 2006 / 2007 are used. The most prominent finding is that the level of scientific and research activity of faculty members working in Iraqi and Jordanian universities is low, particularly in authoring, translation, dissemination of scientific research, publishing articles, supervision of graduate students, patents, participation in scientific conferences and symposia abroad, participation in research under contract for state organizations, dedication to scientific endeavor, amounting to no more than one activity per year on average. During the three-year period, 65 - 68% of the faculty members in and outside Iraq have not undertaken any scientific activity. Moreover, the proportion of hours devoted to scientific research by faculty members does not exceed 1.5% of total weekly hours spent on discharging university duties.

I. The Methodology of the Study

1. Problem and Importance

The country witnessed a scientific rebound in education in the 1960s and 1970s which led to many international scientific prizes being received, such as in primary education and literacy. Iraq was then plagued for three decades by wars, armed conflicts and embargoes, which affected education in general. The resources of this country were mostly used to serve military purposes and not to improve the socioeconomic and educational life of Iraqis. The Gulf War of 1991 also had a major impact on all economic, social, educational and health sectors. The Security Council

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imposed with resolution 661 an economic embargo that prevented the country from calling upon the necessary support to meet the population's needs and also in rebuilding the infrastructure, such as education and health facilities which had been mostly damaged.

Teaching and learning were rapidly deteriorating, their resources were lacking and competent faculty members were leaving (the brain drain) because of low salaries. Iraqi educational accomplishments therefore lost their sparkle.

The invasion of Iraq and subsequent occupation, as well as the ensuing violence, assassination and terrorism since 2003 have had a major impact on all educational aspects, including scientific and research production. Iraqi educational and cultural centers were pillaged, burnt and destroyed. According to UNESCO reports of 2004, 84% of the faculties and universities were destroyed; 20 faculties were totally destroyed during acts of war, 25 faculties were burnt and 101 were pillaged. In this context, it is worth noting that the total number of faculties amounted to 201, not to mention the libraries, museums, artistic and cultural centers that were also destroyed, burnt and pillaged. (UNESCO, 2004, pp. 173 – 174)

No doubt, the crises have greatly and directly affected scientific and research activities of Iraqi faculty members working in Iraqi universities or those abroad. The present study seeks to assess and compare scientific and research activities of faculty members in Iraqi universities and expatriates working in Jordanian universities between 2006 and 2008.

2. Objectives

The study aims at:

- a. Assessing the repercussions of the crisis on scientific research in Iraq.
- b. Evaluating and comparing the level of scientific and research activities between faculty members in Iraqi universities and expatriate Iraqi faculty members who have worked in Jordanian universities between 2006 and 2008.

3. Limitations

The study is confined to:

- a. Studying the evaluation of Iraqi universities performance between 2006 and 2007 to assess the scientific and research activities undertaken by the faculty members of Iraqi universities.
- b. Comparing the level of scientific and research activities between faculty members in Iraqi universities and expatriate Iraqi faculty members who have worked in Jordanian universities between 2006 and 2008, through a questionnaire prepared for this purpose.

4. Methodology

Descriptive research was used in collecting data and information that was to be analyzed and explained in order to realize the objectives of this study.

a. The study population

Iraqi faculty members still working in Iraqi universities i.e. 19,339 people for the 2006 / 2007 academic year are the targeted community². As for the expatriate Iraqi faculty members still working in Jordanian private and governmental universities, they amounted to 797 in 2006 and 863 in 2008³.

² Ministry of Higher Education and Scientific Research, Evaluation Report of Iraqi Universities Performance for 2006 / 2007

³ Statistics of the Jordanian Ministry of Higher Education for the academic year 2006, 2008.



b. The Sample

The study was applied to a random sample chosen according to the characteristics of Iraqi faculty members still working in Iraqi and Jordanian universities. The factors that were considered were the rank, the degree, the specialization and country where the degree was obtained.

The sample included 250 faculty members from the following Iraqi universities: University of Baghdad, Al-Mustansiriya University, University of Technology, Al-Nahrain University, Diyala University and the University of Anbar. The sample accounts for 5% of the total faculty members of the chosen universities. As for the expatriate Iraqi faculty members working in Jordanian public and private universities, they amount to 250 and were chosen from the following universities: University of Jordan, Philadelphia University, American Middle East University, Balqa Applied University, Jadara University, Al-Ahliyya Amman University, Zarka Private University and the Hashemite University. The sample accounts for 31% of the total faculty members of the chosen universities.

