Effect of intra-organizational factors on research

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ABSTRACT

   Along with other areas in our country, the research in medical sciences is a necessity for the maintenance and improvement of community health. The objectives of this study were to determine the intra-organizational factors of conducting research in Tabriz University of Medical Sciences. The matrix of the study included entire academic members and research staff of the university where 121 of them were selected randomly for a descriptive cross sectional study. A questionnaire was designed to collect data using Likert Spectrum. The major difficulty was the lack of sufficient free time. Significant differences were seen in respect with the access to facilities and conducting research, assessing expected benefits of conducting research, level of research awareness among academic members with and without research project. Differences in respect with motivation force, collaboration, job satisfaction and expected benefits from conducting research were shown to be not significant. As stated by academic members, their problems involved with conducting research projects provides lesser role of intra-organizational factors compared to that of personal factors. In other words, the most major problems in not doing research are the lack of sufficient time and proper skills in research method and innovation in looking for problems to be solved.

Keywords: Academic Members; Research Difficulties; Intra – organizational Factors; Researcher; Iran

INTRODUCTION

   Research means attempting for finding the truths and knowledge, and in terms of literal, the meaning of research is searching, probing, investigation and detection. In other words, research can be considered as a developmental objectives and ultimately lead to improving the quality of human life [1].

Therefore, research with collected, analyzed and systematic interpreted of data, is a strategy in order to answer a question or solve a specific problem [2]. Paying attention to scientific research is one of the most important affairs in the scientific communities. Undoubtedly, the scientific developments are only support which can guarantee the durability and stability of political and economic independence in the future. Our medical community continually was strive to help the country self-sufficient and been active in the field of medical science, above all, need to research in mystery field, and it is hoped to create suitable conditions and encourage and persuading talented and interested individuals can obtain its proper place in this field [3].

Supreme Cultural Revolution Council (SCCR) on his approvals have been considered essential the role of research and attempting to detect new issues and researchers for the country and has bound the government to remove research obstacles and financial and spiritual support of researchers, efforts to strengthen and development of the research [3]. According to statistics released by the UNESCO, the level of investment in research and researcher training in industrialized countries shows a very high figure and the number of their researchers per million, is 24 times higher than developing countries, and the brighter, the budget is considered to be 2 to 4

percent of national income that is allocated to itself, while in developing countries this figure is 0.5% or less. It should be recognized that the development of knowledge in any country requires time. For example, it took more than 50 years, U.S.A and Japan were able to reach Europe standard in their scientific research organizations [4].

Six major factor in the research success of the six major industrialized nations that enumerated as follows:

- Main supplier of research costs was the responsibility of the government.
- Existence of the plans have been reviewed and the government support programs.
- Strategic research determined goals.
- Support of central and local governments from academic researches.
- Provide the necessary mechanisms for balancing between the public resources and the scientific community in determining priorities and research lines.
- High percentage of research funding [1]

The results that were presented in the first seminar of Ferdowsi University of Mashhad in 1995 showed that research in the last century in developing countries have a very low level and limited to specific canter, special times, relies on individual and No continuity and above all, even better use of research results to address community needs has not been done [1].

Overtime, and science and knowledge development is the serious threat in the scientific potential of developing countries and the distance between them and developed countries gradually increases. However, these countries have recently begun to study and conduct research, and in the past have been able to meet the essential needs through scientific research. Thus creating an appropriate environment for researchers to conduct fundamental and applied research and also investment in this task is very difficult and costly but the only way to national development is attention to research that on top of that is the researchers training and facilities needed to train and develop these creative and talented personnel [4].

According to statistics provided by the UNESCO, the world's 10 industrialized countries were accounted for more than %80 of the publications from 1981 to 1985. Developing countries to date have made it about %8.5 of the world's scientific publications that among these countries, India, China, Brazil, Egypt, Argentina, Venezuela, Korea, Taiwan, Singapore, Pakistan and Nigeria, respectively have the highest scientific publications in recent years and the sum of %5.8 of total publications %3.73 has belonged to Asia, %1.15 to Latin America, %0.37 to and %0.58 has belonged to Middle East and most of articles related to medicine, biology, agriculture and geology [5]. In relation to the status of third world countries researchers, research by international foundation for science has been conducted in which there are two groups of researchers in these countries; the first group includes prominent scientists and researchers who articles are published in international journals and second group of researchers who have published their papers in the local journals. The first group usually associated with international communities and organizations and second group the condition that provide training or services, are also doing research activities that is some cases this research has an important role in country development and has been effective in solving local problems but in the international communities has no demand and attract and has not been published.

