

Identification and prioritization of the factors promoting research ranking of universities using multi-criteria decision making method

¹Hasan Doulati, ¹Peyman Jafari Tehrani and ²Fatemeh Habib Pour

¹Imam Khomeini University of Naval Sciences, Noshahr, Iran

²Mazandaran Province Education Department, Noshahr, Iran

ABSTRACT

Using the academic capacities of universities to develop research is at the heart of scientific institutions that seek to increase their investment in research to maintain a superior academic niche in competitive arenas. In fact, as mental generators and revolutionary institutions, universities undertake to train the main body of experts in a society. In this regard, they are considered as the major hosts of research in a country. It seems, thus, necessary to identify the factors that contribute to the qualitative development of universities, achievement of international standards and researchers' satisfaction. The present study addresses the questions "what factors contribute to higher research ranking of universities?" and "what factors are more significant?" To this end, the current researchers first reviewed the books, articles and previous research on the topic. Following the identification of contributing factors, they then sought the opinions of professors and elites with Imam Khomeini University of Marine Sciences using a questionnaire. TOPSIS multi-criteria decision-making method was used to prioritize the results. The results showed that the major factors promoting the research ranking of universities included budget requirements, motivational factors, academic interaction with other universities and applied thinking.

Keywords: research, university, multi-criteria decision making

INTRODUCTION

Research may be the most significant component contributing to the development of an organization or a country. A brief study of organizations in both developed and developing countries shows that they have paid great heed to research and promotion of research indices. Research helps overcome ignorance as it eradicates superficial knowledge and brings about mental maturity. It also contributes to social security and strength. New developments in academic performance over the last two decades has brought about significant changes in university commitments and interaction with society, one outcome of which has been greater accountability on the part of the universities [1, 2, 5]. Imam Khomeini University of Marine Sciences, that undertakes to train the military personnel of Iran's Navy in different fields of study, mainly focused on providing educational services [4]. However, the emphasis the supreme leader put on the strategic role of Navy led the academics consider research as a necessity to identify and actualize the capacities of such strategic force [6, 7]. As the avant-garde of research in Iran's Navy, Imam Khomeini University of Marine Sciences needs to consider the promotion of research projects and ranking, hence the empowerment of the Navy. In this regard, this university may help accelerate the achievement of academic and operational goals in Iran's Navy. In the modern knowledge-based economy, universities play a crucial role in economic development as the centers for HR development [3, 8, 9]. In this regard, it is particularly important to utilize the capacities of universities to promote research so that every academic center seeks to increase her research

investments. Accordingly, universities that pay greater heed to research maintain a significant niche in academic competitions. Therefore, as the pioneer of marine science education in Iran, Imam Khomeini University of Marine Sciences considers its main undertaking as providing of expert personnel for the Navy and seeks to promote research projects to address the research requirements of Iran's Navy. In the present study, the researchers aim to identify the factors contributing to research ranking of Imam Khomeini University of Marine Sciences. Then, they would analyze and prioritize the results to extract the significant contributing factors.

MATERIALS AND METHODS

Participants

The population of the study consisted of the Navy experts qualified in certain research areas and holding at least a bachelors' degree, non-military research elites of other universities, scholars and researchers with the research departments. From among the population, a number of 49 experts were selected as the participants.

Procedure The data was collected through library research and field study technique. In this regard, the researchers drew upon library sources, the internet, journal articles, conference proceedings and academic experience and interaction to collect the relevant information. Then, the data was collected using both a researcher-made questionnaire on a 5-point Likert scale and interviews. The reliability of the questionnaire was calculated to be 0.87, which shows a high reliability index.

Data analysis

Descriptive statistics including mean, standard deviation and measures of variability was used to describe the data. Student's *t* test was run to examine the research hypotheses. SPSS software was used to do the statistical analysis.

RESULTS

The results showed that human factors could contribute to research ranking of Imam Khomeini University of Marine Sciences as much as 92.7% ($t_{(48)}=87.51$, $P<0.000$). Organizational factors could account for 93.9% ($t_{(48)}=82.57$, $P\leq 0.000$) and psychological factors constituted 91.2% of the research ranking contribution ($t_{(48)}=73.26$, $P\leq 0.000$). Communication factors were found to contribute to research ranking of Imam Khomeini University of Marine Sciences as much as 89.2% ($t_{(48)}=91.45$, $P\leq 0.000$). The indices were evaluated from two distinct perspectives: degree of importance and level of satisfaction. The indices were ranked using fuzzy multi-criteria decision making. The results are illustrated in Table 1.

Table 1. Ranking of indices

No.	Index	CL _i	Rank
1	Budget requirements	0.968	First
2	Motivational factors	0.887	Second
3	Academic interaction with other universities	0.883	Third
4	Applied thinking	0.872	Fourth
5	A deep approach to research	0.868	Fifth
6	Supply of necessary equipment	0.867	Sixth
7	Research opportunities	0.866	Seventh
8	Non-human relations (equipment, the internet, etc)	0.844	Eighth
9	Official support of research	0.794	Ninth
10	Commitment	0.777	Tenth
11	Nurtured spirit of research	0.773	Eleventh
12	IT and software development	0.766	Twelfth
13	Joint research projects	0.736	Thirteenth
14	Belief in research	0.711	Fourteenth
15	Feedback and corrective measures	0.701	Fifteenth
16	Expert personnel	0.632	Sixteenth
17	Trust in research	0.602	Seventeenth
18	Nurtured research morale	0.592	Eighteenth
19	Publication of academic journals and books	0.523	Nineteenth
20	Importance of research findings	0.496	Twentieth
21	Academic qualification of researchers	0.446	Twenty-first
22	Effective research management	0.406	Twenty-second
23	Prioritizing research needs	0.297	Twenty-third
24	Evaluation of research findings	0.254	Twenty-fourth

DISCUSSION AND CONCLUSION

The ranking results of indices in Table 1 were different from researchers' initial expectation. Accordingly, the researchers initially considered "expert personnel" and "academic qualification of researchers" as the most significant factors while the results proved a different ranking order. On the other hand, "academic interaction with other universities" did not seem to count as a significant factor while the results showed that it did as it ranked third. As shown in Table 1, budget requirements are considered as the most important index in promoting the research ranking of Imam Khomeini University of Marine Sciences. Motivational factors, Academic interaction with other universities, Applied thinking, A deep approach to research, Supply of necessary equipment, Research opportunities, Non-human relations (equipment, the internet, etc), Official support of research, Commitment, Nurtured spirit of research, IT and software development, Joint research projects, Belief in research and Feedback and corrective measures hold the second through fifteenth ranks. Due consideration to these factors may help significantly promote the research ranking of the university. Therefore, measures should be taken to promote the indices in order of priority so that research may be promoted in the university consistent with the policies of Iran's Navy. Moreover, considering the previous experience, experts' opinion and research findings, it is recommended that the cited indices be considered in terms of their weight in the ranking and the measures be taken accordingly.

To add to the current study, it is recommended that future studies address the relative importance of every index in promoting the research ranking of universities.

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