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A MODEL FOR DEVELOPING FACULTY MEMBER`S COLLABORATION IN RESEARCH ACTIVITIES OF ISLAMIC AZAD UNIVERSITY

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ABSTRACT

Nowadays which qualitative development of universities are being emphasized by Higher Education system managers beside quantitative development, the necessity of paying attention to research and knowledge creation beside universities educational functionality can lead to country`s growth and expansion. University`s professors are one of the main elements of researching because of their significant role and professional working domain. Current study has been done in order to present a model for developing faculty member`s collaboration in research activities of Islamic Azad University (case study: Islamic Azad University of Tehran province). The research methodology is surveying and data collection method is conducted by questionnaire. The statistical population of this study includes all part-time and full-time faculty members of Islamic Azad University branches in Tehran province, who were 5922 people during research period (2015-2014) according to statistics of Islamic Azad University Central Office. The reliability of questionnaire was confirmed by expert`s collaboration in this fields, which distributed among 30 persons of statistical population before doing research for a test. Finally using Chronbach Alpha the reliability of questionnaire was approved in 97%. To validate the proposed model, comments of 30 professors and masters are gathered via another validating questionnaire that finally confirmed model validity. The results show that developing collaboration of faculty members in research activities has six main components include administrative and organizational, social and cultural, financial and economic, personal and professional, facilities and type of research activity, solving research barriers and 32 subcomponents.

KEYWORDS: Collaboration, Research activities, Islamic Azad University, Faculty members, Higher education.

INTRODUCTION

In the third millennium, developed and developing countries concluded that researching universities are and important tool for being successful in knowledge economy. In such institutions faculty members and students connect to their colleagues around the world and collaborate in global research and science (Shafie Zadeh, Ehsan *et. al.*, 2012). On the other hand, higher education is the most significant and productive social institution which should lead to knowledge development and science creation in society via research promotion and development, and finally results of created researches in the universities and higher education institutions lead to generating activity and lead person`s role increase and society progress. Today it is accepted that education not only is one of the main and primary human rights, but also it is one of the main indexes in social and economic development. The vital element in updating higher education activities is scientific researches which mainly realized by universities faculty members and higher education institutions. While “there is not any fundamental issue than relation between research and education in modern higher

education" (Gourchian, Nader Qoli et al., 2012). University professors have an important task for researching according to their professional work frame and role. Scientific researches that conducted by faculty members especially in universities and higher education institutions are one of the main components of cultural, social, economic and technological development, and therefore self-contained development during long-time and solving relevant problems to social, economic and cultural development wouldn't be possible without researching and science creation especially in universities. It is clear to do so, using university professors creativity and their scientific and research gains in different fields is inevitable. Scientific and researching findings of educational system are type of products which are offered to society and different social institutions. Society in order to gain its various objectives requires to better recognition of social and natural phenomena and proper tools for their satisfaction, and change and control social system and nature. Society gets this recognition from scientific and educational institutions such as universities, which are results of investigations and researches.

However, there are many different active centers in scientific researches, but in most countries around the world, research or survey is accepted as one of the main universities functions. Reasons such s universities collaboration necessitate in national or local development, solving problems in social space, accelerating growth, scientific development and etc., consider research as necessary function of universities. This matter also approved by UNESCO especially in developing countries (like in Iran) that most of universities have skilled manpower, also universities are the best places for researching due to having sufficient resources like human resource, equipment and facilities, library, press and magazine, using young students energy. In UNESCO annual report, which had been presented in 1966, it is noted that: in most university systems, teachers collaborate in research. In fact, this is a type of higher education quality assurance (UNESCO annual report, 1966). University researching activities include many items such as book compilation and translation, publishing papers in international and domestic journals, paper translation, book review, doing research projects in different scientific fields, attending in scientific communities etc. whatever is important, is a faculty member affected by many factors in doing research activities, which would be distinct based on changing in factor type and its effect intensity on member`s performance in different fields such as research activities.

Problem statement

Statistical surveys during different periods show that necessary measures have not been performed in order to attract faculty member`s collaboration and develop their researching activities. For instance according to available information, all Iranian scientific documents where indexed up to 2008 were about 13568, which in accordance with total number of faculty member on that time (about 54000 member), in average one scientific document was published per four faculty members (Sabouri, Ali Akbar, 2009). However, this rate in Thailand governmental universities was 40 per year (Wichian *et al*, 2009), Also the rate of Iran`s scientific collaboration in comparison with Turkey were 0.82 and 1.40 in 2008 respectively. In this year also research in social science, human science and art in Turkey were 14 times more than that of (512 against 36).