Despite a total of 500 faculty members in the sample, the researcher considered that the sample somehow realized the objectives of the study, given that all the characteristics are available. Statistically speaking, the bigger the sample, the better the study. However, in practice speaking, it is very difficult to apply the questionnaire to more than 10% of the community members due to security, long distances between universities along with human and financial resources.

74.3% of the sample members are doctorate holders and 25.7% are master's degree holders. Furthermore, 33.2% are specialized in the scientific fields and 66.8% in humanities. 62.4% had obtained their degrees from Iraqi universities and 37.6% from foreign ones.

c. The Tools

1. The researcher prepared a questionnaire with a number of questions concerning scientific and research activities of faculty members between 2006 and 2008. The questionnaire was distributed as follows:

- a. It was presented directly to 250 faculty members from diverse scientific majors and levels in Iraqi universities and interviews were conducted with them.
 - b. During a visit to Jordan, the researcher met 250 Iraqi expatriates working in Jordanian public and governmental universities in different scientific and literary majors.
2. The researcher analyzed the performance evaluation report in Iraqi universities for the 2006/ 2007 academic year and gathered the information related to the objectives of the study.

II. Results of the Study- Impact of the crises in Iraq on scientific research

Scientific research in Iraq mainly faced the following crises:

1. Expulsion of Faculty Members from Iraqi Universities

One of the factors that affected scientific and research activities of faculty members in Iraqi universities under the occupation was the expulsion of some faculty members because of their partisanship. In fact, 3,000 university professors were expelled because of their political leanings. Therefore, the Ministry of Higher Education and Scientific Research had to reduce the number of fields in higher education due to the scarcity of micro specializations (Shaaban, 2006). According to the Arab Human Development report for 2003, the persecution by Americans of Iraqi scientists raises fears over the continuation of the research process and the technological progress, not only in Iraq, but in the entire region (UNDP, 2003).



2. Security threats on Iraqi academics

Amidst the occupation, security threats to Iraqi academics increased, and ranged from threats with beating, insults inside the university campuses, kidnapping (group or individual kidnapping) from academic institutions and assassination of faculty members while they were leaving the universities. Some academics even received threatening letters instructing them to leave the campus. In fact, the militias who controlled the security of the universities used the setting as a scene for settling old scores. This therefore, had a major impact on the Iraqi brain drain (Dawoud, 2006).

Furthermore, according to a study prepared by the Association of University Professors in Iraq in 2006, Iraqi university professors were living in fear for their lives; 91% were scared of a painful death and 66% live in dread of being killed at any time.

Another study on the assassination of Iraqi academics conducted by Ismael Al-Jalele, a medical consultant, showed that 80% of the assassinations targeted people working in universities. More than half of the people killed were professors or associate professors. Of these 62% were doctorate holders, one-third of them had specialized in sciences and medicine and 17% of them were practicing doctors (Naba Information Network, 2007, Bouneeman, 2006).

In addition, the site www.brusselstribunal.org published a long list of scientists assassinated after the occupation, subdivided by scientific major and academic level. Up to 19 /1/ 2009, there were 413 faculty members killed, 74 kidnapped, 3,000 expelled and 5,500 doctors migrated.

Table 1 presents figures of assassinated faculty members according to the Iraqi universities and ministries where they used to work until 19 /1/ 2009.

Table 1: Assassinated faculty members

Institution	Number of Assassinated Faculty Members
University of Baghdad	118
University of Basra	39
University of Mosul	46
Al-Mustansiriya University	34
Diyala University	13
University of Anbar	21
Al-Nahrain University	15
Babel University	1
University of Technology	17
Al-Kadissiya University	1
Al-Muthanna University	1
University of Kerbala	4
Kufa University	4
Kirkuk University	5
Center of the Ministry of Higher Education	5
Other State Ministries	76
Total number of Killed academics	413

Source: www.brusselstribunal.org



3. Pillaging and setting fire to universities and libraries

The war acts before 9/ 4 /2003 led to an interruption of studies from 1 /3 /2003 till 1/ 11/ 2003 because universities, libraries, laboratories and scientific research centers were destroyed, burnt and pillaged.

