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Study of Factors Affecting Scientific Production of Faculty Members in Islamic Azad University Of Tehran, Iran

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ABSTRACT

In this study we aim to study factors influencing scientific production of faculty members. This is case study done in Islamic Azad University of Tehran, Iran. The method used in this study was analytical survey.Population of this study includes all the full-time faculty members with M.S. and higher degree or with academic rank of lecturer, assistant professor; associate professor and professor. Data collection tool was a questionnaire.500 questionnaires were distributed among faculty members and after two weeks, 420 completed questionnaires were gathered. Based on collected data and testing effective factors with SPSS software, we concluded that information skills and scientific communication had significant impact on scientific production of the faculty members (p-value<0.05), but factors: welfare services, research facilities, and performance of university managers had no effect on dependent variable.

KEYWORDS: scientific production; information skills; scientific communication; welfare services; research facilities; university management; Islamic Azad University, Tehran

1. INTRODUCTION

Scientific production as a category of scientific communities includes outputs and products of these communities and is one of the main indicators of scientific development in each society. The main goal of scientific communities is to achieve scientific development and promote its quality and quantity of. In other words, the most important factor to achieve independence and get rid of colonialism is to have access to "technical knowledge" through which the independency of each country shall be guaranteed. Acquiring "technical knowledge" can come true in light of scientific research and adaptation to environmental condition and ancient scientific achievements in historical context. Therefore, the scientific and technical knowledge of a country is the key factor in determining its capability to compete at international level.

Today, research affairs, are considered as one of the main elements of healthy cultural, social and economic development after training human force. Development in long run is impossible without establishing a research system in the country since scientific and technological self-efficiency is generated by dynamic and qualified movement in research cycle of each society. Establishing the scientific research constructs and institutions is one of the main objectives and instruments of qualitative development based on growth measures in modern global system. That is, the dream to achieve today world's development indicators at economic, social and cultural dimensions would not come true without research and development and the countries with lower research and development funds compared to their GDP would be marginalized in fast-paced competitive movement on development route.

In the modern society of Iran, a small share of GDP is spent on research affairs annually and this is not an acceptable and ideal situation due to the problems such as financial, facility, managerial and structural barriers such as cultural issues. Science and research in Iran imply obligations in addition to principles, methods and research instruments without which it is not possible to conduct an objective research and have a precise understanding of the related issues and phenomena. (Tayefi, 2001)

One of the main factors of scientific stagnation and backwardness of the country may be lack of "Scientific Macro-Strategy" or "Science Policy". Precise and scientific short-term, medium-term and long term planning is one of the conditions to achieve scientific development and growth. Science policy should clearly determine the objectives of scientific activities and mobilizes the facilities to meet these objectives. The objectives should fit the needs of society and system and its environment and based on the interaction between science and society. Establishing "Research Management" plays a significant and undeniable role in recruitment of scientific human

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force and using their capabilities efficiently. Scientific human forces have their own sensitivities and expectations which make it intolerable for them to accept the executives. Thereupon, establishing science policies is an obvious and inevitable question to be addressed. Otherwise, absence of science policies makes it impossible to develop and formulate the mission and objective of scientific and research activities on one hand and strategies, policies and programs for their realization in connection with proper application of resources and facilities.

Science policy "determines and sets the relationship between science institution and its social context" and helps to increases the mobility and vital power of science in society through synchronizing science and society and mobilizing the facilities. The evidence indicated that Iran lags far behind from international standards of science production terms both qualitatively and quantitatively. So that, the number of our scientific productions including journals and research papers is very low compared to developed countries or limited to specific fields (Niakan and Gharibi, 2005). In fact, it can be said that, science, scientific production and research have not been institutionalized properly in Iran nor have the required efficiency and lacks enough scientific dynamism.

Thus, Iran needs a scientific identity in order to achieve scientific development, overcome scientific backwardness and enter the scientific production process instead of consuming the scientific production. Increasing the quality and quantity of scientific productions is a possible solution which needs to take appropriate measures and policymaking which is more practical in light of getting familiar with scientific productions and factors affecting it. Accordingly, the present study investigates and reviews the factors affecting scientific productions of faculty members in Islamic Azad University branches of district 8 in Tehran, Iran (including *Islamshahr*, *Tehran Medical*, *South Tehran*, *North Tehran*, *Central Tehran*, *Dental*, *Shahr-e Rey*, *Science and Research*, and *Ghiamdasht* branches).