Despite of quantitative growth of Iran in scientific papers publishing from 2008 to 2013, there is huge interval from advanced and developing countries from the quality and quantity point of view especially in social and human science. Science production poverty is a historical, political, cultural and psychological problem in Iran (Sobhani Nejad Mahdi and Afshar Abdollah (2010). By comparing Iran and the world population, the minimum expected share of Iran in researching and science production is 3% in global scale. "According to presented statistics, Iran`s share in producing scientific documents is only 1.69% up to 2014 (ISC). On the other hand investigations in quality of Iran`s published paper in Nature show that Iranian papers have improper situation among others. Iran`s position in referring index of world scientists to Iranian papers as symbol of scientific papers quality among 39 countries in the world is 36$^{th}$ and have lower location than countries such as Singapore, South Africa, Saudi Arabia, Egypt and Turkey. Now, Saudi Arabia`s share in referring to papers index is 0.89% and Iran`s share is half of it 0.44% and Iran placed after Saudi Arabia (0.98%), Turkey (0.47%), Egypt (0.46%) and is fifth country in Middle East. According to great facilities which belongs to Islamic Azad University such as having 20 million per square educational space, 54 Technology Incubators and 420 knowledge-based firms, this university could be effective in promoting qualitative and quantitative level of researching in Iran and enhances its 40% share in research to higher ranks[5]. Iran`s rank in paper publishing was 21 among 150 countries in the world in 2014, but it`s share in science production and researching especially in human

[5] Part of Islamic Azad University`s chairman speech in 2014.

science is poor. Results of Zohouri and Fekri (2010) survey about research barriers from view point of faculty members in Management and Medical Information and Nursing and Midwifery faculties of Iran Medical Science University show that 42% of faculty members have collaborated as executive or main co-worker in running 47 research projects inside or outside university during last three years, and 38% of them stated that they didn't have any paper or researching activity in international or domestic journals during last three years.

The abovementioned evidences display that Iran has long distance from global and developed countries measures in terms of quality and quantity in researching activities in universities. It means that number of our scientific production like papers and journals is very litter in comparison with global average or most of them are limited to special fields. Increase in qualitative and quantitative level of researching activities of faculty members in universities and higher education institution especially Islamic Azad University is one way of gaining global measures in the field of scientific products and therefore economic, technical, social, cultural, and political development, that if it happens, higher education`s officials can make comprehensive decisions in order to develop faculty members collaboration in universities researching activities and make proper policies based on practical researches and scientific findings in this fields in line with country development and growth and solving research requirements in different areas such as production, servicing and other areas with more confidence. So necessitate of survey, identification and determining effective factors on developing collaboration of faculty members is very clear in universities and higher education institutions researching activities especially in Islamic Azad University. Also it is clear that based on country situation that is required of research development in terms of quality and quantity, presenting a model which be able to be a baseline for higher education system officials to make decision and plan in this field.

According to countries ranking around the world, based on indexed papers in Thomson Reuters database (Information Scientific Institute) from 1999 to 2009, Islamic Republic of Iran rank is 35 in the world. In this ranking America, Japan and Germany had located in first to third ranks. Citation index to Iranian papers was 3.72 on that time. According to report of information database of Islamic Revolution cultural-researching institute[6] (quoted by Thomson Reuters database) however Iran`s rank in science production during 1998 to 2014 become better among countries around the world, and upgraded from 52 to 19, but Iran and Middle East countries totally with having 5% of world population only have assigned 3% of global science production to themselves. Whereas West Europe and North America with having 11% of world population have assigned 34 and 31% of scientific productions respectively, and altogether have 65% of global science production. This significant difference during mentioned years displays that Iran has not get its real position in researching and scientific productions till now and has long distance from advanced countries. This problem discusses necessitate of adopting measures and presenting proper solutions in order to increase collaboration of universities and higher education institutes faculty members in researching activities and scientific productions.