Publishing of articles in the journals is done by a great motivation that means the use of research results for the development and utilization in the community. Although these articles are prepared in very good level but due to the weakness of third world researchers on the question of what factors are involved in the research by you. First reason, have been mentioned the motivation to work in an academic environment and getting used of their operating results in the community and promoting academic, careers social position and dignity, valuing the activities efforts and measures taken and job security are also other effective factors. Also the study showed that in some developing countries, researchers have no suitable job and steady status. Most of them are doing research in other professions including training and consulting activities and choose a second job in other organizations or are working in executive jobs and for research are given less time and attention.

The researchers in response to the question of

whether the salaries and benefits that you receive tailored to your needs often emphasized the fact that in the research aspects always have been in the economic bottleneck. This is even more about university researchers who are engaged and this has led researchers of third world include motivations such as solving a social problem, the articles publishing in international journals and presenting at international conferences and subsequent factors were social factors, useful to society, to be economical of project, medical, health and treatment problems solving of community [3].

Research is consistent in the social, economic and cultural conditions of each country and development strategy is planned accordingly. In this regard, performance of other countries cannot be accepted as the pattern. To develop research, knowledge and technology transfer must be appropriately and there is no possibility of research advancement by net transfer of technology. This condition is achieved when strong education system in order to teaching and training of experts works at a high level that this requires researchers who are actively engaged in research. On the other hand, one of the research obstacles to progress is competition among universities and departments. In situations that applied research projects require coordination and collaboration in the group activity. This kind of competition is a major obstacle, moreover, the papers prepared by researchers that were applicable and related to solve problems in the community, in not interested in international journals [3]. In current study, due to the relatively modest place of Tabriz University of Medical Sciences in research and significant number of faculty members, has been investigated the role of intra-organizational factors in research until using them to make timely and correct interventions and planning to improve research in Tabriz university of medical sciences.

MATERIALS AND METHODS

The study population was all of faculty members and research senior experts who on a par with faculty members of TUMS about 700 faculty members and 30 research senior experts who were par with the academic members, the samples were determined according to Cochran sampling formula or by considering the following equation and selected by simple random sampling among entire members of statistic population $n = t^2 . p.q/d^2$ $= (1.96)^2 \times 0.5 \times 0.5/ (0.50)^2 = 150$

Adjustment of sample size $= n/ [1 + (n/h)] = 150/ (1+0.3) = 115 + 5\%$ straggly $= 121$

The study type in terms of research conditions control is a study survey and in terms of time is a cross sectional study and methods for data collection were field interviews and interviews regarding personal information, availability of research activities resources, research difficulties and expected benefits of conducting research difficulties and expected benefits of conducting research. To measure construct, Likert spectrum technique and for the equiponderant of constructs changes range has been used the adjusted scores formula of each construct according to the above equation. After evaluating each construct according to mentioned formula, finally "researchers' attitude toward the process from the research process and facilities", "group collaborations status on researches conducting in the department and faculty" and "ability of research to conduct scientific researches" were assessed and compared.

Also to judge on researchers difficulties on each of appliances and tools needed in research, priority setting technique was used that in chart 1 is inserted.

To measure the activity of faculty members, 10 questions designed that are listed in table 1 that measure of each activity is ratio. Priority setting for research difficulties that are selected among all possible difficulties in terms of priority, the technique of Analytic Hierarchy process (AHP) is used. The validity of the questions was determined in the content form and using expert reviewers comments the adequacy of the questions number and their content were confirmed. The reliability of questionnaire was determined based on Cronbach's Alpha coefficient that according to obtained value was 0.779, higher than the standard level (0.6). To review on assessment of researchers for conducting research and its outcomes, 13 questions were designed and are presented in figures 2 and 3 and how to assess each component is in the ordinal's level. T- test was used to compare the motivational ability, group cohesion,

and assessment the expected benefit and access level of research facilities between two groups of faculty members with and without research. To interpret and analysis of data SPSS statistical software was used, and to report of the qualitative variables percentage calculation and to describe the interval and relative, the statistics tended to the central and distributive were used.