The National Library built in 1920 which contained a wide assortment of more than a million documents, including rare books dating back to the Ottoman period and the royal regime, was completely burnt. The National Archive built in 1973 which contained more than 17 millions documents was burnt and totally destroyed. Moreover, most large libraries in Iraqi universities were burnt and destroyed, such as the central library of the University of Baghdad which was looted and then burnt. It contained many rare sources such as the writings of scholars Ahmad Susa, Muhammad Bahjat Al-Athari and Carmelite Father, Anstas Mary. The libraries of the universities of Basra and Mosul suffered the same fate. To name but a few, Bayt Al-Hikma, Al-Idrissi Research Center, the National Standardization Center and the Arab Gulf Center for Studies were looted, burnt and completely destroyed (Donny, 2003) (Asharq Al-Awsat newspaper, 2007). It is also noteworthy to say that Iraqi libraries had also suffered under the economic embargo imposed from 1990 to 2003. This was in the form of dilapidation of facilities as they could not be modernized, difficulties to subscribe to foreign and international periodicals, the absence of many master's and PhD theses related to scientific research , the unavailability of an internet connection, as well as a lack of general financial resources.

4. Iraqi brain drain

The occupation imposed on Iraq, as well as the marginalization and oppression endured by Iraqi scientists, has stifled the desire to realize any type of achievement. A feeling of indifference and sadness has prevailed and citizens moved away from the process of making any needed change in the country.

The repugnant socioeconomic and political environment led to an increase in brain drain in Iraq. After the Iran-Iraq war (1980 - 1988), the number of asylum seekers from Iraq to industrialized countries reached 24,750. The invasion of Kuwait accelerated this phenomenon and the repercussions of this war, such as the economic embargo imposed on Iraq, led to the migration of 7,350 scientists because of insecurity as well as the political situation. These people were from different specialties such as: surgical sub-specialties, nuclear medicine, electronic engineering, nuclear engineering, laserology, astronomy and many other high-tech specialties. After the occupation of Iraq, the number of emigrating competent people doubled. The total number of emigrating doctors exceeded 5,500 (Nima, p. 3 - 5). As for the total number of emigrating academics, the least we could say is that it doubled, but no real updated figures are actually available.

The reasons of this phenomenon could be summarized as follows:

- a. Decrease in revenues and living standards as the monthly salary of an Iraqi university professor ranged between 10 and 50 dollars under the embargo.
- b. Low morale amidst employees in general and scientists in particular given that the possibilities of scientific research (e.g. books, scientific magazines, apparatus, time needed for research, international scientific contact and institutional infrastructure) were not available and the results of such research were not used to benefit society.
- c. Absence of freedom to think and express opinions, in addition to a strict control on scientific and research material presented by the professors in their specializations. Authorities could even forbid the publishing of the results of some studies and research (Ferjany, 2000).



- d. Attractive external factors, given that technology development and the communication revolution which was to be found in developed countries would attract competent Iraqi people (Ghazal, 2006).

5. Lower expenditure on scientific research

The expenditure on research and development as a percentage of the Gross Domestic Product (GDP) is one of the most important indicators used worldwide to show the priority given by countries to research and development. According to UN statistics, this ratio has reached 3.6% in the USA, 3.8% in Sweden and 2.7 in Japan (UNDP, 2006). In the Arab World, this ratio has not exceeded 0.3% of the GDP, according to UNESCO statistics for 2004 (Abu Taha, 2008). The report showed that the ratio in Egypt has reached 0.34%, 0.28% in Jordan, 0.11% in Saudi Arabia, Syria, Lebanon and Tunisia and 0.04% in Iraq (UNESCO, 2004) where the military expenditure to the GDP ratio for 1990, reached 20% (Hattouch, 2004).

6. Administrative corruption

The Corruption Perception Indicator report for 2006, published by Transparency International, ranks Arab states according to the degree of corruption showed. The less corrupt Arab countries are ranked 31 out of 163, whereas, the Iraqi ranking is 160.

