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Designing a Model for Research Productivity Evaluation of Faculty of District 2 of Islamic Azad University of Iran

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Abstract: Present study is an applied-mixed one which aims to evaluate research productivity of faculty of district 2 of Islamic Azad University. Present study was conducted in two qualitative and quantitative parts. In qualitative part, statistical population of research consisted of all experts and professionals in research jobs and they were sampled in a targeted way. In quantitative part, statistical population consisted of male and female faculty members of District 2 of Islamic Azad University including confirmed official, official, contractual and probationary ones. According to purpose of study and composition of research population, a volume-based random-classified sampling was conducted and sample size was considered as 261 based on Krejcie and Morgan table. Finally in qualitative part of study, researcher used Delphi method to converge opinions of experts and in quantitative part, correlation and advanced multi-variable analyses (exploratory factor analysis, confirmatory factor analysis and structural equation model) were used for data analysis. Results from structural equation model using empirical data showed that organizational factors had no direct effects on research productivity while individual factors directly influenced it. On the other hand results obtained based on Friedman non-parametric test for ranking factors showed that among individual factors job satisfaction obtained the highest rank and gender had the least importance. In ranking organizational factors, motivation obtained the first rank and employees and colleagues' attitudes had the least importance. Also results of exploratory factor analysis and confirmatory factor analysis showed that individual factors can be divided in to three groups: (1) job satisfaction, (2) learning and teaching process and (3) specialized job ability. Also organizational factors divided into six groups: (1) organizational support, (2) organizational culture, (3) organizational purpose, (4) motivational factors, (5) students characteristics and (6) industrial relationship.

Key words: Individual Factors · Organizational Factors · Research Productivity

INTRODUCTION

University is a system which has input, process and output including research, teaching etc. On the other hand one input of higher education system consists of faculty members considered as the most valuable and essential resource for it. In Lee and Rhoads [1] view, main core of a university or college is its faculty and promotion of competency and knowledge of faculty members is equal to increase in quality of university.

Conducting scientific activities by faculty members influences their performance and productivity. According to Teylor *et al*. [2] conducting teaching activities and providing scientific and specialist services by faculty members have a negative relationship with productivity of them. Thus it can be said that assessing productivity of faculty members is a step towards improvement of quality of higher education. Results from study of theoretical bases and research background associated with faculty productivity shows that its productivity can be investigated from three viewpoints i.e. education, research and providing specialist scientific services. In addition productivity can be studied at different levels: higher education system, university, college, educational group, discipline and individual (faculty members). Increase in university productivity can be considered as enhancement of its reputation, status and economic condition of among other universities [3]. Because of the same reason higher education institutions especially Islamic Azad University seek to evaluate and in turn enhance their productivity so that they can promote their status compared with their peers.

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Cantu [4] believe that achieving quality is responsibility of every person particularly those who are closest to operational field. Thus faculty members should be the primary ones who evaluate their performance. One aspect which has a significant effect on productivity of faculty members is research productivity of them. Also according to Hasselback and Reinstein [5], most decision makers consider research works published by faculty members as the primary signal for their quality. Research activities of faculty members are considered as one of the most important jobs of them. These activities lead to production of new knowledge and science and is realized via two general ways i.e. research (including research report and preparation of papers) and books.

Thus research consists of production of knowledge, creation of new approaches to identify and explain phenomena, critical evaluation of previous knowledge and applying knowledge and experience to clarify and describe social and professional needs. In fact research influences the main body of knowledge and this in turn influences education and providing further public services and in general research gives credit to the concept of professor- researcher [6]. Though in evaluation of research performance quality is more paid attention than quantity, but in general the number of papers published in university journals, extent of participation in editorial group of specialized journals, publishing reference and text books, number of papers at local, regional, national and international levels, contributing in organizing conferences and seminars as directors and other positions and submitting project reports can be manifestations of research performance of faculty members. On the other hand number of times a faculty member has been chosen as a director or executive secretary of seminars and conferences, awards received because of submitted papers, extent of attracting foreign academic supports, etc. are also considered as research activity [7].

Thus developing a model for evaluation of research productivity of faculty members which can clarify these elements is potentially beneficial for representation of faculty efforts in research field. In addition it can prepare the appropriate ground for decision making on plans of performance improvement and quality promotion based on related data. In present research it tried to identify elements of research productivity and then its influential factors are detected and finally an appropriate model for productivity evaluation of faculty members is formulated and provided.

Literature Review

Models for Factors Influencing Productivity of Faculty Members: Factors influencing research productivity of faculty members have been studied for several decades. Most of these studies are derived from general model of research productivity being applied to study the effects of factors beneficial in promotion of faculty research productivity in various organizations. In this section some examples of these models are provided:

Bland Model: Bland model has three main component i.e. individual characteristics, Leadership characteristics and environmental (organizational) characteristics [8].

Finkelstein Model: In this model seven variables are proposed to predict the extent of publications of faculty members including (1) interest of faculty in research, (2) having highest education degree, (3) primary publishing habits, (4) previous publishing activities, (5) relationship with colleagues from the same disciplinary, (6) membership in a great number of journals, (7) devotion of adequate time to research [9].

Creswell Model: Creswell [10] tried to identify organizational factors influencing research productivity of faculty members. He described successful researchers as ones who will to promote their scientific status, devote at least one third of their time to research activities, publish papers in their specific field, receive positive feedback from their colleagues and/or have a continuous and close relationship with their colleagues involving in similar research plans inside and outside of university. Thus Creswell model points to importance of organizational factors and also to research culture which influence individual productivity of faculty members.

