

Obstacles To Scientific Research In Light Of A Number Of Variables

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ABSTRACT

The present study aimed to identify the scientific research obstacles facing faculty members in the College of Education at Princess Nora bint Abdul Rahman University (PNU) and to determine the differences in the obstacles according to age, academic rank, scientific specialty, marital status, number of completed studies, and time since the last academic rank was received.

An initial data form and questionnaire were prepared to identify the obstacles to scientific research. The questionnaire assessed personal and family obstacles, social factors, technical skills, organizational and professional obstacles, and societal obstacles. The researcher assessed the validity and reliability of the survey instrument by testing it on a sample of 23 faculty members at the university. The results demonstrated a high degree of validity (i.e., high internal consistency) and reliability (Cronbach's alpha coefficient: .97).

The study instrument was administered to a final sample of 69 faculty members (out of 111) at the university.

The results demonstrated a decrease in the averages of the obstacles. The arithmetic averages for the obstacles were organizational and professional obstacles (2.76), societal obstacles (2.64), personal and family obstacles (1.87), and skills-related obstacles (1.70).

The results demonstrated no significant differences for any obstacles with respect to age, academic rank or scientific specialization. There were significant differences in skills-related obstacles according to the number of completed studies; researchers with no completed projects faced greater obstacles. The results also demonstrated significant differences in societal obstacles associated with the length of time since the last academic rank was received.

Keywords: Impediments; Scientific Research; Faculty in the College of Education; Princess Nora bint Abdul Rahman University

INTRODUCTION

Institutions of higher education are the most important entities responsible for scientific research and universities have served this role in all countries that have made progress in the field of scientific research.

Considering the history of the function and role of universities, it is clear that their function has changed and developed because of social and scientific developments. The role of the university was once limited to providing the framework for skills and knowledge and transferring them from one generation to another. The modern concept of scientific research was not among universities' tasks (which were to develop and grow knowledge); universities did not perform this task until the beginning of the nineteenth century, after huge developments and discoveries occurred in all fields of knowledge. Although the research function of universities is very important, there are weaknesses in the level of scientific research in Arabian universities. These weaknesses could be a result of limitations in the plans and strategies for developing scientific research in addition to the lack of

financial resources and monitoring; the lack of incentives, motives, innovation, and change; instability in the administrative bureaucracy; and the miserable social conditions. Combined, these factors do not encourage the development of a prosperous scientific and research environment.

THE STUDY PROBLEM

Scientific research suffers from many shortcomings all over the world; Sawyerr (2004) showed that in most African countries, the conditions for research have been severely compromised by generally low remuneration, heavy teaching loads, the lack of mentoring for young faculty, and inadequate infrastructure.

In a study conducted by Osagie (2012) that aimed to identify the nature of federal government funding for research in universities in Nigeria, the findings showed that less than 5% of the total recurring revenue was allocated for research at the University of Benin between the 1992/93 and 1996/97 academic sessions. In addition, the findings indicated that the federal government was not making a robust investment in research, and therefore, Nigeria is not developing. Hence, it is in an economic quagmire.

On the Arabian level, scientific research suffers from failures and gaps that separate the researchers from the decision-makers. There is considerable scientific competency and financial capability in the Arabian world, but the spending on scientific research is non-productive because it is rare and not channeled in the right direction.

There have been many studies about the impediments to scientific research in Arabian universities, such as the study by Zoulef and Al-sa'ida (1997), which aimed to identify the obstacles facing scientific researchers in Jordanian universities. The findings showed that there were obstacles in gathering data, environmental impediments, and financial, publishing, distribution, and administrative obstacles that hinder scientific researchers in completing their research.

In another study, Al Ataibi (2010) aimed to determine the reasons behind the weaknesses in the implementation of scientific studies by students in Jordanian universities and identified the following factors: weak interest in general scientific research in the Arab world, few financial resources allocated to scientific research, concern among faculty members about the overburdened school system, the lack of sufficient time for research, the increase in the number of students, disinterest among the students in the culture of scientific research, inadequate research methods learned by the students, the absence of an encouraging climate to perform scientific research, and the lack of faculty members who are well trained in scientific research methods.

A study by Kazem and Algemali (2004) aimed to identify the obstacles to scientific research at the University of Sultan Qaboos in Oman. The study sample comprised arts and social sciences faculty members and education faculty members, and the study findings revealed the same obstacles that were mentioned in the study by Zoulef and Al-sa'ida (1997). The researchers arranged the obstacles from the most intense to the least intense - the researchers' burdens, lack of knowledge and information, publishing- and judgment-related obstacles, and administrative obstacles.