Corruption is very complex in Iraq; it affects individuals as well as communities and institutions. It became closely intertwined with political and economic degradation. Moreover, it had also penetrated the organizations of scientific research in Iraq, thus the country has regressed in qualitative scientific attainment (Nouri, 2007).

7. Regression of performance in Iraqi universities

The Performance Evaluation Report of Iraqi Universities ⁴ for the academic year 2006 – 2007 indicated the following:

a. Lack of autonomy of Iraqi universities:

When one takes a close look at the rules and regulations adopted in higher education, scientific research institutions and Iraqi universities, one finds that the majority of these regulations limit the independence of these facilities, putting them under the direct control of the ruling political party. Thus, academic freedom is restricted; faculty members are discouraged from innovation because it might give rise to controversial issues or political problems. Consequently, the desire to create is stifled. However, the excellence of scientists of distinction found in some Iraqi universities is the fruit of personal efforts and conditions and not of an institutional support.

b. Decrease in the higher academic ranks:

Despite the 10 to 13% increase in faculty members of Iraqi universities after the occupation, due to the reappointment of politically expelled members and the unemployed, some universities have witnessed a significant decrease of faculty with high ranks. This is the case in the University of Baghdad (15%), the University of Technology (17%) and Babel University (25%). This is due to the following reasons:

- 1) The expulsion of more than 3,000 faculty members who were mainly holders of high

⁴ The Evaluation Report of Iraqi Universities Performance is a database containing more than 250 evaluation indicators of the quality and level of Iraqi universities performance in the following domains: (objectives and mission of the university, faculty members, students, scientific research, social service ...)

academic ranks. This was in an attempt to dismantle the Baath Party.

- 2) Assassinations and brain drain. The number of assassinated faculty members reached 413 people. This was 2.2% of the total number of Iraqi faculty members. The number of faculty members who emigrated or resigned reached 15.8% of the total amount (Majid, 2007).

c. Increase of teaching load:

Due to the embargoes inflicted on Iraq, the average weekly working hours for faculty members in Iraqi universities was very high before 2003. It ranged from 21 to 24 hours per week for all academic levels. Between 2006 and 2008, this average decreased to 14 - 24 hours per week. Yet this goes beyond the university instructions which stipulate 68- hours per week for a professor, 10 -12 hours per week for an associate professor and 14 - 16 hours per week for an assistant professor.

Indicators showed that Iraqi universities have given priority to teaching hours at the expense of research, social service and other intellectual aspects. The average weekly hours that faculty members dedicate to research reached 34 minutes in Iraq, which is 1.5% of the whole academic working hours (Majid, 2007) compared to 33% for each faculty member in developed countries (Zaytoun, 1995).

d. Decrease in scientific journals:

According to the evaluation indicators, 7.7% of Iraqi universities published scientific results while the other universities stopped publishing them due to a lack of relevant resources, the continuous electric power cut-offs and the interference of political parties (Majid, 2007).

e. Lack of equipment such as libraries and computers:

The Evaluation Report of Iraqi Universities Performance for the academic year 2006 - 2007 noted a decrease in the number of books in libraries and their dilapidation as well as the deterioration of libraries that had endured pillage, embargoes and wars. Some of them were even burnt down. The UNESCO report of 2004 showed that libraries in Iraqi universities are limited. It was noted that even in the best universities the number of books per student is low (around 7 only). Namely it is 7.3 for the University of Technology, 7.6 for Al-Mustansiriya University and 5.1 for Kufa University. As for the total number of books in libraries, it ranged from 700,000 in the University of Basra to 30,000 in smaller universities, compared to 3 million books in the University of Strasbourg for instance, 2 million books in Konstanz University in Germany and 3.3 million books in Cluj University in Romania (UNESCO, 2004).

The evaluation indicators also highlighted a decrease in the number of computers compared to the number of students and faculty members, as only one computer is available per 20 faculty members in a single university (Majid, 2007).

Therefore, one could say that Iraqi universities suffer from a lack of material, technical and human resources and are even more vulnerable because of security and instability.