In ranking of countries around the world during 1999 to 2009, which were based on citation to ISI papers, Iran ranked in 41th (Farzan e-newsletter, 2012). In this period Iran`s citation index in SCOPUS database were 22 and America, China and UK were first to third ranks respectively. Citation index rate to all Iranian papers (16745 papers) in this database were 0.60 %, which is a very low figure in term of citation index.

Iran has produced 29849 scientific certifications in 2012, which had little increase over 2013 and reach to 30147 according to last statistics in SCOPOS database, Iran have produced 23450 scientific documents during first 11 months of 2014, which is ranked 20th in the world and assigned 1.54% of scientific papers production share to itself. Again America, China and UK were the first to third ranks in the world in this field. Investigations show that papers of Iranian authors and researchers didn't consider as highly cited papers and have low impact factors in term of journal types (SCOPUS, 2014).

Number of papers with impact factor was about 943 research-scientific journals, which in the most optimistic it is clear that huge number of professors in Iran`s university didn't have any opportunity for publishing even one paper in international or domestic journals. The statistics show that scientific productions of developing countries were as below such as India with 81908 document (rank 7 in the world), South Korea with56178 documents I rank 12 in the world), Brazil with 43851 documents (rank 13 in the world) and Taiwan with 32770 (rank 15 in the world), and surpassed in

[6] www.supprt@noorsoft.org

research and scientific productions rather than Iran. Undoubtedly, these deficiencies could be the main reasons of governmental, scientific and cultural official`s dissatisfaction and anxiety to make serious decision in order to enhance universities professors and other researchers motivation for more collaboration in researching activities and science creation. Also in this way, survey of universities role in Iran show that not only research has not an acceptable position in universities, but also there is no worthy attention to universities and faculty members responsibility and role in research (Sajjadian Seyed Mohammad, 2008).

Now, research in most universities (especially Islamic Azad University) is as second propriety after education and teaching, which only performed in order to get annual grade by professors (Feiz, Davood 2008). Another important challenge is severe weakness of some professors in doing research skills, which related to unfamiliarity with research fundamentals and disability in utilizing suitable statistical analysis methods to explicate research findings (Azizi Nematollah and Parsa Seyed Ahmad, 2011). According to abovementioned facts, the main purpose of research is that " which model could be presented in order to develop faculty member`s collaboration in Islamic Azad University research activities?"

Literature review

Nowadays, due to interaction with doubtful, complex, competitive and dynamic realities of the world, knowledge, research and researching morale become so important that discuss universities professors collaboration as an inevitable fact in research process for accelerating development trend in country comprehensively. So there must be a specific set up for collaboration enhancement of universities professors especially Islamic Azad University in research fields in order to provide growth, development and change scientific and technology production.

Among available theories and approaches about researching and scientific activities (which discussed in sociology of science), six important approaches are explained which are more relevant to research subject and are able to explain researching-scientific basis of people especially universities and higher education institutions faculty members favorably, which include:

1. **Extroversionism theory**

Main founder of extraversionism theory in explaining social behaviors and science sociology is Robert K. Merton who is the famous American sociologist. Merton explored effect of social environment on scientific development via compatibility or incompatibility of society cultural structure with internal norms of scientific organization, and he stated that society and its institutions confirm the values of science or are in contrast to them. In favorable situation, structure of political, social and cultural institutions support scientist`s independence and ordered function of science norms, which lead to science development and growth. But whenever some different values such as racism, nationalism, political, religious and economic power and traditional folk contradict with scientific ethnic values and its gain and prevent independent function of science, social institution conflict with science. Merton analyzed these conflictions in term of social pressures on science independence (Ghanee Rad and Mohammad Amin, 2008).

Merton in addition to explored effect of culture on science, also investigated other social conditions on science too. From Merton viewpoint concepts such as: "cultural structure", "normal structure" and "science morality" means an emphasis on values, norms and moral aspects of scientific activity. A scientist as social activist acts based on certain regulations and norms in the scientific society, which Merton called them science normal structure or science morality. Scientists in this field work with this approach and consider scientific realities subject to determinism of scientific supernatural factors especially social factors. A general principle, which this approach is based on it is that institution function in this way is an extraverted approach which concentrates on institutionalizing social relationships among science and its social functionalities in different societies and also focuses on relationships among political, social and economic factors with scientific system functionality. Some scientists follow specific theoretical and scientific orientation of institutions and other economic, political, social and cultural systems. For instance form Bllumer point of view, by accepting mentioned assumption, understanding cognitive and social aspects of science under the influence of factors out of science is feasible and science isn't independent, but under influence of social and cultural factors are out of itself.

