Quality standards and academic evaluation of scientific research in universities

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Abstract. The excellence in standards and determinants of total quality and accreditation in scientific research is one of the most important standards of academic evaluation in according to the internationally accredited standards in universities, which are based on well-established scientific foundations at the global level. Fulfilling these standards helps to achieve the desired development goals. Through the application of descriptive and analytical approach, The present research aims at the realization of the dimensions of several research axes that ensure the quality standards of scientific research within the system of academic evaluation of the university, including: the promotion of scientific research excellence in the university institutions, the interest in quality output of the Scientific research in accordance with the standards of 'Web of Science', the encouragement for publication in internationally reliable magazines and journals, which is controlled scientifically through accredited academic and research entities, the promotion of the scientific publication that is adopted for innovative research, as well as the improvement of the scientific arbitration quality to keep up with the technological advent in the management of scientific research.

Keywords: Quality and academic accreditation in universities; standards of scientific publication; university knowledge community; evaluation of performance in university education; academic evaluation; academic research.

1. Introduction

Academic evaluation is a basic component of education process and has to keep pace with it. (Bianco, Mariela; Gras, Natalia; Sutz, Judith, Dec 2016). The evaluation can be defined as a scientific process in order to issue a fixed and specific judgment on the value of things, a set of subjects, scientific attitudes, persons or institutions, based on many precise criteria. (Abu Alem, 1987)

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In the field of education, the evaluation can be defined as the educational process that seeks to recognize and determine the degree of success or failure to reach the main objectives of the educational curriculum, as well as the comprehensive awareness of its strengths and weaknesses in order to achieve the desired goals within the general policy of education quality. (Dundas, Ingrid; Thorsheim, Torbjørn; Hjeltnes, Aslak; Binder, Per Einar 2016).

This evaluation can be built on quantitative and qualitative data by using many means of measurement in order to obtain fixed evaluation rules.

Therefore, Academic evaluation is an important and vital factor in enhancing the quality of the higher education institutions. This can be done by applying means and measurements that ensure objectivity and transparency in order to achieve the ultimate goal, which is gaining confidence from the university's knowledge community in numerous outputs of these institutions and educational programs. (Al- Zayzad, 1998)

The main tasks of academic evaluation in universities can be identified in general as follows:

- Establishing a number of basic rules, standards, conditions and controls for academic evaluation and accreditation processes.
- Review, control, periodic evaluation and accreditation of the academic performance of university institutions.
- Continuous participation in the development of the general plans of the Kingdom to prepare and develop the university academic performance.
- The preservation, retrieval and publication of information and data related to the academic accreditation in order to raise the awareness of society, local media and scientific research.
- Supporting carrying out scientific studies in the various scientific fields, and publishing intellectual production up-to-date to research in the certified journals and conference papers.
- The preparation of studies and provision of technical consultations for the university institutions in pursuance of increasing the level of academic performance.
- Exchange of experiences between universities concerning the scientific production inside and outside the university.
- The scientific research, in accordance with international standards, is a real indicator of the progress of countries and the advancement of knowledge. It has become an urgent necessity to achieve a sustainable development in the university knowledge community. Over and above that, it is considered as one of the determinants of academic evaluation, for the quality standards in the scientific research help to solve many scientific problems of the knowledge community and achieve the following main objectives:
- Promoting the excellent scientific research in the university or research institutions.

- Giving importance to the quality of the outputs of scientific research.
- Encouraging publication in internationally reputable magazines and journals.
- Encouraging faculty members to publish under the name of the university and research institution.
- Provide a positive scientific environment that attracts the distinguished scientists and researchers to work in academic and research institutions and interact with the promising national competences.
- Raising the level of awareness among the employees of the university towards the importance of distinguished scientific research.

Universities and research institutions are increasingly interested in scientific research at all levels. This is evidenced by the continuous support of research centres and the funding of research activities for all researchers. This coincides with a steady increase in the establishment of endowment funds to support scientific research, as well as the establishment of specialized research chairs in order to support and enhance the scientific research and advancement at the level of the Kingdom.