RESULTS

In order to assess the level and scope of the research activities of faculty members, a period of three years of study was considered finally, according to the information in Table 1 can be seen that on average, each academic member was supervisor of 5.17 counts of theses and was advisor of 2.8 counts of theses.

Also, on average, the number of the conducted approved projects were 1.15, the number of projects that they have been as a fellow were 1.6, the number of articles presented at international congresses were 3.4 the number of published papers in international congresses 0.36 counts, the number of posters presented in international congresses 0.95 counts, the number of papers published in international journals is only 1 that in all of the activities carried out each year for the faculty members less than 1 counts.

In order to rank and to prioritize faculty members difficulties on doing research, weighting coefficient technique was used and finally. Based on the information in Table 4 can be seen that the major problems of the faculty members are as follows:

1.   Not having enough time to conduct research
2.   Lack of facilities
3.   Long time projects approval
4.   Lack of job security
5.   Lack of economic security
6.   The unavailability of advisor for conducting research
7.   Lack of knowledge about the research priorities in community
8.   Lack of knowledge and skills in research methods and conducting it.

Rate of access to research facilities in the group with research is more than the group without research (coefficient 57.2 vs. 40.9); Also, assessing the expected benefits of research among faculty members who do not conduct research is less than faculty members who have research for conducting (coefficient 40.05 vs. 56.27). Group cohesion according to researchers between with and without implementing research (coefficient 48.2 vs. 43.3) and the amount of their motivational ability (coefficient 3.37 vs. 8.37) there is no significant difference. These equations have been summarized in Table 3.

According to Table 4, it is seen that the level of job satisfaction (t= 1.6 & P = 0.09) and the expected benefits of the research (t= 1.3 & P= 0.19) between the two groups of individuals with doing research and those with no research is not significant but the level of research knowledge and awareness among people who are doing research is more than those with no research (coefficient 54.07 vs. 48.6; P= 0.014).

In order to study the classification and differentiation of groups that include people who have done and those who have not done research, discriminant analysis was used, and wilk's lambda was obtained 0.988 and P= 0.615; it indicates that classification of faculty members based on conducting research, using model of discriminant analysis was performed correctly and is valid. So that 71.4% of individual who have done research and 70.7% of individuals who have not done research have been properly separated.

DISSCUSSION

According to the faculties' views, intra-organizational problems are less important than personal factors in performing research projects [6].

Based on the present study results averaged over the last three years (2000-2002), each faculty member has conducted one research project and their main research activity is in line with the advising and supervising of student's thesis, so the most important assessment component of faculty members welcoming of conducting the research project is voluntary research activities as an assessment indicator.

According to the research activities of educational hospital of Norway less than in other Scandinavian countries, a study to determine the effective factors in doing research was conducted among faculty members that 0.38% of individuals

participated in research projects, 0.83% of them were mentioned that due to lack of time they do not research that in our study such results were also obtained. In Norway in order to promote the research, clinical research units were established in hospitals that the present study was not enough the existence of such research centers in researches promoting [7].

What is considered as an evaluation of research-scientific of faculty members is that whether faculty members are welcome conducting research? And their view on organizational factors related to the conduct and lack of research? Accordingly, initially the expectation of faculty members were considered that it was found (became clear) the most important of their expectation creating necessary arrangements and preparation such as the process of financial and administrative and approval from university and research deputy and the second factor is prioritize research needs. Deficiency of research budgets is one of the researchers' difficulties in this study that the majority of developing countries research budget will not allocate enough and researchers cannot rely on it. Economic bottlenecks and restrictions, rapid changes in management and personal taste interference are factors that make it difficult to rely on state funding. Bureaucracy is also makes delay in reaching budget to researcher so that person finally give up of conducting research [3]. Based on expectations of academic members on the priority setting of research projects it can be said that the first step in the study is the diagnosis that this issue is done by faculty members and researchers. There for, priority setting of research projects is one of the missions and sensitivities that should be done by personal involved in specific areas of each scientific group. Set priorities are the important process in the management of countries health researches that its importance particularly in resource allocation is even more. Priority setting process will help all countries in planning of research programs in health field and mobilization and research resource allocation and also strengthening of research capacity [8].