2. Intraversionism theory

At the end of 20th century another approached introduced in science sociology studies called introverted or holistic approach. Internal or introverted subject had been selected because in this theory, science is considered independent and science production concentrated on internal factors and variables of scientific society. In holistic approach scientific society is considered as a whole and system. "Social science" is a key concept in this theory, which itself is considered as a system or subsystem against society that is a larger system. From this perspective, science progress relies on scientific society. So in this theory the factors out of science are not so important, but more emphasis is on system and scientific system. In other words, external determinism of science shouldn't be discussed and scientific facts are affected by inside space of scientific society. This scientific space consists of several elements such as scientist, discoveries, books, scientific journals, scientist`s relationship, competitions, financial credits, priorities, universities, research and educational centers and other dependent factors. According to this theory, each scientific society has norms, progress rules, reality criteria, professional regulations, justifications, rejections, acceptance, honors and its specific characteristics. Rama Souban, Hagessterom and Pinch are the most important experts of this approach.

3. Cognitive theory

The cognitive theory pays a lot of attention to internal structure and scientific expansion and development of knowledge, and understand cognitive change in this approach mainly ask question in term of cognitive factors and internal social structure that, does recognition or cognition which derived from scientists formed, built and transferred by society itself? In other word, does scientific cognition content, whatever we access to it and consider it as the best natural global recognition depend on society? Pinch stated that:" if content of scientific cognition in the society formed by society itself, then the way of painting formed all obtained image, and certainly there would be more than one drawing" (Tavakkol, Mohammad, 2012). Another subject which, cognitive approach followers discuss about it, is rising "cognitive revolution" in science sociology studies. It means instead of emphasis on factors and element out of science which, leads changes in science movement trend, also pay attention to how recognition or science formed (in a scientific society way". Generally this approach considers science apart from and disembodied of predisposing factors and conditions.

4. Exchange theory

The exchange theory is an operational sociology and make an opportunity for researcher to extract some assumptions about sociological subjects and observe through it. The exchange theory focuses on tangible things, valuable feelings, reverence, collaboration, admission, opportunities, bonuses, pain, costs, shame and many human relations aspects, and explore them in terms of establishing behavioral interactions and social regularity in groups and societies (Ritser Jorge and Dogloss Jey, 2012).

The movement base of this theory is an individual, and also its analysis unit and main subject of it is explaining social problems and sociological subjects especially in scientific, research and ultra-social explanation. In accordance with theorist`s view about exchange, group structure means interaction and dynamism of forces which have individual sources, because people who interacted reward to each other, hence if people wants any reward, they should interact and collaborate with people who provides reward. On the other hand people try to fix exchange rates and facilitate access ways to anything, which deal. James Freezer added following principles to this theory based on his researching findings, which are according to exchange viewpoint and analyze social organizations:

1. Exchange and individuals entrance process is result of people motivations for understanding their needs.
2. Exchange processes lead to institutionalization of interacted actions patterns and culture.
3. Institutionalized network of interactions not only serves for human needs, but also includes various types of social system.

The social behaviorists and Exchange theory followers don't assume actor`s action and activity as conscious task and believed that individual`s actions are unconscious reactions against triggers. The external triggers determine a person`s reaction, so from exchange viewpoint, actor`s image is very mechanical and due to this respect people and actors of society are similar to people and actors of social theories and structural-functional theory (Roshe Gey, 1998).

4. Needs theory

Sociologists, psychologists and economists presents different definitions about need, but intersection of all definitions is that need is considered as "deficit feeling" (Seif Ali Akbar, 2010), .Another point which expressed in needs theory is

that needs are various and hierarchy. Maslow considered human needs as special type of instinct and divides them to five groups:
A: Physical needs
B: Safety
C: need to respect
D: Need to love and belonging
E: Need to self-seeking and self-realization

From Maslow viewpoint these needs are general and don't depend on time and place, however appearance of their expression may be different. If need considered as type of behavior it would depend on situation which, human located in it.