Universities also encourage innovative studies by creating a favourable environment that supports scientists and researchers' excellence and creativity in all fields of knowledge to achieve global leadership.

In order to ensure the quality of scientific research, specialized universities and research centres should adopt several standards to achieve a good quality for scientific research and work continuously to improve their outputs and benefit from the results of scientific research of all kinds and specialties in all areas of life. (Bianco, Mariela; Gras, Natalia; Sutz, Judith, Dec 2016).

2. Problematic of the study

The present study tries to cover several thematic axes together in order to reach a constant knowledge of the essential link between the flourishing of the scientific research in universities and its impact on the efficiency of the evaluation system and academic accreditation as one of the components of total quality in higher education.

Therefore, the researcher seeks through this research study to address the main criteria of quality and academic accreditation associated with scientific research and their effect on the success of the university evaluation system.

2.1. Significance of the study

The importance of the study stems from its scarcity and its objectivity. Only few previous studies objectively revisited the subject of evaluation and academic accreditation related to the standards of scientific research in universities. Therefore, the researcher aims to highlight the role of the main criteria of the

scientific research as one of the components of academic evaluation and accreditation in universities.

2.2. Research questions

The researcher tries to answer the following research questions:
What is the definition of academic evaluation?
What are the main determinants of the comprehensive scientific research's quality standards?
Does the application of the comprehensive quality determinants on the scientific research lead to the success of the academic evaluation system in universities?
What are the serious conclusions and recommendations that can be drawn from this study, which can lead to the effectiveness of the university evaluation system?

2.3. Research Hypotheses

The researcher assumes that many universities and research centres will apply a bunch of the proposed quality standards in the study. This is confirmed by the increase in the number of scientific studies that are globally accredited (Al-Ghamdi, S 2017). Meanwhile, there are many universities that did not fully apply these criteria of quality in order to keep pace with other universities. The researcher also assumes that this research may be a basic scientific document for the advancement of scientific research and its components in universities.

2.4. Research Methodology

The researcher used the analytical and descriptive research method depending on a number of recent studies in order to fully explanation, identify and document the basic criteria of the scientific research. These criteria will help to total quality, accreditation and academic evaluation of the university.

3. Discussion and analysis

3.1. **The first topic:** raising the level of University members' Skills in Academic research

This can be done through a comprehensive system of many scientific courses and workshops specialized in the field of scientific research (Kyvik, Svein; Aksnes, Dag W. 2015). These courses include academic research's stages and types starting from the choice of the topic, the paper preparation to the success and accuracy of the selection of the appropriate tools. In line with this, execution stages have to be given much importance as well as the improvement of data collection skills from various sources of information like the available searching databases in universities or in many scientific journals such as the World Database Providers (EBSCO), (Scopus), (Web of Science). The mentioned above trainings help to improve Academic Staff Skills in scientific exploration and analysis, perception, solving research problems, and using critical and creative thinking. In addition, they end by instructing the academic staff the proper publishing techniques in prestigious and accredited local and international journals (O'Connor, Pat; O'Hagan, Clare 2016).

It is also important to encourage universities and research institutions to motivate researchers so that they attend specialized international conferences and forums. This helps to promote the name of their universities and research centres in various specialized international scientific forums, which inevitably leads to improve the knowledge, scientific and professional level. (Moskovkin, Vladimir M .; Bocharova, Emilia A .; Balashova, Oksana V. 2014)

3.2. **The second topic:** Encouraging innovative research

Universities, represented by the university's scientific research agencies, Scientific research committees and the different colleges in the universities, must form a joint academic work team whose first task is to encourage and identify innovative scientific research that serves the local community and increases global human knowledge at the same time. (Wang, Lipeng; Li, Mingqiu, 2012)

Opening new scientific and applied fields and giving awards to the best studies encourages innovative research. Added to that, continuous support of creativity and inventions' patents in the fields of scientific research and promote them locally and globally are good steps to invest effectively in the advancement of the knowledge community.