Dundar and Lewis Model: this model initially had two characteristics: (A) Individual characteristics associated with personal qualities and environmental experiences; (B) Organizational and department characteristics including variables associated with leadership, culture, structure and policy. Studying more than 3600 PhD research works in US, Dundar and Lewis [11] found out that one of the most important factors for predicting research productivity of faculty members was faculty size.

Teodorescu Model: he proposed an international model for productivity. Teodorescu [12] model states that individual success variables and organizational features

are predictors of research productivity in national framework. He tested his model in 10 countries. Results from testing model show that correlates of productivity of faculty members are different at international level but those faculty members who continuously contribute in scientific seminars and/or are members of scientific societies associated with their specific field of study are research productive in most countries.

Brocato Model: Brocato [13] pointed out various factors effective in research productivity of faculty members in his model including psychological factors, individual characteristics and organizational and group environment for conducting research. He found out that individual characteristics of faculty members such as motivation, professional networks and research training had high correlation with research productivity. Brocato [13] also found out that organizational, educational group (department) and disciplinary features had very least influence on research productivity compared to individual characteristics.

Research Productivity: With respect to huge size of service sector in every country, in this sector productivity of staff and particularly faculty members (knowledge workers) are also relevant. If an accurate system is established to measure productivity of knowledge workers (K.W), it can potentially be useful in monitoring and improving performance [14]. Thus productivity of faculty members is also considered and discussed in the framework of productivity of K.Ws. Though some researchers addressed characteristics which are thought to be effective in the field of productivity, but up to now no research was able to address all aspects of a university and all items stated in research productivity promotion regulations in relation to their effects on productivity.

Overall, productivity of faculty members can be divided into three groups of research, educational and specialized services productivity. Today faculty members' productivity in various fields of education, research, professional growth, etc is increasingly paid attention [15] but with respect to subject extent and necessity for limiting it, present research studies research productivity in particular. Reviewing theoretical bases and background of associated research shows that various factors influence productivity of faculty members which are grouped into two parts of individual and organizational ones in conceptual model [12, 16]:

Individual Factors: Individual factors includes following variables; (1) job satisfaction, (2) scientific status of faculty member (professor, associate professor, professor assistant, educator), (3) Experience of serving as faculty member, (4) self-evaluation of faculty members, (5) educational degree (masters', doctorate (PhD) and higher), (6) graduation university, (7) gender (male, female), (8) grade according to official document.

Organizational Factors: Organizational factors includes following variables; (1) organizational structure of university (degree of centralization, decentralization), (2) management practice, (3) organizational support, (4) organizational culture, (5) educational goals defined at educational group level, (6) authority level of faculty members (job independence), (7) rules and regulations for annual promotion of faculty members, (8) motivational factors, (9) salary and compensation, (10) Welfare affairs of faculty members, (11) arrangement for providing faculty members with study opportunities by university, (12) Holding educational workshops meeting needs of faculty members, (13) Student characteristics, (14) work load of faculty members, (15) Learning and teaching process, (16) research rules and regulations, (17) research and teaching skills, (18) Employees and colleagues attitudes.

Research Questions

- What are the elements comprising research productivity of faculty members?
- How importance are individual and organizational factors influencing research productivity of faculty members?
- What are the individual factors influencing research productivity of faculty members and what are their factor structure?
- What are the organizational factors influencing research productivity of faculty members and what are their factor structure?
- What is the appropriate model for productivity evaluation of faculty members of Iranian Islamic Azad University Branches of District 2?

Methodology: Methodology of research varies based on type and nature of research subject. Present research was an applied one with respect to its purpose, thus researcher initially and primarily sought to achieve a practical goal and develop applied knowledge in relation

to intended subject. Methodology of research was of mixed type. Indeed in present research positive aspects of quantitative and qualitative research were mixed by researcher and the research subject was studied in this way. In qualitative part of research, Delphi method was used to converge experts' opinions and in quantitative part, present study was of non-experimental type and in fact it was a correlation study in which it was tried to discover or determine the relationships between various variables using correlation coefficient. Therefore in quantitative part, it was tried to analyze data using advanced multi-variable analyses (exploratory factor analysis, confirmatory factor analysis and structural equation model). Thus sequence of two parts of present research was a qualitative-quantitative one.

Statistical Population and Research Sample: According to the fact that present research was conducted in two qualitative and quantitative parts, statistical population of it consisted of all experts in research affairs and a targeted sample among them obtained for present research. Also statistical population in quantitative part consisted of all male and female faculty members of Islamic Azad University branches of District 2 who work as confirmed official, official, contractual and probationary employees. According to purpose of study and composition of research population, a random-classified sampling consistent with statistical population size was conducted and sample size was considered as 261 based on Krejcie Morgan [17] table.

Data Collection Instrument: In present study library resources and questionnaires were used to collect information. In this respect in addition to a form for demographic characteristics, questionnaire of "indentifying factors influencing productivity of faculty members" and "faculty members' research productivity" scale were used. It should be noted that this researcher-made questionnaire was composed based on qualitative part or research and library studies (Regulations for Promotion of Faculty Members of University). Also a researcher-made questionnaire was used to evaluate individual and organizational factors influencing research productivity of faculty members. Individual factors consisted of 17 questions and organizational ones consisted of 38 ones and they were measured using a 7-point Likert scale. Face and content validities were confirmed by related experts and reliability based on Cronbach Alpha was obtained as 0.859 for questionnaire of individual factors influencing research productivity of faculty members and 0.844 for questionnaire of organizational factors influencing research productivity of faculty members.