5. Functionalism theory

The functionalism theory of society is considered as a macro system or structure, and divided this structure to multiple microsystems. Each micro system is responsible for relevant functions to other microsystems and macro-structure. The microsystems located in hierarchy and there is exchange relation among microsystems. Talcott Parsons is one of the most famous functionalism scientists which, analyze social actions and system based on functional-structural model. Parsons divided social system and actions in his analytic model to four microsystems. From his viewpoint each one of analytical microsystems have a function. According to "Voluntary behavior theory" Parsons reject determinism of social action. He made balance between social action and behavior based on voluntary nature of action, positivism and extremist idealists. From Parsons viewpoint "social action" is important, it means that "the social role is explored not their real self". He pays attention to individual in the center of his theory and as social actor and a member of a whole which called social system that includes social activities and individual`s interacted relationships. However actor acts in term of system framework, but from Parsons viewpoint, his behavior is volunteer and logical and has creativity, authority and evaluation forces. Based on Parsons view, social action has volunteer characteristics only in terms of social norms and values. He stated that: "social action was organized in term of social values and norms, and social norms leads individual`s action in order to final conform with social values system, and social norms form and conduce individual`s action manner. Parson`s purpose from freedom and voluntarily social action didn't means absolute freedom and volition in individual behavior.

Another feature of social action from Parson` viewpoint is social action rationality. But Parsons didn't believe that individual always is aware of his behavior and action, but rationality means that social actions doesn't performed automatically and activists always consider their ultimate objectives in their behaviors and actions. Based on Parson`s view, action template is consists of three elements: individual, situation and individual`s tendency to created situation. Actor`s tendency to situation is Parson`s theory base and has two types in his view:

1. Incentive orientation
2. Values orientation

And each orientation has three parts:

1. Conceptual
2. Emotional
3. Chronological

Totally, individual should adopt his incentive orientation with available system of society or group values and proceed based on those. Therefore, it is clear that in Parsons Voluntary and Rational Action theory Various concepts are effective like action, actor, action situation or environment, social norms and values, individual and valuable orientations or individual incentive adoption with social values, actor`s goal and the most important things is socialization process.

Therefore, Parsons also like other structural functionalists observes social actions and behaviors (researching-scientific actions) as results of individual`s social role (like researchers and professor`s social database) in social system. Another significant fact is that Parson`s theory has relationship with interacted action theories and even Max Webber`s theory.

The operational definitions of concepts

In this research, the model referred to image and relationship diagram among elements and components of conceptual model, which presented based on research literature review and theoretical basics. Also "development" in this research means quantitative increasing in individual or group collaboration of Islamic Azad University faculty members in research activities, who works full-time or part-time. "Collaboration" in this research means as responsibility acceptance of Islamic Azad University faculty members who do individual or group research activities, which research point is considered for them in new promotion bylaw for faculty members.

The phrase "research activities" in this survey referred to activities that have been done by faculty members individually or as a group, and research points are considered for them in promotion bylaw of Islamic Azad University faculty members. Research activities in this university promotion bylaw includes items such as publishing papers in valid international and domestic journals, book compilation, paper translation, book review, doing research projects in various scientific fields, attending in conferences and scientific communities etc. A faculty member in this survey also referred to an individual who has recruitment sentence of faculty member and works in Islamic Azad University as contracting, trial or official employment.

Research objectives:

Main objective: "a model to develop faculty member`s collaboration in research activities of Islamic Azad University"

Specific objectives:

1. Determining components and aspects of faculty member`s collaboration in research activities;
2. Determining collaboration level of faculty members of all Islamic Azad University branches in Tehran in research activities;
3. Identifying effective factors on faculty member`s collaboration in research activities of Islamic Azad University;
4. Presenting a suitable model to develop collaboration of Islamic Azad University faculty members in research activities;
5. Validating proposed model from university expert`s viewpoint.

This study is includes as practical researches in terms of objective, so it`s results could be used for developing faculty member`s collaboration in research activities and solving research problems and barriers in Islamic Azad University and other universities and higher education institutions.

Research questions:

1. What are components and aspects of faculty member`s collaboration in research activities?
2. How do faculty members of Islamic Azad Universities in all branches in Tehran collaborate in research activities?
3. What are effective factors on collaboration of Islamic Azad University faculty members?
4. Which model could be presented to develop faculty member`s collaboration in research activities?
5. What is the appropriateness degree of proposed model from expert`s viewpoint?