2. MATERIALS AND METHOD

2.1. Scientific communication

Scientific production is an important base for modern science and has a significant role in science development. Scientific communication system is based on transferring the information and findings of scientific activities through the network of experts and peer review through which the scientific activities of scientists are evaluated and rewarded (Kuper & Kuper, 1985).Scientific communication is the direct or indirect exchange of information and the results of scientific activities among the scientists and scientific institutions through communication channels.

Scientific communication has a long history and its methods have evolved over the time. In the new era, before establishment of the scientific societies and regular publication of scientific journals, letters were the communicative instruments of scientists to share the information about their discoveries. Thereafter, researchers published a booklet to share their ideas with and inform the results of their personal experiments to other scientists. There are numerous methods for scientific communication, all of which can be divided into two groups of formal/informal or direct/indirect communication. In formal indirect method, information is communicated through a mediator such as a scientific journal. In contrast, in informal direct method, information is communicated directly and without the presence of a mediator like meeting of two scientists in a seminar.

Scientific journals, books, reports, monographic, regular meetings of scientific and professional sessions, great scientific seminars and others are examples of formal communication channels and personal meetings, private letters, reprint and preprints, phone calls, academic seminars and others are informal and direct communication channels. However, both methods of communication are important on their own.

Sometimes, scientists understand issues through informal communication which otherwise would not be possible through formal communication. Nevertheless, both methods of communication have advantages and disadvantages due to their nature. Moravcsik (1982) pointed to the communicative methods of a scientist with four groups of people including decision makers, other scientists, technologists and general public. Each scientist needs both types of communication but formal indirect communication is obviously more efficient.

Garvey and Griffith (1972)stated the differences between formal and informal communication and considered large extend, being irretrievable and rapid feedback to the informant as the characteristics of informal communication (Meadows, 1974). In short, information transfer and communication is a must for science and all have confirmed its necessity. Today, more than one million papers are published and different seminars and conferences are held in different field and levelsall over the world, all of which indicate the extent and magnitude of scientific communication in the modern world. Communication functions as a tool for meeting the needs of scientists.

Scientific communication is one of the essential components of new science and countries spend a percent of their national income in this area. Investment of developed countries on scientific communication cannot be compared with developing countries. According to Abdus Salam (1984) one way through which developing

countries can prevent migration of their students is to extend the scientific communication and provide the condition for fast transfer of information and scientific advance to the local scientists. Iran is one of the developing countries which has taken this point into consideration and it is hoped to achieve success.

Shamsaei Golsefidi (1994) studied the viewpoints of the faculty members in agriculture faculties of Iran about the factors influencing the quality and quantity of research projects. He used a questionnaire to study the opinions of 253 of faculty members of agriculture faculties of Iran including professors, associate professors, assistant professors, lecturer and teaching assistants. Research findings indicated that according to them, the most important inhibiting factors in scientific research activities were: financial factors, organizational-administrative factors, factor related to facilities and resources, personal-social factors and finally the professional factors, respectively. Moreover, it was found that there was no significant relationship between the ranking of the respondents with five categories of scientific-research activities inhibiting factors and also the relationship between research background and the five variables. However, there was a significant relationship between the working experience of the respondents and the effect of inhibiting factors.

Baratpour (2002) used the survey method to study the viewpoints of 57 faculty members of librarianship departments of all the state universities of Iran about the personal, welfare, social, motivational, economic and administrative organizational factors affecting their research activities. Study findings indicated that willingness and interest from among the personal factors had the highest effect and time factor had lowest effect on doing research projects, respectively. From among the welfare-supporting factors, the factor of having access to books and journals had the highest effect and two factors of holding educational workgroups on o research and statistical methods and using the welfare facilities had the lowest effect. According to the respondents, from among the social factors, human relations among the faculty members had more effect on their scientific activities compared to the research scientific relations. The results also indicated that from among the motivational factors, the factor of encouraging the professors to participate in national and international conferences had the highest effect and the factor of encouraging professors to do joint activities with other universities had the lowest effect. In economic dimension, financial rewards, increased wages and benefits and differences between the amount of payment to research project by university and their incomes out of university had the highest efficiency. Finally from among bureaucratic factors, long process of research topic approval and the bureaucratic process due to the regulation of devoting lower research payment had the highest and lowest effect on research and scientific activities, respectively. Comparing the studied factors, the results indicated that based on the respondents viewpoints, the combination of bureaucratic and the financial factors had the highest and least effect on scientific activities, respectively.