III. Results of the study- the scientific and research activities, a comparison between Iraqi Faculty at Iraqi Universities and Iraqi faculty expatriates at Jordanian universities, between 2006 and 2008

Results showed that the average research and scientific activities for faculty members working in Iraqi universities reached 2.97 compared to 3.16 for expatriate Iraqi faculty members working in Jordanian universities. It is noted that 64.8% of the faculty members in Iraq and 68.4% in Jordan did not present any scientific or research work during the abovementioned period, which is of course a very worrying situation. (Table 2)

Table 2: percentages of scientific and research activities undertaken between 2006 and 2008 by faculty members in Iraqi universities and Jordanian universities

Number of Undertaken Research & Scientific Activities	Number of Faculty Members in Iraq		Number of Iraqi Faculty Members Working in Jordan	
	N	%	N	%
None	162	64.8	171	68.4
1 - 3	17	6.8	15	6
4 - 6	20	8	18	7.2
7 - 9	14	5.6	13	5.2
10 - 12	12	6	13	5.2
13 - 15	18	7.2	20	8
16 & more	7	2.8	9	3.6
TOTAL	250	100	250	100

As for the quality and nature of scientific and research activities undertaken by faculty members, the following can be noted (see table 3):

1. Published research

This kind of research came first amongst the research and scientific activities of faculty members in both Iraqi and Jordanian universities. The average number per faculty during a single year reached 1.345 in Iraqi universities and 0.702 in Jordanian ones. Consequently, a faculty member, either in Iraq or Jordan is presenting a maximum of one piece of research during a single year.

As for the field of research there is focus more on humanities and social sciences rather than on natural sciences such as computer engineering and medicine.

Many studies show that the productivity of a researcher in developed countries can reach up to 1.5 pieces of research per year (Ghanem, 2000) and during the past five years, 305 million scientific research papers were published all around the world. These included 34% of American origin and less than 1% from the Arab countries (Al Barghouty et al., 2007).

2. Participation in scientific conferences and symposia

The participation of faculty members in scientific conferences and symposia is ranked second. The average annual amount of participation reached 0.816 in Iraq and 0.431 in Jordan. This lack of participation is due to insufficient financial resources for sending delegations to participate in scientific conferences and symposia outside Iraq. This is due to university regulations which have defined an amount of \$200 that will be allocated per year to any faculty member who participated in a conference outside Iraq during a single year.

3. Published articles

Published articles are ranked third. The average annual number of published articles is 0.519 in Iraq and 0.652 in Jordan.



4. Supervising theses

Supervising theses is ranked fourth, with an annual average of 0.259 for each faculty member in Iraq and 0.602 in Jordan. This shows that a faculty member in Iraq can supervise one thesis every 4 years, while in Jordan he/she can supervise one every 2 years.

5. Writing books

Writing books is ranked fifth, with an annual average of 0.242 for a single faculty member in Iraq and 0.345 in Jordan. This means that a faculty member in Jordan or Iraq can only write one book every 45- years.

This low rate of writing and publishing is mainly caused by:

- a. Local censorship. A strict censorship targeting writers and writings is imposed on books in Iraq. Many have been forbidden because they expressed the views of some political parties, criticized the state or any friendly country and were contrary to morals.
- b. The absence of companies and printing houses that print, publish and distribute such texts.

6. Dedication to science:

Dedication to science is ranked sixth, with an annual average of 0.041 in Iraq and 0 in Jordan.

7. Translating books

Translating books is ranked seventh, with an annual average of 0.018 for each faculty member in Iraq and 0.032 in Jordan.

Iraq does not translate many texts because faculty members tend not to master foreign languages. Therefore, they can neither translate nor benefit from the book in its original language. Moreover, translation sources and references, if available, are very old.

8. Participating in research contracts of State institutions

Participating in research contracts of state institutions is ranked eighth, with an annual average 0.029 in Iraq and 0 in Jordan. This weak participation is due to the low number (8.8%) of contracts between state institutions and Iraqi universities. Moreover, state institutions are not able to pay salaries or allocate the appropriate financial resources to faculty members for their participation in research contracts.

9. Patents

Obtaining patents is ranked ninth, with an average of 0.009 in Iraq and 0 in Jordan.

When comparing the scientific and research production of faculty members inside and outside Iraq, it appeared that the results were in favor of faculty members in Iraq in research, published studies and participation in conferences, while they were in favor of members outside Iraq in academic supervision of higher education students. As for the 6 other domains, the differences were not significant.