Statistical community, research sample, method and tools of data collection

The statistical community in this study includes all full-time and part-time faculty members of Islamic Azad University branches in Tehran, who work in Tehran university branches during educational year 2014-2015. Number of statistical community is about 5922 individuals according to central office of Islamic Azad University information.

Following table presents frequency distribution of research statistical community (number of Islamic Azad University faculty members) during research period divided to academic grade, gender and employment status:

Table1. The statistics of all Islamic Azad University faculty members branches in Tehran up to end of first half of 2014

	Full-time		Part-time		Total
	Male	Female	Male	Female	-
Teacher	1360	851	34	4	2249
Assistant professor	1735	1028	175	15	2953
Associate professor	215	57	128	3	403
Professor	137	7	168	5	317
Total	3447	1943	505	27	5922
	5390		532		

- Source: Monitoring, evaluating and measuring center of Islamic Azad University

For sampling, first 361 individuals had been selected using Morgan table as research primary sample in accordance with statistical community volume (5922 individuals). Then (based on supervisor and consultant professor`s viewpoints) 15% had been added to sample population due to lack of access to all sample members and because of failure in returning questionnaires by some respondents. Finally, 415 individuals determined as final sample. Then because of geographical dispersion and extent of Islamic Azad University branches in Tehran, in first step all branches divided to five area west, east, south, north and center of Tehran, then some branches were selected using cluster sampling and in second step questionnaire were distributed among selected full-time and part-time faculty members in random.

Data collecting tools in this study was a questionnaire, which includes 40 closed two-dimensional questions (desired and current state) and one open question. Expert`s consultations were utilized for formal and content validity of questionnaire. The author distributed the questionnaire among 30 individuals of statistical community (professors of Islamic Azad university all Tehran branches) tentatively to determine questionnaire reliability, so the questionnaire was confirmed with 97% Chronbach alpha coefficient. Also in main research among all members of statistical community, the Chronbach alpha coefficient was more than 0.8 for all variables in both desired and current state, which shows relative reliability of questions in evaluating research components and factors.

Following table displays distribution of number of questions in questionnaire based on factors of proposed model and also calculated Chronbach alpha for each one of factors:

Table2. Distribution of number of questions in questionnaire based on factors of proposed model and Chronbach alpha

Row	Factor	Number of questions	Chronbach alpha (current state)	Chronbach alpha (desired state)
1	Organizational and administrative factors	8	0.806	0.855
2	Cultural and social factors	9	0.850	0.864
3	Personal and professional factors	4	0.855	0.832
4	Financial and economic factors	7	0.862	0.861
5	Facilities and research activity type	7	0.840	0.868
6	Solving research problems and barriers	5	0.861	0.704

The authors used Average Variance Extracted (A.V.E) and Divergent Validity Index (Forker Larker index) to determine proposed model validity, and used Convergent Validity Communal (CV.com) and Convergent Validity Redundancy (CV.red) of Aston – Geissler Index to determine proposed model quality, thereupon validity and quality index had been confirmed for all variables expect Common index in cultural and social factors. The results show that validity of all variables except financial and economic factors were highly confirmed in accordance with this index. Since A.V.E is 0.48 and close to 0.5 for financial and economic factors, so it can be said that this index also confirmed financial and economic factors too. It can be concluded that validity and quality of model is approved generally.
Survey steps and relevant calculations to proposed model validity are as below:

Convergent Validity Index or Average Variance Extracted (A.V.E)

- This index proposed by Forker and Larker (1981).
- The minimum figure for this index is 0.50.
- It means that, the considered hidden variable explains at least 50% of it`s observable variance.

Table 3. The results of convergent validity index (A.V.E) test

Factor	AVE
Organizational and administrative factors	0.89
Cultural and social factors	0.73
Personal and professional factors	0.76
Financial and economic factors	0.48
Facilities and type of research activities	0.82
Solving research problems and barriers	0.55

The results of AVE test show that all variables except financial and economic factors are confirmed. Since about financial and economic factors AVE is 0.48 and is close to 0.50, so it can be said that this index confirms financial and economic factors with very little difference to acceptable value.