The Alkasabi study (2003) identified obstacles in addition to those previously mentioned - the separation between scientific research and practice and societal problems, the lack of planning within universities related to desired fields of scientific research, randomized research, and the individuality of performance.

A study by Amatanious (2006) had the same aim as the studies mentioned above, but the study sample was from Syria University. It produced the same results, including the lack of financial resources dedicated to educational research, the lack of flexible systems and regulations for financing educational research, the existence of administrative impediments, and the lack of cooperation with other universities.

The study by Almogaidal and Shamas (2010) investigated the obstacles facing education faculty members in Salalah at Oman and reached the same results. However, this study also investigated the differences between males and females in the types of scientific research obstacles they face, and it also assessed the differences in the dimensions of scientific research obstacles according to the faculty members' scientific discipline and years of

experience. This study found no statistically significant differences between males and females in terms of obstacles to scientific research and no statistically significant differences in terms of discipline; however, there were statistically significant differences related to years of experience, such that the least experienced researchers faced more obstacles.

The aim of Mohsen's study (2011) was to explore the difficulties in scientific research at Baghdad University in Iraq from the faculty members' point of view and to determine the differences between disciplines in their views about the difficulties facing scientific research. The results of this study showed that difficulties and obstacles strongly affect scientific research in the university. Financial, technical, and organizational factors have the greatest effect. The study also showed that there are no statistically significant differences in the obstacles faced between humanities faculty members and scientific faculty members in Baghdad.

In a study by Alzahrani (2011), which aimed to identify the barriers and problems preventing researchers from publishing their research in Saudi Arabian universities, the researcher identified many problems related to lack of encouragement from academic staff to conduct and publish research, the lack of financial support for the research publishing sector, and the lack of a research publishing infrastructure. In another study performed by Alghanim and Alhamali (2011), who sought to identify the prevalence, factors, and obstacles affecting research productivity among the academic staff at medical and health colleges in the Kingdom of Saudi Arabia, the findings showed that lack of time, lack of research assistants, lack of funds for research, and busy teaching loads were the most frequently cited obstacles impeding research productivity in Saudi universities.

The previous results show that there are many problems and obstacles facing research in the educational field in Arabian countries.

To examine the study problem using the current research sample, which consists of faculty members in the College of Education at Princess Nora bint Abdul Rahman University (PNU), the researchers reviewed the academic ranks of the faculty members in education and compared them with other faculties because advanced ranks are associated with conducting scientific research. The results were as follows:

1. Associate professors and chairs comprised 11% of the total education faculty members, which is a very low percentage compared with the percentages among other faculties, which were as high as 30% in some cases.
2. Most of the retired female faculty members on the education faculty (7 of 8) retired with the rank of associate professor.
3. Twenty-four faculty members (18.46%) had received their last academic rank more than ten years prior.
4. The researchers also reviewed the last five years of the education faculty members' progress from one academic rank to another. They found that the progress toward academic ranks was very slow - during the last five years, only three members had been promoted from associate professor to chair and only three others had been promoted from assistant professor to associate professor.

The data enable the researchers to examine the obstacles facing faculty members so that they can present them to those who are involved in developing scientific research so that the obstacles can be overcome and scientific research can be enhanced in the College of Education at PNU.

THE RESEARCH QUESTIONS

1. What are the obstacles to scientific research facing the education faculty members at PNU?
2. Are there statistically significant differences in the obstacles to scientific research facing faculty members on the education faculty at PNU according to age?
3. Are there statistically significant differences in the obstacles to scientific research facing faculty members on the education faculty at PNU according to academic rank?
4. Are there statistically significant differences in the obstacles to scientific research facing faculty members on the education faculty at PNU according to academic discipline?
5. Are there statistically significant differences in the obstacles to scientific research facing education faculty members at PNU according to the number of completed studies?

6. Are there statistically significant differences in the obstacles to scientific research facing education faculty members at PNU according to the time elapsed since the last academic rank was received?

THE STUDY TERMS

The researchers adopted the definition used by Lodico, Spaulding, and Voegtle (2010) for scientific research - "a systematical survey aims to discover the phenomena which help in reaching facts and verifying their validity according to subjective standards."

Impediments to Scientific Research

The researchers define the impediments to scientific research as all the problems and difficulties that hinder the ability of faculty members to conduct scientific research, whether they are related to personal, social, or familial factors; skills; or administrative, organizational, professional, or social factors.

Procedurally, the researchers define the impediments to scientific research as "the total score on the questionnaire about the impediments to scientific research, where a high score represents many impediments and obstacles and a low score represents a low percentage of impediments."