Talebi (2002) studied the viewpoint of 37 faculty members of technical and engineering departments of Amir Kabir University of Technology, Sharif University of Technology, Iran University of Science and Technology about the factors involved in developing and publishing the scientific papers in a survey and using a questionnaire. Results of the study indicated that the majority of the respondents had pointed to the high effect of PhD theses and average effect of M.S. theses. Considering the administrative research facilities, the statistical tests showed that the facilities had higher effect on developing paper than the co-researcher. Although the degree of need for facilities in scientific researches was different and this difference could be due to the type of the research field and type of the research whether it was theoretical or practical.

Moreover, findings indicated that the vertical promotion motivation was the most important motivational factor in developing scientific papers. This factor was more effective than the payment to research and interest of acquiring fame in scientific productions. Based on the research findings, the majority of the respondents pointed to the very high effect of the factors related to the welfare and financing. However, from among the scientific cooperation and relations factors, scientific cooperation and relation with the colleagues and foreign researchers had more effect on scientific productions compared to two other factors that are cooperation and relation with the faculty members of other national universities and the researchers in non-academic centers.

Ghazi Pour (2002) did a comparative study of internal factors of science institution including the normative and institutional factors on the amount of scientific production of the faculty members in research and academic population. The population of the study included 194 faculty members of Tehran University as the academic population and 76 of faculty members of some research institutes in Tehran as the research population which were studied through survey method and a questionnaire. Results of the study indicated that a part of predicted normative and institutional factors played a role in explaining the amount of scientific production of faculty members. From among these factors, first of all, the amount of communications had the effective role on scientific production of the respondents in both studied groups of populations and the amount of scientific production was more for the members with stronger communications. Furthermore, the role of normative commitment on the amount of scientific productions of the respondents was only confirmed in academic population and the members of academic population who were committed to scientific norms had more scientific productions. But the effect of institutional normativity

on scientific productions of faculty members was not confirmed for both populations and the amount of institutional normativity had no effect on the amount of scientific production of the members. Moreover, the findings indicated that the normative factors had been less effective on the scientific productions of the research population and it seemed that their scientific and research activities was more related to their personal interests and motivations. However, it seemed that the special principles and criteria of the academic and educational environment had made the researchers normative in a way that the more normative ones had more scientific production.

The viewpoints of 168 faculty members of Ferdowsi University about the reason of running less research projects in or out of university by faculty members of Humanities departments compared to non-humanities departments were studied in the explanatory survey of Behravan and Noghani (2004). Research findings indicated that professors' perceptions about research barriers, expecting the loss and returns of running a research project, defining research in their field of study and finally the opportunities for scientific activities influenced the professors' tendency to present and run the research projects.

Mohammadi (2005)in a questionnaire-interview survey studied the viewpoints of 250 faculty members in department of physics and chemistry in universities of Iran about the personal factors (gender, age, academic rank, degree, the university where they obtained the degree, type of employment, teaching experience especially in M.S. and PhD courses, and management position at university) and organizational factors (science management, science culture, resource of science institution and amount of scientific communication) affecting their scientific activities. Findings indicated the effect of personal factors such as gender, age, academic rank, degree and teaching experience on scientific activity of the participants. Moreover, it was found that organizational factors of type and amount of scientific communication had higher effect on scientific activities of respondents. So, more scientific communication of an individual with scientific community members, scientific forums, research institutes, factories and public offices could lead to increased scientific activity. Moreover, research findings indicated that employing competent managers as university deans and the way of performing managerial responsibilities by them affected the quality of scientific activities. Culture of scientific institutes in normative and methodological dimension played an effective role on quality of scientific activities. Finally, resources of science institution and providing required facilities for faculty members were among the factors influencing the scientific production.