In the study of Sydney College Nursing that conducted among faculty members to determine the effective factors in promoting research, the first step in the assessment of research quality have mentioned the needs assessment and research needs analysis of faculty members [9]. Faculty members about promoting of research resources are also believed that with its increasing, the research projects will be welcomed that in this regard, the main source of research is mentioned internet access and specialized libraries at colleges and university. For this reason, in order to clarify the reasons for not embracing aspects of research projects and matching the expectation of faculty members with the available research, their assessment of existing facilities of university and college were also obtained that ultimately, the lack of necessary funds for conducting research and also the ability to communicate with other universities and not to be effective of research in solving of community problems have been proposed (discussed). It should be noted that the application of research finding in over the word is faced with obstacles such lack of penetration of research culture among manager and decision makers, the failure of information system, low quality of some research project, especially in terms of conducted process, and non- compliance of research issues with the needs of organizations and institutions [1]. Also, economic interests in order to conduct research project have been raised by faculty members. In practice domain, not have necessary efficiency. So that based on the expected benefits of conducted research by faculty members to be inferred that faculty members have expressed the economic benefits have also raised as a minimum factor that with the summarized of both parts, will be available to the general conclusion that, according to Hersey Blanchard for creating of motivation in order to conduct research projects, financial profit and privileges. However, the motivational factors are the same attitude of faculty members to conduct research projects and also missions of university and their sense of identity [10]. Hence make necessary arrangement such as research instruments and also setting priorities for research projects are as maintenance factors, while welcoming the projects depends on the opportunity cost and evaluations of faculty members that due to their multi-job. Practically, is not established the possibility of spending more time on it and follow-up a problem and the first question on their mind. According to research

conducted by international foundation for science (IFS), because of the lack of job security among faculty members in the third world countries, research activities after education and providing services are at a later stages [3]. On the other hand, in countries like Britain evaluation of faculty members was the number of articles published in valid journals and assessments of clinical departments is based on research projects and absorb more research funding. For this reason, faculty members spend more time on research in such countries and jet in countries it also is recommended that all faculty members are strengthened and evaluated of each of the tree aspects the above, and also the salaries and benefits of individuals are based on the above three tasks [11]. But what is more from all the focus and has directed the main core of the study to wards it, is that the ability level of faculty members to conduct research projects is 59.1%, and even if the priority setting of research projects was done but the results of conducted research due to technical and cognitive problems may not be acceptable. The other hand, because the research projects are conducted as a group and specialized coverage is created, so in order to fix the flaws of non-technical skins in conducting study, group collaboration is possible, but also group collaboration with mean 52.4% is too low that cannot be replaced of lack of expertise in research projects and this is confirmed by the comments of Dr. Afrough on difficulties of conducting research and welcoming the scientific projects. Generally, faculty members difficulties on research projects in terms of their own, indicate that intra-organizational factors compared to the personal factor of faculty members have more minor role, it means that the major difficulties of not doing research projects has been proposed lack of sufficient time, lack of required skills in research methodology, and finding the problem and organizational factors such as long duration of projects approval and unawareness of research priority are in the next sequences [12].

Stem and Dyer have been considered the researchers obstacles at organizational level in order to conduct research as follows: insufficient time. Shortage of resources, group collaborations, lack of feedback lack of joint research with other organizations and lack of operational life of the research, and at the individual level have also mentioned, lack of skill and experience, lack of motivation and excessive specialization, which prevented a comprehensive view of the new approaches that in most cases, are consistent with the results of current research [13]. Most faculty members have been mentioned the lack of time as a problem in conducting research so that they spend so much time for training and clinical services, while Pernarin believes that when a faculty member can be successful in their educational task, which is a good researcher and be able to use the results of their research in teaching [14].

Generally, it was observed that motivating power of the faculty members to do or not to do research is the same but the assessment level of use fullness of conducting study between two groups of faculty members is different and the assessment of usefulness of doing research is more among faculty members with research so that according to faculty members with research, conducting research at the university has an extensive and objective applications in education and clinical affairs and the results can be used. This finding is consistent with the theory of Fish and Isen [15].