Diagnostic Validity Index or proposed model of Forker and Larker index

- According to this index, a hidden variable should have more dispersion than other hidden variables among its observances.
- The square root of extracted variance for each hidden variable should be more than maximum correlation of that variable with other hidden variables in model.
- This test measures diagnostic validity in hidden variables level.
- According to Hanseler`s researches (2014), only 72.08% of analyzed papers by Smart-PLS had used this test for diagnostic validity confirmation.
- This index is result of correlation values tables combination among hidden variables and extracted variance average
- Results of this index for proposed model is presented in following table:

Table 4. The results of diagnostic validity test (Foker Larcker) to determine model quality

-	Organizational and administrative factors	Cultural and social factors	Personal and professional factors	Personal and professional factors	Personal and professional factors	Personal and professional factors
Organizational and administrative factors						
Cultural and social factors	0.52					
Personal and professional factors	0.32	0.49				
Financial and economic factors	0.43	0.81	0.54			
Facilities and type of research activities	0.22	0.55	0.70	0.59		
Solving research problems and barriers	0.44	0.72	0.58	0.84	0.72	

As you can see in above table, value of calculated diagnostic validity index (Forker Larker index) for all factors is close to 0.50 or more than that, so quality of model is confirmed in terms of diagnostic validity.

Communal Convergent Validity (CV.com) index and Redundancy Convergent Validity (CV.red) index of Aston-Gaissler index

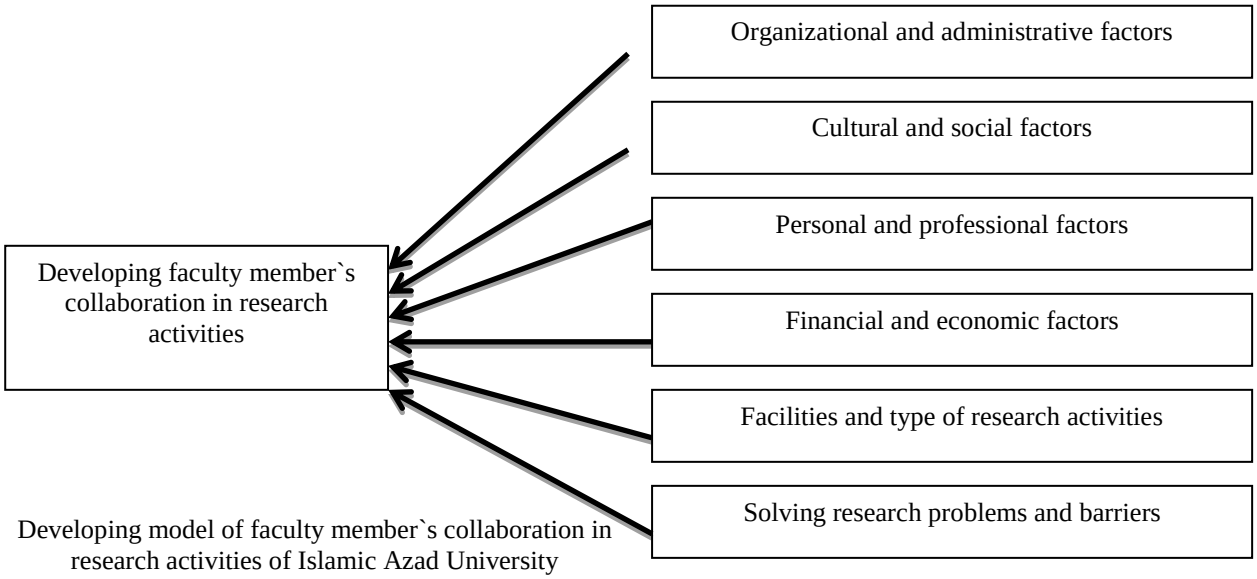
CV.com measures model ability in predicting observable variables using value of their according hidden variable. Positive values of CV.com show proper quality of model, this index also is called quality index of structural model too, but the most famous measuring index of structural model quality is Aton-Greissler index. In this index, values upper than zero display high ability of structural model in prediction (Henseler Jörg et al., 2009). Following table shows running CV.com and CV.red results on sixtet factors of proposed model.

Table 5. CV.com and CV. red Aston-Gaissler index

Variable	CV.com	CV,red
Organizational and administrative factors	0.08	0.06
Cultural and social factors	0	0.24
Personal and professional factors	0.17	0.40
Financial and economic factors	0.11	0.34
Facilities and type of research activities	0.25	0.25
Solving research problems and barriers	0.49	0.41

Calculation results of two abovementioned indexes show that quality indexes for all factors (except common index in cultural and social factors) are confirming model quality. So it can be concluded that the proposed model has required quality in terms of abovementioned indexes generally.