RESULT AND DISCUSSION

Data Analysis: According to components obtained from reviewing theoretical and empirical references and interviews with academic experts, researcher extracted measures to evaluate research productivity of Islamic Azad University faculty members and then identified individual and organizational factors explaining research productivity of faculty members so that based on them a model for factors influencing research productivity of faculty members can be formulated.

Research Question 1: What are the elements comprising research productivity of faculty members?

In summary, with respect to research productivity measures based on theoretical and empirical background, academic experts opinions and also weight coefficients of each measure, research productivity of faculty members consist of seven components: (1) submitting articles, (2) book writing and translation, (3) thesis and dissertation supervision, (4) administrative-scientific services, (5) judgment in relation to articles and research plans, (6) innovation and invention and (7) having research plans (Figure 1).

Since factor loadings of elements comprising productivity are different, contribution of each element to productivity of faculty members is different from other ones. Though research productivity score of each faculty member represents total scientific status of that faculty

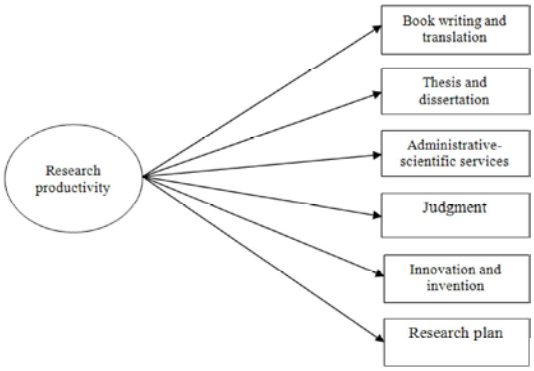

Fig. 1: Elements comprising faculty members' research productivity based on factor analysis results

Table 1: Results of Friedman non-parametric test for ranking individual and organizational factors

Individual Factors Influencing Research productivity	Components	Rank	Organizational Factors Influencing Research productivity	Components	Rank
	scientific status of faculty member	6.55		Organizational structure of university	6.93
	Experience of serving as faculty member	6.25		Managing method	8.70
	Job satisfaction	7.56		Organizational support	9.04
	Self-evaluation	6.73		Organizational culture	8.24
	Educational degree	6.44		Defined organizational goals	8.00
	Graduation university	5.47		job independence	8.89
	gender	2.56		Promotion rules and regulations	7.54
	Grade based on last official document	3.84		Motivational factors	9.77
	Work load	7.06		Salary and compensation level	8.82
	Learning and teaching process	6.55		Welfare affaires of faculty members	9.20
	Research and teaching skill	6.99		Study opportunities	9.44
				Holding required development courses	7.43
				Student characteristics	5.61
				Research regulations	7.28
				Employees and colleagues' attitude	5.09
	Frequency	240		Frequency	241
	Chi^2	633.36		Chi^2	451.84
	Degree of freedom (df)	10		Degree of freedom (df)	14
	Significance level	0.000		Significance level	0.000

member, but comparison between scores of them do not present accurate information because total score of each faculty member may have a different composition of seven elements. Thus equality of scores of two faculty members does not necessarily represent their equal performance based on elements of research productivity. Developed scale is partly consistent with results of works by Bland *et al*. [16], Hasselback and Reinstein [5], Lootsma and Bots [18], Barnett *et al*. [19], Kelly and Warmbrod [20] and Crosta and Packman [21] with respect to methodology.

Research Question 2: How importance are individual and organizational factors influencing research productivity of faculty members?

In order to obtain importance of components of individual and organizational factors influencing research productivity of faculty members, using Friedman non-parametric test, components of each factor were ranked and the results are provided in table 1. According to results of table 1 it can be said that among individual factors, job satisfaction obtained the highest priority (e.g. Williams [22], Manjunath *et al*. [23] and White and Pyfer [24]) and gender was of the least importance (e.g. Barnett *et al*. [19], Bland *et al*. [25]) while among organizational factors, "motivational factors" had the most importance and employees and colleagues' attitudes had the least rank. Results from research on motivation factor was similar to that of White and Pyfer [24], Barnet *et al*. [19], Williams [22] and Manjunath *et al*. [23]. With respect to factors employees and colleagues attitudes towards research productivity of faculty members no similar findings were found. Also other weights reflect importance of other factors in evaluation of research productivity of faculty members.

Research Question 3: What are the individual factors influencing research productivity of faculty members and what are their factor structure?

In order to validate consistency of items of individual factor components influencing research productivity with respect to content and evaluate fitness of factor structure and theoretical model to data, first order confirmatory factor analysis was used and fitness indicators are reported in table 2. Results suggest that all indicators are at an appropriate level and model is in good fitness to data. Thus items are consistent with theoretical construct.

Consisting factors and factor structure of individual factors influencing faculty research productivity based on factor structure results (Table 3) showed that first rank factor included components of "job satisfaction" and the highest factor loading was

Table 2: Fitness indicators of components of individual factors influencing research productivity

Indicator	Fitness Value
Chi^2 and its significance level	98.84 (p=0.001)
RMSEA	0.066
NFI	0.96
NNFI	0.97
CFI	0.98
GFI	0.94
AGFI	0.90

Table 3: Factor loadings, determination coefficient and t-statistics for items of individual factors influencing research productivity (**P < 01/0)

Questions (components or items)	Loading factor (β)	t-statistics	Multiple determination coefficient
q15	0.76	13.58	0.58
q16	0.89	16.45	0.78
q17	0.78	14.00	0.61
q18	0.86	15.51	0.75
q19	0.67	11.17	0.45
q39	0.70	9.06	0.49
q40	0.72	9.27	0.52
q48	0.61	9.67	0.37
q51	0.75	12.49	0.57
q52	0.71	11.43	0.50
q53	0.82	14.13	0.67
q54	0.66	10.76	0.44

associated with item 16 (my job needs are completely met in Azad University). Items 48, 51, 52, 53 and 54 together consisted a factor can be called as "learning and teaching process" and the highest factor loading was related to item 52 (using special methods such as questioning or involving students with the aim of learning encouragement). Finally third factor was formed with items 39 and 40 which in combination were named as "specialized job ability". These three factors totally explained 66 percent of variance as shown in figure 2.