Also access rate to research facilities is higher among faculty members with research, this means that individuals who are doing research have relatively high access rate to the resources and informing facilities. It has been noted that in other studies high access to one issue prolongs individual activity that according to motivational theory of Humenz is in the case of the value and success according to him, whatever the level of access to a phenomenon to be considered value for a person and it is available, the operation is repeated by them [16]. Group cohesion among two groups of the faculty members were not significantly different thus, it is predicted that this variable acts as a mediating variable, so that alone cannot determine to conduct and not to conduct research among faculty members. Finally, these study limitations, include: impossibility of qualitative comparison of researcher's projects, self-declared of data collection results, study opportunities of some individuals and not doing research. During that period, the following

suggestions are offered: to prepare a list of research priority for each of the departments (educational groups), further concessions to the research group ,formation of consulting units in college and shorten the approval time for research projects. Based on the data in Table 2 can be seen that the score of group cohesion, according to researchers with research is 48.2% and lack of research 43.3% that accordance with standard criterion of t = 1.5 and P = 0.125 in which observed difference is not significant. Access rate to research facilities and information in group with research is 57.2% and in group without research is 40.9% that according to standard t= 6.3 and P= 0.01 was observed the significant difference between two groups and those who are doing research have are relatively high rate of access to resources and information facilities (Table2).

Motivating power of researchers who are doing research 37.7% and those who are lack of research 37.8% was obtained that accordance with standards t = 0.137 and P= 0.89 there is no significant difference in two groups (Table 2); as can be seen in this table, usefulness evaluation of faculty members without research is 40.05 and with research 56.27 that accordance with standard t= 2.2 and P =0.028 there is significant difference among two groups so that according to faculty members with research at the university, have extensive and objective use in education and clinical practice and also they use from the research results.

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Table 1. Number of researchers' research activities in the last three years

activitiy type in the last 3 years	Mean	Standard deviation (SD)
theses supervisor	5.17	5.76
theses advisor	2.79	5.3
approved research projects (As Project Executive)	1.15	1.75
approved research projects (As Project fellow)	1.60	3
Oral presentation at the national or local congresses	3.43	5.2
Poster presentation at the national or local congresses	2.14	3.23
Oral presentation at the international congresses	0.37	1.02
Poster presentation at the international congresses	0.96	1.82
Accepted articles in national journals	2.86	1.40
Accepted articles in international journals	1.03	2.57

Table 2. Ranking score of researchers' difficulties for implementing of research

Component	1st priority	2nd priority	3rd priority	Score
Not having enough time	33	17	19	47.8
knowledge and skills in different research methods	2	10	6	9
Lack of facilities	22	22	19	39.3
unavailability of advisor for conducting research	9	8	10	16.3
Lack of job security	15	17	9	2.5
Lack of economic security	10	18	15	19
Long time projects approval	19	16	15	27
Lack of knowledge about the research priorities	5	9	14	14.5
Other	4	0	2	4.66

Table 3. Comparing mean scores of intra-organizational factors in the scientific staff members with & without research

Score Factor	group without research		group with research		P-Value
	mean	SD	mean	SD	
Group cohesion according to researchers	43.38	18.62	48.27	15.54	0.125
Access to research facilities	40.91	21.63	57.19	18.87	0.01
Amount of motivational ability	37.38	24.38	37.90	15.64	0.89
Assessing the expected benefits of research	49.05	18.41	56.27	16.73	0.028

Table 4. Comparing mean scores of job satisfaction, expected benefits of the research, and level of research knowledge and awareness, between people with & without research