According to research findings, finally researcher presents following model to develop faculty member`s collaboration in research activities of Islamic Azad University:



Developing model of faculty member`s collaboration in research activities of Islamic Azad University

Factors ranking in desired status

Since effective factors are various in collaborating faculty member`s in research activities and observing them simultaneously isn't possible, so the author ranked them by Freedman test in order to determine their priorities to help Islamic Azad University officials for planning research activities to develop faculty member`s collaboration. Results of this test is presented as below:

Test Statistics	
N	415
Chi-square	1911.216
Df	5
Asymp. Sig.	.000
a. Freedman Test	

Since significance level of test was 0.00 and is smaller than error level, so factors ranking in desired status is significant and author is allowable for this ranking.

Table 7. Freedman test for prioritization of factors

Variable	Rank average	Rank (importance)
Organizational and administrative factors	4.95	2
Cultural and social factors	5.90	1
Personal and professional factors	1.23	6
Financial and economic factors	3.43	4
Facilities and type of research activities	3.68	3
Solving research problems and barriers	1.81	5

DISCUSSION AND CONCLUSION

Finally, authors checked model using various tests and analyzed all its aspects. Surveys show that respondent`s viewpoint about collaboration situation of faculty members in current state differ from desired state. All identified factors by author were effective in model and cover research objective properly. Running different tests also confirmed quality and validity of proposed model. In final researcher ranked the identified factors and classified their priority based on respondent`s viewpoint. The researcher not only confirmed model reliability and validity, but also presents final model to help other researchers for future research based on these results. Variables reliability was confirmed using Chronbach alpha higher than 0.7 for all variables. Three indexes were used for model validation. The first index was Average Variance Extracted (AVE) which is convergence validity index. Verifying this index shows that more than half of hidden variables were explained by its items. In fact, items were be able to explain their variables properly. The second index was Diagnostic Validity Index which verified model validity in hidden variable level. The second index was model quality indexes. The first quality index is model Convergent Validity Redundancy (CVred) index. Positivity of this index displays model ability in predicting by items of each variable. Next index is Convergent Validity Redundancy (CVred) index, because value of this index for all variables is more than zero, so it could be said that model is qualified and finally its validity is confirmed.

Some recommendations are proposed in line with research results. About organizational and administrative factors it is recommended that university officials avoid administrative red tape for collaboration of faculty members in research activities, and also provide required support for researcher. Also support faculty members in accordance with regulations. About cultural and social factors, it is recommended that do researches in proportion with country cultural space, so in this way pay attention to society scientific space and social norms are very important. Also it is suggested to support research teams in terms of financing. About personal and professional factors suggest to choose research activities proportional to member`s profession and fields of study. Another suggestion is that the researcher acts independent during research activities and university reduces his mandatory educational hours for more collaboration of faculty members in research activities. The next recommendation is for improving financial and economic support of researchers who are faculty members. To do so research activities wage should be suitable and also paid in time. In fact, research space should be in a way that faculty members utilized financial benefits of researching activities without spending complicated administrative steps and wasting time. Granting facilities based on research activity type is another suggestion of author. Documenting results of common researchers between university and industry sector (in terms of CD, uploading in websites, publishing in valid journals and…) supplying laboratory equipment, access to required scientific resources and prioritizing researchers who are faculty members in using facilities relevant to

research subject are other suggestion by author. Cooperation and collaboration among universities, coordination and accelerating research activities trend become facilitate. Non-commercializing research results and low relationship between universities and industry sector are some important barriers in faculty member`s collaboration path for research activities. Another suggestion also offered such as familiarizing all full-time faculty members with research method as basic skill in doing research activities during primary five years of employment through holding virtual or physical in-service courses, publishing manuals, providing learning brochures to faculty members to develop university professor`s collaboration in research activities.

Finally, it is suggested that researchers do such research according to presented model in other universities like governmental, Payeme-Noor, Applied Science and Technology universities too. Research officials in universities especially Islamic Azad University could use results of this survey and utilized proposed model to develop faculty member`s collaboration in research activities and enhance their incentives for doing researches, in order to minimize or remove gap between current state and desired state about university research activities.

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