Obtained results showed that individual factors can be divided into three groups (1) job satisfaction, (2) learning and teaching process, (3) specialized job ability. Obtained results were consistent with following studies with respect to each factor:

With regard to job satisfaction the results were consistent with those of Williams [22] and Manjunath *et al*. [23]. Respecting to learning and teaching they were consistent with those of Bland *et al*. [16], Mitchell and Rebne [26], Noser [27] and were not consistent with Lee [28]. Also with respect to specialized job ability the results were consistent with Crosta and packman [21].

Research Question 4: What are the organizational factors influencing research productivity of faculty members and what are their factor structure?

In order to validate consistency of items of organizational factor components influencing research productivity with respect to content and evaluate fitness of factor structure and theoretical model to data,

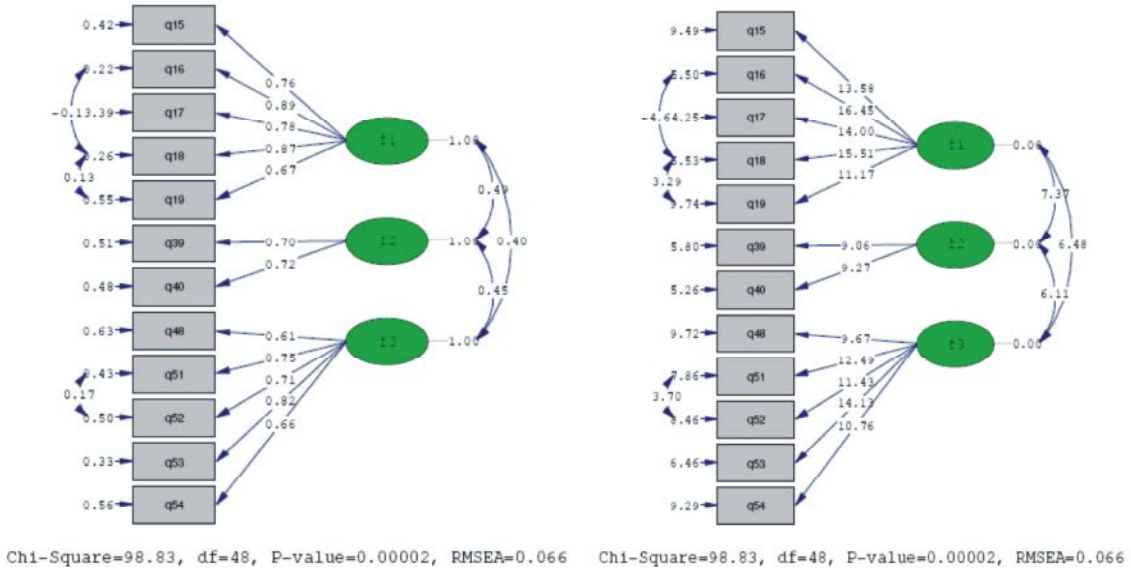

Fig. 2: Results of factor structure of items of individual factors influencing research productivity