3.3. **The third topic:** Improving the quality of scientific reference

Scientific reference is one of the most important determinants of improving the quality of scientific research. The final academic approval to start and publish the research study is given after going through the processes and stages of scientific reference.

The scientific reference of the research papers is divided into two important stages:

First: the preliminary reference stage. At this stage, the preliminary reference is carried out by numerous specialized referees with sufficient scientific experience who have a bunch of research, reviews and studies in the same major scientific field that were previously evaluated and mentioned in their Curriculum Vitae (CV).

The primary reference is generally characterized by locality. That is why universities resort to the preliminary reference of scientific research to determine its quality in terms of originality of the idea and consistency of the scientific methodology and measurement and experimentation tools, stages of implementation, the compliance of objectives with the general idea of the scientific research and not to be repeated or plagiarized from other scientific research. (Bi Ying; Yang, Liansheng: 2015)

Second: the final stage of reference. This is the final stage of reference in order to publish in the prestigious accredited scientific journals. These journals rely on journals like the Web of Science - Clarivate Analytics - Thomson Reuters, and

research entities and globally accredited publishers such as Sage Springer, Elsevier, Brill, Prentice-Hall in pursuance of to submit scientific research to an advanced stage of reference. In this respect, referees are provided with specialized and comprehensive database in all scientific fields along with the need to make the scientific required modifications for each research study, while ensuring the absence of plagiarism before the approving publication.

3.4. **The fourth topic**: the implementation of integrated automated systems in the management of scientific research

The rapid growth of electronic and digital transactions in the management and follow-up of research projects is one of the most important determinants of improving the quality of scientific publication. In fact, the efficiency of scientific and applied outputs of these projects allows achieving competitiveness and advancement of research projects as one of the pillars of academic evaluation. (Kovacevic, Aleksandar; Ivanovic, Dragan; Milosavljevic, Branko; Konjovic, Zora; Surla, Dusan, 2011).

The management of supported scientific research is done through the integrated automated system beginning from the registration of basic data of research till the completion of reference process of research projects according to the following stages:

First: Registration stage in the electronic system. The integrated automated system allows the scientific research management to register through the on the website's main page of the research institution or the university or other scientific research centres, which includes two types of users.
The first type is the research centres local users including researchers from all branches of the research institution or the university as well as the Research Director and the Research Unit Director who determine the date of calls for submission of the subsidized research projects.
The second type is represented by an external group of researchers, research projects referees and members of the Scientific Research's Ethics Committee from outside the research institution or university.

Second: the stage of the research proposal submission. The research proposal submission is done by means of a special browser interface with the possibility of attaching files according to the adopted template by the university - the research centre. This interface includes the researchers' resumes, the proposal, the research project execution schedule, and the proposed detailed budget.

Third: the stage of auditing the research project's originality and its ability to comply with the research institution's strategies.
The verification of the research compliance with the university strategy takes place after receiving the study in the research institution or the university. The university strategy is clarified in the kick-off of the new research projects submission. At this stage the research proposal is subject to auditing in terms of

originality and conformity to the adopted criteria at the university through sending the research proposal to the accredited referees.

Fourth: The reference process management. The reference process is carried out through sending the research projects secretly by the research institution or the university to two accredited and specialized referees at least. In the case of rejection of one referee and acceptance of another, the research project is send to a third referee.

Fifth: Signing the approved research contracts. The research projects budget are approved and signed only after the completion of the reference process, obtaining their results and approving them at the research institution - the university.

3.5. **The fifth topic:** upgrading the standards of global publishing within the Web of Science criteria. The scientist Eugene Gadefield created the Impact Factor. Thomson Reuters calculates the impact factors periodically for each year of the accredited and registered scientific journals in the Journal Master List. It also publishes them internationally in The Journal Citation Annual Report, where journals are classified according to their impact factors (Horta, Hugo; Santos, João M. Feb 2016).