Faculty Member

The researchers define a faculty member as "a university professor who is responsible for teaching, scientific research, academic guidance, and who receives advisory and administrative tasks from those in the position of assistant professor or higher."

Study Community

The study community consists of all the faculty members on the education faculty at PNU - 111 members, including professors, assistant professors, and associate professors.

Study Sample

The study included all the faculty members on the education faculty at PNU who were working during the first term of the academic year (2013). A total of 72 of them responded to the survey, and after excluding the incomplete questionnaires, the final sample included 69 faculty members.

Study Tools

The Questionnaire on Scientific Research Impediments

The questionnaire on scientific research impediments was designed by the researchers after they reviewed prior studies and theoretical frameworks related to scientific research and its impediments, standards, and similar questionnaires. The questionnaire consisted of 40 items covering the following dimensions: personal, familial, and social obstacles; skills-related obstacles; and organizational, professional, and communal obstacles.

These items were answered on a four-point response scale (matches me totally; matches me often; matches me sometimes; never matches me).

This questionnaire was evaluated by eight faculty members in the psychology department of the College of Education. The items reached 80% consistency; some of them were removed and others were rephrased based on the opinions of the judges.

The validity of the tool was assessed by evaluating its internal consistency. The results showed that all the coefficients were statistically significant between the individual items, between the items and the total score on the dimension it belongs to, and between the items and the total score on the questionnaire. The two items without

statistically significant results were removed. The reliability of the questionnaire was assessed using Cronbach’s alpha coefficient, which was (0.97), considered a very high reliability coefficient.

Statistical Methods

To extract and analyze the results, the following statistical methods were used: frequencies, percentages, arithmetic means, and ANOVA tests (p).

THE INTERPRETATION OF STUDY RESULTS

First Question

What are the obstacles to scientific research facing the education faculty members at PNU?

To answer this question, refer to Table 1 for calculated arithmetic means for each dimension.

Table 1: The Arithmetic Means and the Descending Order of Importance of the Impediments to Scientific Research for the Faculty Members

Dimensions	Arithmetic Mean	Order
Personal, familial, and social obstacles	1.87	3
Skills-related obstacles	1.70	4
Organizational and professional obstacles	2.76	1
Communal obstacles	2.64	2
Total score for obstacles	2.31	

* The arithmetic means of four scores.

Table 1 shows that the arithmetic means for the impediments to scientific research were as follows: organizational and professional obstacles (mean of 2.76); communal obstacles (mean of 2.64); personal, familial, and social obstacles (mean of 1.87); and skills-related obstacles (mean of 1.70). This result is consistent with the study by Kazem and Algemali (2004) which also identified organizational obstacles and researchers’ burdens as the most common obstacles.

The order of the impediments reflects the faculty members' awareness of research needs, control of personal, familial, social aspects, and interest in developing their research skills.

Second Question

Are there statistically significant differences in the obstacles to scientific research facing education faculty members at PNU according to age?

To answer this question, refer to Table 2 for results of the ANOVA test that was performed.

Table 2: ANOVA Test (P) of the Significance of the Differences in the Responses about the Impediments to Scientific Research According to Age

Dimension	Variance Resource	Total Squares	Freedom Degrees	Squares' Mean	p Value	Significance Level	Comment
Personal, familial, and social obstacles	Among groups	0.68	3	0.23	0.99	0.405	Not significant
	Within groups	13.90	61	0.23			
Skills-related obstacles	Among groups	0.59	3	0.20	0.42	0.736	Not significant
	Within groups	28.04	61	0.46			
Organizational and professional obstacles	Among groups	1.49	3	0.50	0.88	0.458	Not significant
	Within groups	34.45	61	0.57			
Communal obstacles	Among groups	0.50	3	0.17	0.19	0.904	Not significant
	Within groups	53.81	61	0.88			
Total impediments to scientific research	Among groups	0.48	3	0.16	0.53	0.665	Not significant
	Within groups	18.67	61	0.31			

Table 2 shows that p-values are not significant for the following dimensions: personal, familial, and social obstacles; skills-related obstacles; professional and organizational obstacles; communal obstacles; and the total impediments to scientific research. In addition, there are no statistically significant differences in the study sample responses about the impediments to scientific research related to the differences in ages which can be explained by the convergence of ages in the sample, given that 39 members were older than 35-45 years old.

Third Question

Are there statistically significant differences in the obstacles to scientific research facing faculty members on the education faculty at PNU according to academic rank?

To answer this question, refer to Table 3 showing the results of the Mann-Whitney test that was performed.