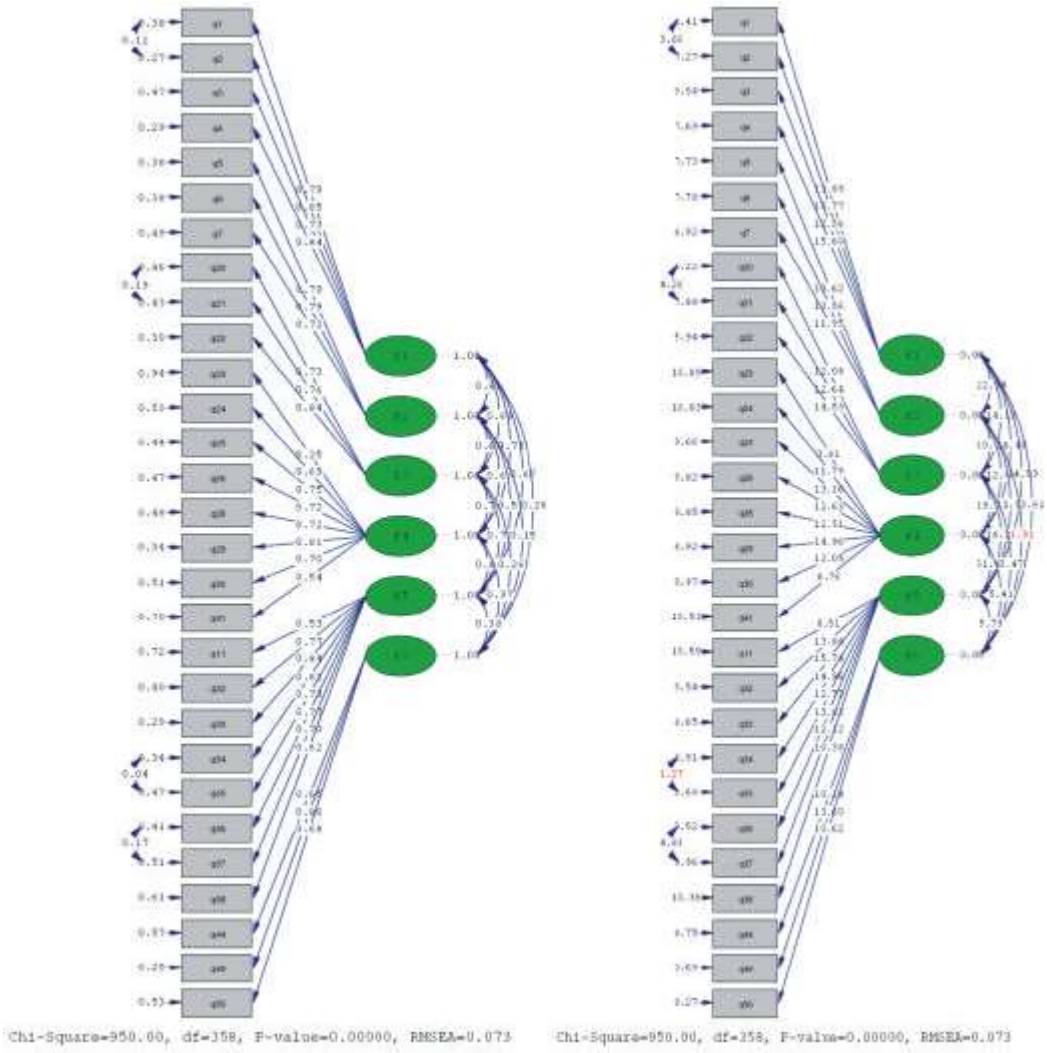

Fig. 3: Results of factor structure of items comprising organizational factors influencing research productivity

first order confirmatory factor analysis was used and fitness indicators are reported in table 3. Obtained results showed that all fitness indicators but GFI and AGFI were at relatively good level and model was well fitted with data and this showed consistency of items with theoretical constructs.

According to opinions of statistical sample and results from factor analysis in present research (Table 4), first rank factor included components of " organizational support" and the highest factor loading was related to item 36 (decision making process of university is completely towards supporting faculty members in conducting research activities). items 28,25,29,26,30 and 41 totally formed a factor can be called "organizational culture". Third factor with items 1, 2, 3 and 4 was called "defined organizational purpose".

Table 3: Fitness indicators of components of organizational factors influencing research productivity

Indicators	Fitness value
Chi^2 and its significance level	950.01(p=0.001)
RMSEA	0.073
NFI	0.93
NNFI	0.95
CFI	.096
GFI	.089
AGFI	0.84

Fourth factor consisting of items 21, 20 and 22 was called "motivational factors". Fifth factor consisted of items 49, 50 and 44 was called "student characteristics". Results of factor structure of items comprising organizational factors influencing research productivity are shown in figure 3.

Table 4: Determination coefficient and t-statistics for items of organizational factors influencing research productivity (**P < 01/0)

Questions (components or items)	Loading factor (β)	t-statistics	Multiple determination coefficient
q1	0.79	13.89	0.62
q2	0.85	15.77	0.73
q3	0.73	12.56	0.53
q4	0.84	15.60	0.71
q5	0.79	13.62	0.62
q6	0.79	13.56	0.62
q7	0.72	11.95	0.51
q20	0.73	12.08	0.54
q21	0.76	12.64	0.57
q22	0.84	14.53	0.70
q23	0.25	3.81	0.06
q24	0.69	11.79	0.47
q25	0.75	13.16	0.56
q26	0.72	12.63	0.53
q28	0.72	12.51	0.52
q29	0.81	14.96	0.66
q30	0.70	12.05	0.49
q41	0.54	8.76	0.30
q11	0.53	8.51	0.28
q32	0.77	13.88	0.60
q33	0.84	15.74	0.71
q34	0.81	14.96	0.66
q35	0.73	12.73	0.53
q36	0.77	13.82	0.59
q37	0.70	12.12	0.49
q38	0.62	10.38	0.39
q44	0.65	10.14	0.43
q49	0.86	13.60	0.75
q50	0.68	10.62	0.47

Table 5: Fitness indicators of research structural model

Indicators	Fitness value
Chi^2 and its significance level	208.65 (p=0.001)
RMSEA	0.072
NFI	0.89
NNFI	0.92
CFI	0.93
GFI	0.90
AGFI	0.85

Research Question 5: What is the appropriate model for productivity evaluation of faculty members of Iranian Islamic Azad University Branches of District 2?

Though in conceptual model of present research, individual and organizational factors influencing research productivity were considered as exogenous variables, but results from structural equation model using empirical data showed that the variables research productivity and individual factors provided the best fitness as endogenous variables and organizational factors consisted the single exogenous variable of present research. Fitness indicators are reported in table 5. Obtained results suggest that all fitness indicators except for AGFI are at very good levels and model is well fitted to data and this shows consistency of items with theoretical construct.

Figure 4 presents standardized coefficients of structural model obtained from fitting conceptual model of research to empirical data and also t-statistic values are provided to evaluate significance of path coefficients of structural equation model of research productivity. In general it can be seen that only one path was insignificant at confidence interval of 95 %.