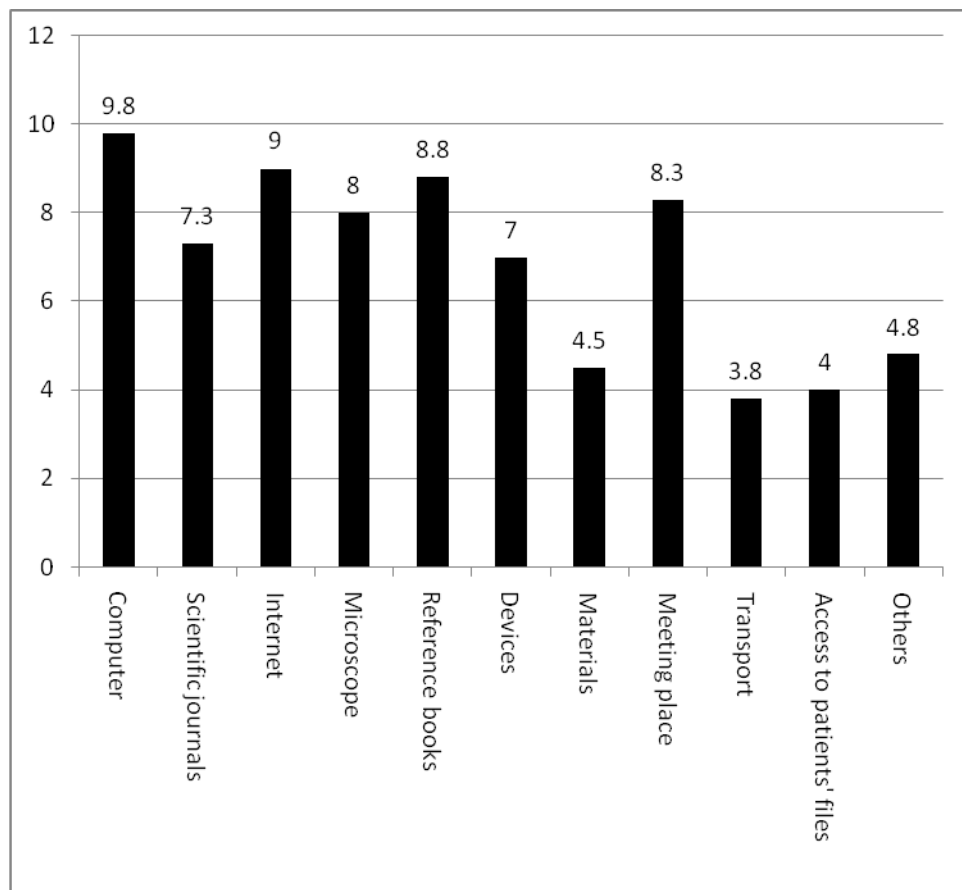| Score Variable	group without research		group with research		P-Value
	mean	SD	mean	SD	
job satisfaction	51.92	18.51	57	14.28	0.099
expected benefits of the research	57.67	12.82	60.51	10.45	0.192
research knowledge and awareness	48.66	14.74	54.71	11.28	0.014