Table 3: The Mann-Whitney U Test of the Significance of the Differences in the Study Sample Responses about the Impediments to Scientific Research According to Academic Rank

Dimension	Academic Rank	Number	Grades' Mean	Total Grades	U Value	Significance Level	Comment
Personal, familial, and social obstacles	Associate professor and higher ranks	10	29.75	297.50	-0.90	0.370	Not significant
	Assistant professor	59	35.89	2117.50			
Skills-related obstacles	Associate professor and higher ranks	10	25.75	257.50	-1.58	0.114	Not significant
	Assistant professor	59	36.57	2157.50			
Organizational and professional obstacles	Associate professor and higher ranks	10	31.95	319.50	-0.52	0.603	Not significant
	Assistant professor	59	35.52	2095.50			
Communal obstacles	Associate professor and higher ranks	10	27.50	2750.0	-1.28	0.200	Not significant
	Assistant professor	59	36.27	2140.0			
Total impediments to scientific research	Associate professor and higher ranks	10	29.45	294.50	-0.95	0.344	Not significant
	Assistant professor	59	35.94	2120.50			

Table 3 shows that the p-values are not significant for the following dimensions: personal, familial, and social obstacles; skills-related obstacles; professional and organizational obstacles; communal obstacles; and the total impediments of scientific research. In addition, there are no statistically significant differences in the sample responses about the impediments to scientific research that are related to the differences in the academic ranks of the study sample. This result can be explained in light of the fact that teaching requirements, scientific research, committee work, and administrative work are applicable to faculty of all academic ranks without any noteworthy exceptions.

Fourth Question

Are there statistically significant differences in the obstacles to scientific research facing faculty members on the education faculty at PNU according to academic discipline?

To answer this question, refer to Table 4 for results of the ANOVA test that was performed.

Table 4: ANOVA Test (P) of the Significance of the Differences in the Sample Responses about the Impediments to Scientific Research According to Academic Discipline

Dimension	Variance Resource	Total Squares	Freedom Degrees	Squares' Mean	p Value	Significance Level	Comment
Personal, familial, and social obstacles	Among groups	1.27	6	0.21	0.79	0.582	Not significant
	Within groups	16.64	62	0.27			
Skills-related obstacles	Among groups	2.39	6	0.40	0.91	0.493	Not significant
	Within groups	27.15	62	0.44			
Organizational and professional obstacles	Among groups	6.12	6	10.2	20.2	0.076	Not significant
	Within groups	31.25	62	0.50			
Communal obstacles	Among groups	8.28	6	1.38	1.74	0.126	Not significant
	Within groups	49.12	62	0.79			
Total impediments to scientific research	Among groups	20.5	6	0.34	1.10	0.373	Not significant
	Within groups	19.21	62	0.31			

Table 4 shows that the (p) values are not significant for the following dimensions: personal, familial, and social obstacles; skills-related obstacles; professional and organizational obstacles; or communal obstacles. In addition, there are no significant differences in the total impediments to scientific research and there are no significant differences in the sample responses about the impediments to scientific research that are related to the differences in the academic disciplines of the study sample. The studies by Mohsen (2011) and Almogaidal and Shamas (2010) reached the same results, which can be attributed to the convergence of the academic disciplines on one side and the fact that all the disciplines are subject to the same prevailing rules and regulations.

Fifth Question

Are there statistically significant differences in the obstacles to scientific research facing education faculty members at PNU according to the number of completed studies?

To answer this question, refer to Table 5 for results of the ANOVA test that was performed.

Table 5: ANOVA Test (P) of the Significance of the Differences in the Sample Responses about the Impediments to Scientific Research According to the Differences in the Number of Completed Studies

Dimension	Variance Resource	Total Squares	Freedom Degrees	Squares' Mean	p Value	Significance Level	Comment
Personal, familial, and social obstacles	Among groups	0.69	2	0.35	1.35	0.267	Not significant
	Within groups	16.21	63	0.26			
Skills-related obstacles	Among groups	4.30	2	2.15	5.69	0.005	Significant at the level 0.01
	Within groups	23.80	63	0.38			
Organizational and professional obstacles	Among groups	0.47	2	0.24	0.041	0.663	Not significant
	Within groups	35.94	63	0.57			
Communal obstacles	Among groups	1.63	2	0.082	0.098	0.379	Not significant
	Within groups	52.21	63	0.083			
Total impediments to scientific research	Among groups	10.8	2	0.054	1.77	0.178	Not significant
	Within groups	19.14	63	0.30			

Table 5 shows that the p-values are not significant for the following dimensions: personal, familial, and social obstacles; professional and organizational obstacles; and communal obstacles. There are no statistically significant differences in the total impediments to scientific research and there are no statistically significant differences in the sample responses about the impediments to scientific research that are related to the differences in the number of studies completed by the study sample.