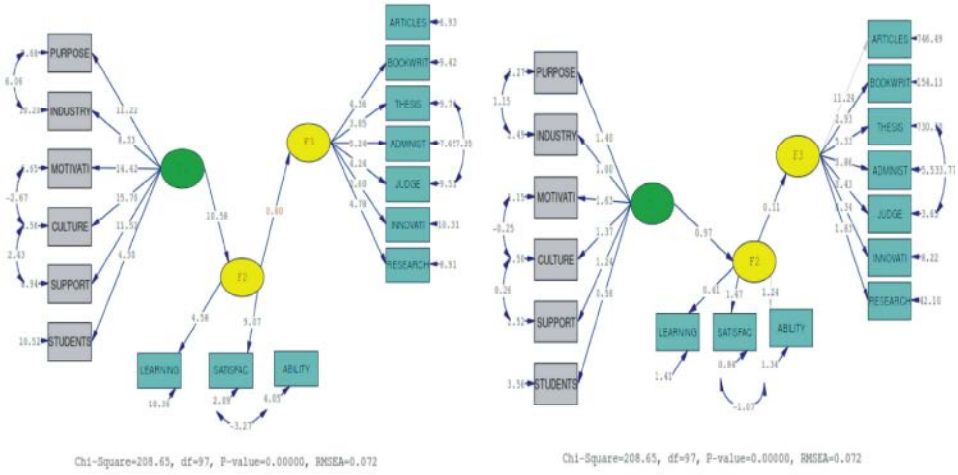

Fig. 4: Values of t-statistic and standardized coefficient of structural model obtained from fitting conceptual model of research to empirical data

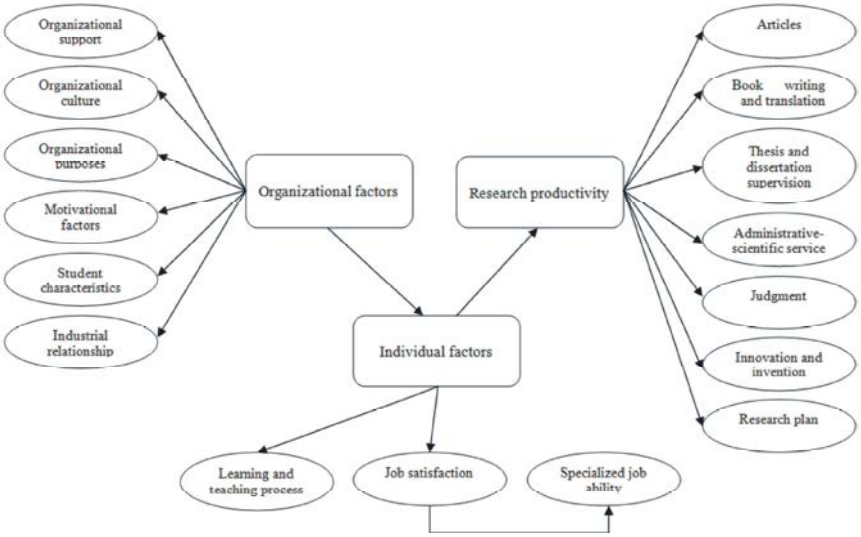

Fig. 5: Structural equation model of research productivity

Thus structural equation model of research productivity was not consistent with that of Creswell [10] and Bland *et al*. [8] while it was consistent with Brocato [13] model. Final model of research is seen in figure 5.

DISCUSSION AND CONCLUSION

In order to answer research question which says that if proposed model for individual and organizational factors influencing research productivity is able to explain research productivity of faculty members? Structural equation model was used. It showed that factors comprising research productivity of faculty members consisted of seven components: (1) submitting articles, (2) book writing and translation, (3) thesis supervision, (4) administrative-scientific services, (5) judgment in relation to articles and research plans, (6) innovation and invention and (7) having research plans. Though in conceptual model of research individual and organizational factors influencing research productivity were considered as exogenous variables but results from structural equation model analysis showed that the variables research productivity and individual factors provided the best fitness as endogenous variables and variable of organizational factors was single exogenous research variable. In other words it can be concluded that organizational factors did not have a direct effect on research productivity of faculty members of Islamic Azad University branches of District 2 and individual factors had a direct effect on research productivity of faculty members.

In order to develop model from total score of research productivity of faculty members for each seven components of research productivity evaluation, factor structure was employed. Results from responding second question in ranking individual factors based on Friedman non-parametric test showed that job satisfaction had the most priority and gender was of least importance (factor weight). Also in relation to organizational factors results obtained for ranking factors showed that motivation had the highest importance and employees and colleagues' attitudes had the least importance. Results from exploratory factor analysis and confirmatory factor analysis with respect to answering third question showed that individual factors can be divided into three groups: (1) job satisfaction, (2) learning and teaching process and (3) specialized job ability. Also results from exploratory factor analysis and confirmatory factor analysis with respect to answering fourth question showed that organizational factors can be divided into six groups: (1) organizational support, (2) organizational culture, (3) organizational purpose, (4) motivational factors, (5) students characteristics and (6) industrial relationship.