Iravani et al. (2007) used a questionnaire to study the quality and quantity of scientific productions and research performance of members of Agriculture faculty in Tehran University and factors influencing scientific production during 1994-1998. It was concluded that the average number of research projects, papers and books (authored and translated) had been 2.5, 1.6 and 0.3, respectively for each faculty member during the studied period. The highest and lowest scientific publications per capita during the studied period were observed in Department of Irrigation and Reclamation Engineering (1.3) and Department of Food Industry (0.33) for books, Department of Plant Pathology (17.9) and Department of Agricultural Machinery Engineering (5.5) for papers, and Department of Animal Science (1.41) and Department of Food Industry (5.2) for research projects. Department of Food Industry (5.2) and Department of Horticultural Science (1.4) had highest and lowest level of publications efficiency (number of publication per experience years) respectively. There was a positive and significant relationship between motivational and economic factors with scientific productions of respondents. In addition, there was a positive and negative difference between scientific productions of respondents with MS and PhD degree.

Ghaemitalab (2006) in a survey and using a questionnaire studied the viewpoints of 103 full-time faculty members of Ferdowsi University of Mashhad about effective factors on publishing papers in national and international journals. Results indicated that the most effective factors for Department of Humanities included: scientific and research capabilities of the researcher, ability to write scientific papers, proficiency in information sources and newness of research topic. However, the ability to write scientific paper, proficiency in information sources, scientific and research capabilities of the researcher and newness of research topic were identified as the most effective factors for Departments of Basic Science and Mathematical Science, respectively. Faculty members in Departments of Agricultural and Engineering rated the newness of research topic, scientific and research capabilities of the researcher, proficiency in information sources and the ability to write scientific papers as the most effective factors on scientific activities, respectively. Totally, according to the faculty members of the studied departments, the most effective factors in publishing national and international research papers were: the ability to write scientific papers, proficiency of the researcher in information resources, the scientific and research capabilities and newness of research topic.

Fox (1992) investigated the effect of research and teaching on research products of Social Science faculty members of Pennsylvania University. Two viewpoints were studied regarding research and teaching. The first view considered the research and teaching as complementary acts having common objectives so that each strengthening and further developing the other. But, in the second view, these two elements were considered separately and took a competitive aspect rather than the complementary one. According to this view, although teaching and research were

performed simultaneously but they were not compatible and had conflicting roles with different functions and necessities. Results of the research indicated that the faculty members who favored research and spent more time on it, had a lot of scientific productions and high amount of rewards was devoted for their research activities. Moreover, efficient researchers had less contact with students and spend less time on teaching. Since, they considered research as more important; they naturally had more research and scientific productions. It was also found that teaching and learning (especially at undergraduate level) showed different aspect of a dimension and did not lead complementarily to more scientific production together but they were more in competition. Those who prioritize research over teaching had more scientific productions compared to those who considered research and teaching together or dealt with teaching more.

Kyvik and Teigen (1996) studied the amount of scientific productions of male and female researchers at Institute for Studies in Research and Higher Education in Norway. Results of the study indicated that child care and lack of research collaboration were the two factors which caused gender differences in scientific productions. Women with young children had less collaboration in research with other scientists and were less scientifically productive compared to their male and female colleagues.

Xie and Shauman (1998) investigated the effect of sex differences in research productivity of faculty members at University of Michigan and University of California. Findings were presented in two sections: first, sex differences in research productivity declined over the studied period (1969, 1973, 1988 and 1993) and the female-to-male ratio increased from about 60 percent in late 1960s to 75 to 80 percent in late 1980s and 1990s. Second, the sex differences in research productivity were attributed to differences in personal characteristics, structural positions and marital status of the research participants. The results suggested that sex differences in research productivity were resulted from differences in structural positions of women in science. Moreover, women had less scientific productivity since their position, personal characteristics and facilities for publishing scientific papers was less than men.