Table 3: Average annual scientific and research production of faculty members in Iraqi and Jordanian universities between 2006 and 2008

Statistical Significance	Annual Average for Faculty Members Working in Jordan		Annual Average for Faculty Members inside Iraq		Type of Scientific and Research Production
	Comment	Average	Comment	Average	
Not significant	1 book each 3 years	0.345	1 book each 4 years	0.242	Writing Books
Significant at 0.01	One faculty /one conference each 2.5 years	0.566	One faculty /one conference each 1.5 year	0.816	Participating in Scientific Conferences and Seminars
Not significant	1 book translated each 25 years	0.032	1 book translated each 50 years	0.018	Translating Books
Significant for 0.01	Less than one research per year	0.702	1.25 research each year	1.345	Publishing Researches
Not significant	No participation	0	3 faculty for each 100 members participate in research contracts	0.029	Participating in Research Contracts of State Institutions
Not significant	No dedication	0	Annually, 4 faculty members out of 100 dedicate are research full timers	0.041	Dedication to Science
Not significant	1 article each 1.5 year	0.652	1 article each 2 years	0.519	Articles
Not significant	-	-	1 patent each 100 years	0.009	Patents
Significant for 0.01	1 supervision of a Master's or PhD Thesis each 1.5 year	0.602	1 supervision of a Master's or PhD Thesis each 4 years	0.259	Supervising Master's and PhD Theses

IV. Conclusions and recommendations

1. Conclusions

Consequently, one can make the following inferences:

- a. Scientific and research production is weak, as shown in the evaluation indicators of Iraqi Universities' performance. This is due to the expulsion of more than 3,000 faculty members, security threats to academics, the brain drain, the assassination of more than 413 faculty members, low expenditure on scientific research, war acts such as

pillaging and setting fire to universities, insufficient libraries and laboratories, as well as administrative corruption.

- b. The performance of Iraqi universities is poor because universities are not independent, salaries even for high academic levels are low and opportunities to publish in relevant scientific journals are slender. In addition, there is a heavy academic load, weak scientific and research production and insufficient technical and financial resources (libraries and computers).
- c. When it comes to scientific and research production, faculty members inside and outside Iraq endure similar conditions stemming from psychological, social and economic instability.
- d. More than 64% of faculty members inside and 68% outside Iraq have not undertaken any scientific activity for 3 years.
- e. The number of hours dedicated by each faculty member to scientific research represents a maximum of 1.2% of the weekly working hours.
- f. Scientific and research production of faculty members working in Iraqi and Jordanian universities is low. This includes: writing, translating, publishing scientific research and articles, academically supervising higher education students, obtaining patents, participating in scientific conferences and symposia abroad and participating in research contracts of state institutions, as well as dedication to science. The average number of scientific and research activities between 2006 and 2008 reached 2.97 in Iraq and 3.16 in Jordan.
- g. Scientific and research activities of faculty members in Iraqi universities focused on publishing research, obtaining patents, participating in scientific conferences and symposia and in research contracts of state institutions as well as dedication to science. The differences were significant in their favor for the publication of articles and the participation in scientific conferences and seminars.
- h. Scientific and research activities of Iraqi faculty members in Jordanian universities focused on publishing scientific articles, supervising higher education students, writing and translating books. The differences were significant in their favor for the supervision of higher education students.

2. Recommendations

- a. It is necessary that international and regional organizations such as UNESCO, ESCWA, the Arab League Educational, Cultural and Scientific Organization, the Federation of Islamic Universities, the Association of Arab Universities and other organizations in charge of higher education affairs use this study in order to take adequate measures to alleviate the harsh conditions endured by faculty members in Iraq and Jordan.
- b. It is necessary to present the results of this study to organizations in charge of human rights and associations in charge of academic affairs in order to organize conferences and forums that defend Iraqi faculty members and alleviate their hardships.
- c. It is important that faculty members inside and outside Iraq get research grants in order to encourage them to maintain a scientific contact between Arab and international universities, as well as research centers.
- d. Scientific research of faculty members inside and outside Iraq should be published in prestigious Arab and international scientific journals.



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