Table 5 also shows that the p-value is significant at the level of 0.01 for the dimension of skills-related obstacles. Thus, there are statistically significant differences in the study sample responses about the skills-related impediments to scientific research that are related to the differences in the number of studies completed; and by using the Scheffe's test, we can discover the source of these differences.

Table 6 shows that there are significant differences at the 0.05 level in the skills-related obstacles between the respondents who completed more than two studies and those who did not complete any studies. This result can be attributed to the fact that scientific research requires a group of skills, and not mastering them represents an obstacle to scientific research.

Table 6: Scheffe's Test to Clarify the Source of the Differences in the Sample Responses about the Skills-Related Impediments to Scientific Research that are Related to the Number of Completed Studies

Number of Studies Completed	Arithmetic Mean	No Research Completed	One or Two Studies	More Than One or Two Studies	Difference Favors
No research completed	1.98			*	No research completed
One or two studies	1.61				
More than one or two studies	1.35				

* Significant differences at the 0.05 level.

Sixth Question

Are there statistically significant differences in the obstacles to scientific research facing education faculty members at PNU according to the time elapsed since the last academic rank was received?

To answer this question, refer to Table 7 for results of the ANOVA test that was performed.

Table 7: ANOVA Test (P) of the Significance of the Differences in the Sample Responses about the Impediments to Scientific Research According to the Differences in the Time Elapsed Since the Last Academic Rank was Received

Dimension	Variance Resource	Total Squares	Freedom Degrees	Squares' Mean	p value	Significance Level	Comment
Personal, familial, and social obstacles	Among groups	0.33	2	0.17	0.061	0.0549	Not significant
	Within groups	16.56	60	0.028			
Skills-related obstacles	Among groups	0.086	2	0.043	0.095	0.0392	Significant at the level 0.01
	Within groups	27.17	60	0.045			
Organizational and professional obstacles	Among groups	0.76	2	0.038	0.066	0.0522	Not significant
	Within groups	34.86	60	0.058			
Communal obstacles	Among groups	6.91	2	3.64	4.27	0.018	Significant at the level 0.05
	Within groups	48.56	60	0.081			
Total impediments to scientific research	Among groups	0.039	2	0.047	1.41	0.252	Not significant
	Within groups	19.80	60	0.33			

Table 7 shows that the p-values are not significant for the following dimensions: personal, familial, and social obstacles; skills-related obstacles; and professional and organizational obstacles. There are no statistically significant differences in the total impediments to scientific research and no statistically significant differences in the sample responses about the impediments to scientific research that are related to the differences in the time elapsed since the last academic rank was received.

Table 7 also shows that the p-value is significant at the 0.01 level for the dimension of skills-related obstacles. Thus, there are statistically significant differences in the responses about the skills-related impediments to scientific research that are related to the differences in the time elapsed since the last academic rank was received. By using a Scheffe's test, we can discover the source of these differences.

Table 8 shows that there are significant differences at the 0.05 level in the communal obstacles between the participants who received their last academic rank 1-5 years ago and those who received their last academic rank more than 10 years ago. This result reflects a state of scientific frustration among some of the faculty members who remained at their current academic rank for longer than expected as a result of the impediments to financing their research and applying their results in the community.

Table 8: Scheffe's Test to Identify the Source of the Differences in the Participants' Responses about the Communal Impediments to Scientific Research that are Related to the Differences in the Time Elapsed Since the Last Academic Rank was Received

Time Elapsed Since the Last Academic Rank was Received	Arithmetic Mean	1-5 Years	5-10 Years	More Than 10 Years	Difference Favors
1 – 5 years	2.36				
5 -10 years	2.89				
More than 10 years	3.15			*	More than 10 years

* Significant differences at the 0.05 level

CONCLUSION

Based on the results of this research, the researchers recommend the following:

1. Creating a general overview of scientific research plans in the university at the level of all departments and faculties according to the needs of community institutions.
2. Allocating the appropriate budget necessary for scientific research that is free from routines and unnecessary spending controls.
3. Supporting the view that spending on scientific research is a real investment to serve humanity and not a waste of money.
4. Supporting research and researchers through grants and scientific awards that increase and enhance the work of scientific researchers.
5. Urging universities to encourage faculty members and facilitate the formation of scientific communities that lead to scientific progress in educational disciplines.
6. Establishing an administration for scientific publishing in universities to facilitate publication of researchers' scientific findings in the top scientific magazines.

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