Hu and Grandon (2000) studied the effective factors on research productivity of Information System (IS) faculty in U.S.A to answer the question that why some faculty members were more productive that others in academic research. A number of hypotheses were constructed about faculty research productivity based on the life-cycle model of academic research and previous studies. The results indicated that while only two significant factors contributed positively to the research productivity-the time allocated to research activity and the existence of IS doctoral programs-many. Furthermore, other factors had significant adverse effect on research productivity including the number of years on faculty, the teaching load exceeding 11 hours weekly and non-academic employment and non-IS experience. Moreover, some of the commonly proposed influential factors had no significant effect at all including tenure status, academic rank, school type and IS-related employment experience.

Kotrlik et al, (2002) studied the factors related to the research productivity of all agricultural education faculties in colleges and universities of U.S.A. In this study, publications in peer-reviewed journals were used as research productions. The study examined the research productivity of agricultural education faculty; their perceptions of the organizational culture existing in their department to support research productivity, and their assessment of their research competency. It was found that in general, one organizational culture existed to support for research in the departments where the faculty members worked. Moreover, regression analysis revealed that three variables of number of advised doctoral students in the last five years, faculty members' perceptions of their research confidence, and the number of hours allocated by the faculty member to graduate students' assistant explained fifty percent of the variance in research productivity. The variables that did not explain a significant proportion of the variance were percent of the faculty member's time allocated to research, salary, organizational culture and support of research, age, gender, rank, number of master's students advised in the last five years, and number of years they had held a tenure track position.

2.3. Methodology

2.3.1. Statistical population and sample

Population of this study includes all the full-time faculty members with M.S. and higher degree or with academic rank of lecturer, assistant professor; associate professor and professor in Islamic Azad University district 8 branches. Based on the statistics provided by the secretariat of district 8, the population of the study includes 2593 subjects (1303 lecturers, 1164 assistant professors, 80 associate professors and 46 professors). Due to plurality of faculty members working in these branches, stratified random sampling method was used to select the research sample. Table 2 shows the population distribution

Table 2. Population distribution of the study based on branches and academic ranks

	Branches	Professor	Associate professor	Assistant professor	Lecturer	Total
1	Science and Research	26	28	175	61	290
2	North Tehran	5	12	200	212	429
3	Central Tehran	4	22	368	334	728
4	Tehran South	1	2	144	276	423
5	Islamshahr	-	-	27	63	90
6	Shahr-e Rey	4	4	71	136	215
7	Ghiamdasht	-	-	13	47	60
8	Tehran Medical	4	4	84	120	212
9	Tehran Medical	2	3	13	24	42
10	Tehran Dental	-	5	69	30	104
	Total	46	80	1164	1303	2593

Cochran's formula was used in order to determine the sample size and the obtained value was 417.

2.3.2. Data Collection method and tool

Required data were collected through direct reference to the faculty members so this is an analytical survey. Data collection tool was a questionnaire and its collecting lasted for nearly two months.500 questionnaires were distributed between the faculty members and after two weeks, 420 completed questionnaires were gathered.

2.3.3. Science production Measurement

Science production in the present research was defined as developing different scientific references including books, publishing papers in scientific journals, conducting research projects, presenting conference papers, supervising dissertations, and registering patents over the past three years. Since, based on the data collected from the Islamic Azad University secretariat of region 8, a significant percentage of the faculty members in Islamic Azad University were young and had less work experience, so in order to study the scientific productions of all the faculty members within the same time limit, only the scientific productions of the respondents during last three years were taken into account. The research and scientific productions of each faculty member were measured based on the relative scale. So that, first total number of each respondent's scientific productions was determined by question 29 and then it was scored based on the Faculty Promotion Regulation and Guidelines issued by Central Organization of Islamic Azad University (table 1). Finally, research score of each respondent was calculated.