Also results from analysis of descriptive data showed that among individual factors there was a significant difference between "learning and teaching process" and other components. Among organizational factors influencing research productivity of faculty members, there was a significant difference between "student characteristics" and other components. Among components of research productivity, "articles" had the highest average and "innovation and invention" had

the least average. Among measures of "articles" average for measure of full-text scientific article submitted to scientific forums had the highest average among measures of this component and average for measure of scientific-research article submitted to foreign journals was lower than those of other measures of this component. Among measures of book writing and translation, average for book writing was higher than those of other measures of this component and average for measure book republishing was higher than other measures of this variable. Among measures for thesis and dissertation supervision, average for thesis supervision was higher than other indicators of this variable and average for measure of supervision of doctorate dissertation was lower than other measures of this variable. Among measures of administrative-scientific services component, average for measure of participation in specialized and educational workshops was the highest and average for measure of being editor or director of credible scientific journals was lower than others. Also component of innovation and invention and component of research plans had low averages. Interaction table of gender frequency, employment type and scientific status of research sample shows that 25 percent of sample was female and 75 percent was male. Also based on employment type, most faculty members were in official-probationary employment and with respect to scientific status, the most frequency was belonged to educator status.

Research Limitations: Present research as most other studies had limitations most important of them noted in the following:

- Lack of shared perception of common specialized concepts and terms (e.g. centralization and decentralization0 among faculty members of sample. In order to reduce this limitation after pilot study, efforts were exerted to delete some of these terms. Also for concepts which probably had of no common perception among faculty members, required descriptions were provided next to each term and while collecting data, researcher did his best to remove inconsistency on common concepts using verbal descriptions.
- Lack of a relatively complete statistical system to access to data required for evaluation of productivity of faculty members.
- Presence of a conservative quality in some faculty members in the sample.

Applied Suggestions:

- Using questionnaire of research productivity evaluation, productivity of Islamic Azad University branches can be measured and the results of measuring research productivity of faculty members without any mention of their names can be used in order to inform universities about their strengths and weaknesses and finally to develop and implement professional growth plan and improve research productivity of various universities.
- Creation of a relatively comprehensive statistical system to evaluate productivity of faculty members based on research, education and specialized services.
- Creation of mechanisms required for establishment of a link between results from research productivity evaluation and research quality and productivity improvement plan in higher education system and particularly in Islamic Azad University.
- Comparison of faculty members' productivity between various universities with similar characteristics.
- Productivity of faculty members should have two qualitative and quantitative dimensions. Studies on measurement of faculty productivity are mostly focused on quantitative dimension.
- Up to now several efforts have exerted to assess productivity of faculty members with respect to method and extent of the studies. From methodological viewpoint up to now no generally acceptable and standard method for evaluation of faculty productivity has identified. Some common methods for faculty productivity evaluation are as follows:
  - Conceptual analysis and mixed research
  - Using structural equation model
  - Using analytic hierarchical process
  - Using multi-level models.
  - Using logistic regression and multi-regression

Most experts believe that using only one single method or a special type of data cannot carefully evaluate faculty members' performance. Thus it is suggested that multi-perspective strategies are used in this respect.

- Developing a special or standard model for all universities to evaluate productivity of higher education should be based on academic fields. No single standard should be used to evaluate

productivity for all academic fields. Also in comparison of universities their history, financial potential, special capacities, etc. should be considered.

- Results from present study can be of many benefits for policy makers, higher education administrators, researchers and students. University presidents may exploit present results related to current situation of research productivity in universities in order to detect and identify research challenges and providing opportunities to improve research productivity.
- Compared to previous studies on other institutions, research productivity ratio of faculty members of Islamic Azad University is relatively at a low level. Thus some shared efforts should be exerted by policy makers, administrators and academicians towards improvement of research productivity.
- Islamic Azad University like any other academic institution which values research and development should find ways to achieve success through employing and training insightful and professional faculty members. in this way it should establish on-job training system to create and recreate research skills for its faculty members.
- Spending time to conduct research may be one of the best factors for predicting and determining research productivity in Islamic Azad University research process. In order to promote research productivity of faculty members of this university, it is recommended to consider devoting a time for conducting research in work schedule of faculty members. Finally financial support and rewarding system can be an effective factor in motivating and encouraging faculty members to do more research works.
- With respect to the fact that research-orientation is one of the most important strategies of Islamic Azad University and higher education system, thus universities should play their role in this field. Reasonable plans should be designed to prepare the ground for cooperation of faculty members with related organs in order to perform shared research.
- Quantity and quality of organizational research is one of the most essential criteria for achieving superiority and success for a university. In higher education system, research productivity plays a significant role in achieving academic success and this depends on salary and promotion policy.
- One of the problems in measuring research productivity is lack of adequate and appropriate data. Thus process of conducting research in universities should be included in the framework of faculty members' job requirements so that all universities can provide quantitative and qualitative data to researchers to evaluate their research productivity. Also faculty members have not the same definition and perception of productivity in higher education.
- In total, research productivity is a complicated concept. With respect to frequent research conducted in relation to research productivity in higher education and role of it in promotion of scientific status of faculty members and given the fact that research productivity in higher education system (faculty members promotion regulations) is an objective and measurable category, it can be inferred that some dimensions of it are not seen in all faculty members and only are shown by a few number of them.
- One of the useful functions of measuring faculty members' research productivity is that results of it can be employed in making decisions on improvement and upgrade of productivity level of faculty members. Results from reviewing theoretical bases and also background of research works conducted in this field to identify factors influencing research productivity show that various factors play role in this respect. In addition to importance of productivity issue and effect of it on improvement of performance of higher education units few research is conducted in this field. In recent years organizations and research and industrial centers have exerted great efforts to introduce and apply productivity but little is said on possibility of a plan for academic productivity measurement system.

Suggestions for Future Research

- Measurement of productivity in academic fields and specialized services provided by faculty members.
- Forming qualitative indicators for measurement of research productivity of faculty members.
- Study of the relationship between research productivity and academic productivity.
- Study of the relationship between research productivity and allocation of financial resources to universities.
- Reproducing present research in other districts of Islamic Azad University to measure nature of its districts in relation to level of research productivity.