Chart 1. The researchers' point of view about access to research resources and facilities (mean of score)
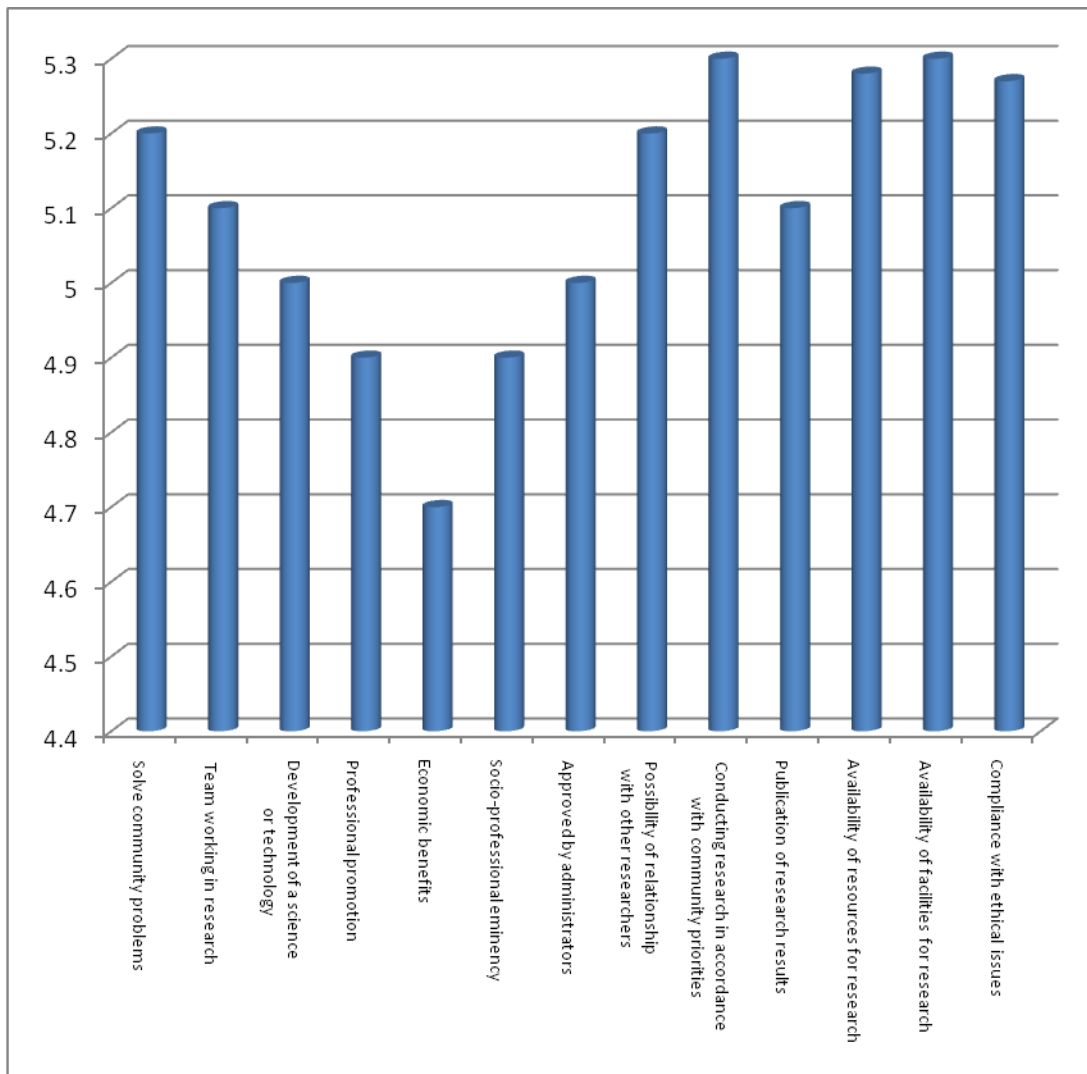
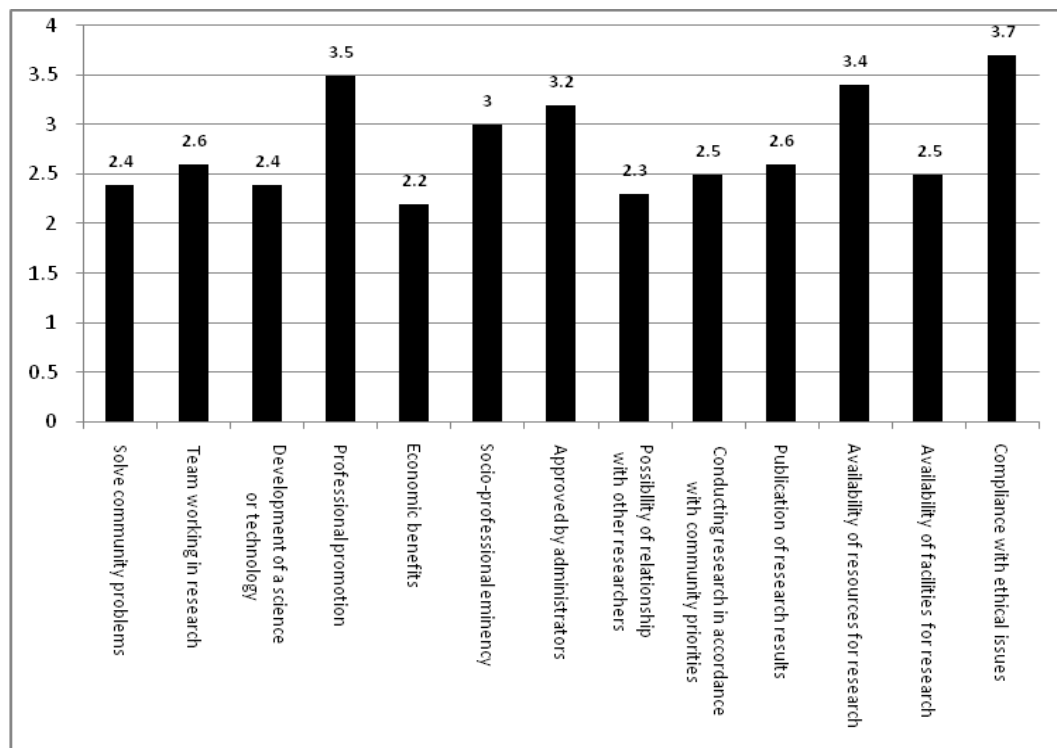Chart 2. The researchers' expected benefits of research (mean of score)

Chart 3. Situational analysis of research conducting done by researchers (mean of score)