Table 1. Scientific productivity measure according to Iranian Faculty Promotion Regulation

Scientific activity	Score	Scientific activity	Score
Publishing Research papers in national journals developed individually	5	Registering Patents	10
Publishing Research papers in national journals developed cooperatively	4	Writing books	20
Publishing Review papers in national journals developed individually	3	Co-Writing books	17
Publishing Review papers in national journals developed cooperatively	2	Translating books	12
Publishing papers in international journals developed individually	7	Co-translating books	10
Publishing papers in international journals developed cooperatively	5	PhD thesis supervision	8
Presenting conference papersdeveloped individually	2	PhDthesis consultation	8
Presenting Conference papersdeveloped cooperatively	1.5	M.S thesis supervision	3
Conducting research projects	5	M.S. Thesis consultation	3
Collaborating research projects	3		

2.3.4. Research hypotheses

H1. There is a significant relationship between *information skills* and scientific production among faculty members of Islamic Azad University of Tehran.

H2. There is a significant relationship between *welfare services* and scientific production among faculty members of Islamic Azad University of Tehran.

H3. There is a significant relationship between *research facilities* and scientific production among faculty members of Islamic Azad University of Tehran.

H4. There is a significant relationship between *scientific communication* and scientific production among faculty members of Islamic Azad University of Tehran.

H5. There is a significant relationship between *performance of university management* and scientific production among faculty members of Islamic Azad University of Tehran.

2.3.5. Data analysis method

Collected data was analyzed using SPSS software.

3. RESULTS AND DISCUSSION

Results of data analysis are presented as descriptive and inferential statistics in two sections: In section one demographic characteristic of the respondents including age, gender, department, work experience, and academic rank are presented. In section two provide the analysis scientific productions of the respondents during last three years.

3.1. Descriptive statistics

In this section we present demographic characteristic of research sample. Table 3 shows them.

Table 3. Demographic characteristic of research sample

Measure	N	%
Age group		
Less than 30	59	14
31-40	191	45.4
41-50	105	25
51-60	33	7.9
Higher than 60	32	7.6
Total	420	100
Academic rank		
Professor	12	2.9
Associate professor	25	6
Assistant professor	217	51.7
Lecturer	160	38.1
No answer	3	0.7
Total	420	100
Sex group		
Male	313	74.5
Female	107	25.5
Total	420	100
Work Experience (year)		
Less than 5	160	38.1
6-10	118	28.2
11-15	66	15.7
16-20	27	6.4
21-25	10	2.3
26-30	6	1.4
More than 30	33	7.9
No answer	3	0.7
Total	420	100
Department		
Humanities	120	28.6
Science	90	21.4
Engineering	63	15
Medical Science	54	12.9
Agriculture	59	14
Art	34	8.1
Total	420	100

3.2. Inferential statistics: Testing hypotheses

In this section the results of testing hypotheses and the effect of independent variables on dependent variables (scientific production) are presented. To test hypotheses, one-way ANOVA was used.

Hypothesis 1:

Table 4 shows the mean of research score based on information skills of the respondents and table 5 shows the effect of information skills on research scores of them.

Table 4. Descriptivestatistics

Information skills	N	Mean	SD
Very poor	0	0	0
Poor	12	15.883	10.7689
Average	145	24.503	23.5919
Good	141	53.124	68.7697
Excellent	122	103.545	64.3999
Total	420	56.824	63.824

Table 5.ANOVA results of H1

Variable		Sum of Squares	df	Mean Square	F	sig
Information skills	Between groups	396223.584	3	132074.528	48.979	0.000
	Within groups	128896.378	416	3098.549		
	Total	1685219.962	419			

As seen in table 5 since p-value (0.000) is less than 0.05, so independent variable (information skills) reliably predict the dependent variable. So we can conclude that there is a significant relationship between the amount of scientific production of faculty members and different information skills. Therefore, it can be said that faculties with higher informational skills, have significantly more scientific productions than those with lower informational skills.

Hypothesis 2:

Mean and standard deviation of welfare services is presented in table 6.

Table 6. Descriptive statistics

Welfare services	N	Mean	SD
Very poor	31	54.194	50.3150
Poor	157	59.096	66.9903
Average	169	51.518	51.0010
Good	60	69.358	87.4584
Excellent	3	13.333	4.0415
Total	420	56.824	63.4193

Table 7. ANOVA results of H2

Variable		Sum of Squares	df	Mean Square	F	sig
Welfare services	Between groups	20883.897	4	5220.974	1.302	0.269
	Within groups	1664336.065	415	4010.448		
	Total	1685219.962	419			

According to table 7, sig.=0.269 which is greater than 0.05, so independent variable (welfare services) do not reliably predict the dependent variable. So we can conclude that there is no significant relationship between the amount of scientific production of faculty members and different welfare services. Therefore, it can be said that satisfaction of faculty members from welfare services provided by the university does not affect the scientific production. So this hypothesis is rejected.