- Testing proposed model to determine applicability of it in other universities of Iran.
- Study of the way of linking results from research productivity of faculty members with plans for improvement of research productivity and quality in higher education and Islamic Azad University.

REFERENCES

1. Lee, J.J. and R.A. Rhoads, 2004. Faculty entrepreneurialism and the challenge to undergraduate education at research universities. Reserch in Higher Education, 45(7): 739-60.
2. Taylor, S.W., B.F. Fender and K.G. Burke, 2006. Unraveling the Academic Productivity of Economists: The Opportunity Costs of Teaching and Service. Southern Economic Journal, 72(4): 846-859.
3. Blackburn, R., J. Bieber, J. Lawrence and L. Trautvetter, 1991. Faculty at work: Focus on research, scholarship and service. Research in Higher Education, 32(4): 385.
4. Cantu, VaIeriano, J.r., 1997. The Identification and Validation of a Checklist of quality standards for Faculty Administrative Work at Research Universities. PH.D dissertation, Texas Tech University. U.S.A.
5. Hasselback, J.R. and A. Reinstein, 1995. A proposal for measuring scholarly productivity of accounting faculty. American Accounting Association, 10(2): 269.
6. West Verginia School of Mediated, 1999. Guidelines for Faculty Appointment, Promotion and Tenure, http://www.hsc.wvn.edu/som/promotion/full doc.html.
7. Kuo, Y.F. and L.S. Chen, 2002. Usingthe fuzzy synthetic Decision approach to assess the performance of university teachers in tiwan, international journal of management, 19(4): 593-605.
8. Bland, C.J., E. Seaquist, J.T. Pacala, B. Center and D. Finstad, 2002. One school's strategy to assess and improve the vitality of its faculty. Acad Med., 77: 368-76.
9. Finkelstein, M.J., 1984. The American Academic Profession: A Synthesis of Social Scientific Inquiry since World War II. Columbus: Ohio State University Press.
10. Creswell, J.W., 1985. Faculty Research Performance: Lessons from the Sciences and Social Sciences. Washington, DC: Association for the Study of Higher Education.
11. Dundar, H. and D.R. Lewis, 1998. Determinants of research productivity in higher education. Resarech Higher Education, 39: 607-31.
12. Teodorescu, D., 2000. Correlates of faculty publication productivity: a cross-national analysis. Higher Education, 39: 201-22.
13. Brocato, J.J., 2001. The research productivity of family medicine department faculty: a national study dissertation. Michigan State University.
14. Ramirez, Y.W. and D.A. Nambhard, 2004. Measuring knowledge worker productivity, A taxonomy. Journal of Intellectual Capital, 5(5): 602-628.
15. Radhakrishna, R., E. Yoder and D. Scanlon, 1994. Determinants of Faculty productivity: perspectives of Agricultural and Extension Education Faculty. Educational Resources Information Center (ERIC). U.S.A Document Reproduction Service No. ED., 380: 549.
16. Bland, C.J., B. Center, D.A. Finstad, K. Risbey and J.G. Staples, 2005. A Theoretical, Practical, Predictive Model of Faculty and Department Research Productivity, Academic Medicine, 80(3): 225-237.
17. Krejcie, R.V. and D.W. Morgan, 1970. Determining Sample Size For Research Activities. Educational and Psychological Measurement, 30: 607-10.
18. Lootsma, F. and P. Bots, 1997. The assignment of scores for out-based research funding, delft university of technology, unpublished manuscript.
19. Barnett, R.C., P. Carr, A.D. Boisnier, A.S. Ash, R.H. Friedman, M.A. Moskowitz and L. Szalacha, 1998. Relationships of gender and career motivation to medical faculty members, production of academic publications, Academic Medicine, 73(2): 180-6.
20. Kelly, M.E. and J. Warmbrod, 1986. Developing and maintaining productivere searchers in agricultural education, Journal of the American Association of Teacher Educators in Agriculture, 27(1): 27-32.
21. Crosta, P.M. and I.G. Packman, 2005. Faculty Productivity in supervising doctoral student dissertation at Comell University. Economics od Education Review, 24(1): 55-65.
22. Williams, H.A., 2003. A Mediated Hierarchical Regression Analysis of Related to Research Productivity of Human Resource Education and workforce Development Postsecondary Faculty. A dissertation for PH.D degree Louisiana State University.

23. Manjunat, L., S. Tyagraajan, J. vasantkumar and M.R. Ansari, 2008. Determinates of Teaching Productivity and Characteristics of University of Agricultural Sciences. Dharward. Kamataka India, 21(1): 83-85.
24. White, A.H. and J. Pyfer, 2001. A New Perspective: The Department as the Unit of Analysis. American Council on Education, http://www.acenet.edu/ resources/chairs.
25. Bland, C., B. Center, D. Finsted, K. Risbey and J. Staples, 2006. The impact of appointment type on the productivity and commitment of full-time faculty in reaserch and doctoral institutions. J. Hidher Education, 77(1): 89-123.
26. Mitchell, J.E. and D.S. Rebne, 1995. Nonlinear effects of teaching and consulting on academic research productivities. Scio- Economic Planning Sciences, 29(1): 47-57.
27. Noser, T.C., 1996. Research Productivity and Perceived Teaching Effectiveness: A Survey of Economics Facultv. Research in Higher Education, 37(3): 299-321.
28. Lee, J., 2005. Faculty Productivity and salary by type of institution and gender. A dissertation for PH.D degree in Stanford University.