Hypothesis 3:

Table 8 shows Mean and standard deviation related to the variable “research facilities”.

Table 8. Descriptive statistics

Research facilities	N	Mean	SD
Very poor	0	0	0
Poor	26	63.154	43.4497
Average	251	57.173	65.1214
Good	135	57.052	64.9251
Excellent	8	21.438	16.3891
Total	420	56.824	63.4193

Table 9. ANOVA results of H3

Variable		Sum of Squares	df	Mean Square	F	sig
Research facilities	Between groups	11097.010	3	3699.003	0.919	0.432
	Within groups	1674122.952	416	4024.334		
	Total	1685219.962	419			

According to table 9, sig. =0.432 which is greater than 0.05, so we can conclude that there is no significant relationship between scientific production and research facilities among faculty members of Islamic Azad University; Therefore this hypothesis is also rejected.

Hypothesis 4:

In table 10 we present mean and standard deviation of "scientific communication".

Table 10. Descriptive statistics

Scientific communication	N	Mean	SD
Very poor	1	65	0
Poor	219	31.041	30.5548
Average	153	73.359	72.0458
Good	45	121.156	75.8772
Excellent	2	163.5	207.1823
Total	420	56.824	63.4193

Table 11. ANOVA results of H4

Variable		Sum of Squares	df	Mean Square	F	sig
Scientific communication	Between groups	396476.692	4	99119.173	31.918	0.000
	Within groups	1288743.27	415	3105.405		
	Total	1685219.962	419			

According to table 11, sig. =0.000 which is less than 0.05, so we can conclude that there is a significant relationship between scientific production and scientific communication among faculty members of Islamic Azad University. in this regard we can say that scientific productivity of faculty members with strong academic links significantly is more than those with weak academic communication.

Hypothesis 5:

Descriptive statistics of the variable "Performance of university management" is shown in table 12.

Table 12. Descriptive statistics

Performance of university management	N	Mean	SD
Very poor	4	47.25	43.2078
Poor	63	62.143	53.4654
Average	236	49.428	60.0597
Good	103	68.16	71.1285
Excellent	14	76.893	89.7548
Total	420	56.824	63.4193

Table 13. ANOVA results of H5

Variable		Sum of Squares	df	Mean Square	F	sig
Performance of university management	Between groups	33933.526	4	8483.382	2.132	0.076
	Within groups	1651286.436	415	3979.003		
	Total	1685219.962	419			

According to table 13, p-value which is greater than 0.05, so we can conclude that there is no significant relationship between scientific production and performance of university managers in Islamic Azad University; Therefore this hypothesis is also rejected.

In spite of the significance of "welfare services" and being away from the livelihood concerns and its confirmation by Mohammadi (2005), and Alamdari and Afshoun (2003), in this study welfare services showed no effect on scientific production of faculty members, because there was no significant difference between scientific productivity of respondents satisfied and dissatisfied with welfare services. Also our findings revealed that "research facilities" had no impact on scientific productivity of faculty members which were not consistent with the results of Golsefidi (1994) and Mohammadi (2005).

About "scientific communication", our results showed that scientific communication of respondents was not active. The lack of a spirit of cooperation, Weaknesses in the English language, not applicability of their studies, and mismatch of the issue with the needs of society are one of important factors in poor scientific communication. Unlike the results of Mohammadi (2005), this study showed that there was no relationship between "performance of university management" and scientific productivity of respondents.

4. Conclusion

The advent of the era of communication is one of the greatest challenges that have affected various societies. In this information age, the ability to provide a wide range of personal and business needs is a key requirement. In this study we tried to examine factors affecting scientific production of the faculty members in Islamic Azad University of Tehran located in Iran. Results showed that information skills and scientific communication had significant impact on scientific production of them, but factors welfare services, research facilities, and performance of university managers had no effect on dependent variable.

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