The Impact Factor term is a vital measure to understand the importance of the certified scientific journals in their field of specialization. The Impact Factor reflects to which extent recently published scientific studies rely on the number of references from previously published research in these accredited journals. The more references are repeated, the higher impact factor will be. (Bergman, Elaine M. Lasda, Nov 2012).

The impact factor of a specialized scientific journal is calculated over the course of a year through considering the average number of repetitions of references in the available studies in this journal over the past two years. The impact factor for a magazine for 2016 can be calculated as follows (Floyd, Randy G .; Cooley, Kathryn M; Arnett, James E .; Fagan, Thomas K .; Mercer, Sterett H .; Hingle, Christine, Dec 2011):

= (A) represents the total number of repeated citations adopted for all published research in the journal's publications during 2014-2015 for published and indexed research by Thomson Reuters, 2016.

= (B) represents the number of published papers that have already been cited in scientific journals for the years 2014-2015, which should be in the form of articles, reviews, research or scientific papers.

Impact factor = B / A

The 2016 impact factor is then published in 2017; its calculation can be done after completing 2016 publications and the indexing process through a global electronic appendixes. (Bergman, Elaine M. Lasda, Nov 2012).

3.6. **The sixth topic:** Setting the standards of plagiarism

plagiarism is one of the most important dangers of originality in scientific research, where it is intended to obtain textual, analytical parts or research results by another researcher and to attribute them illegally to himself or others (Bethany, Reine D. 2016), without scientific citation. This direct and indirect transfer is limited and should not be exceeded by the researcher in accordance with the standards of the international Publishing criteria 'Web of Science'. The proportion of plagiarism must not exceed 20% in some magazines to a maximum of 25% in other international journals.

Nowadays, many of the world-renowned plagiarism discovery soft wares are available. The one of the most important soft wares is IThenticate, which identifies the percentage of plagiarism from internationally published research in English.

3.7. **The seventh topic:** Detection of Hijacked Journals (Hijacked Journals)

E-piracy is an organized process by individuals and organizations to penetrate computers, corporate sites, universities and individuals. It is often carried out over the Internet through internal networks connected to more than one computer, known as 'Intranet'. Usually, E-piracy is carried out by people who have complete command of using computer programs, data processing methods and database building. They can use the help programs to penetrate the target computer and identify, control and manage all its contents, through which the penetration of the other devices associated with it in the same network could be done (Clapham, Andrew; Vickers, Rob; Eldridge, Jo. 2016).

In the field of scientific journals phishing, many hackers penetrate the site of an approved scientific journal or create a completely new site with the name of the magazine, its features and the International Standard Serial Number (ISSN). Through this site, the phisher publishes scientific research by taking fees from the researchers through the payment by international credit cards, which may also be misused to steal their money.

This publication is therefore not academically considered, since it has not been issued by a reliable scientific authority. So, this form of publication is considered non-academic. Most of these journals are not institutionalized for scientific publishing and have open access. Currently, More than 150 international scientific journals that are available on the Web of Science are hacked.

3.8. **The Eighth Topic:** Fake Publishers

A bulk of scientific research is published through Fake Publishers in journals that carry the international scientific characteristics such as auditing the scientific coverage, reference procedures and publishing conditions. Then, they

ask for money in return. (Moskovkin, Vladimir M .; Bocharova, Emilia A .; Balashova, Oksana V. 2014).
Often these publishers are not subject to the Web of Science, or anyone of the world's certified publishers. In this respect, scientific publication loses its added for both the researcher and i and the academic body. This kind of publication is not considered internationally in terms of referencing and impact factor.

3.9. **The ninth topic:** complying with the standards of scientific research preparation and its stages

In preparing the paper presented to a magazine in the Web of Science, the scientific research team must adhere to the following conditions: (Burnette, Margaret H. Oct 2015).

- Commitment to prepare a research abstract in English, which does not exceed 500.
- -Preparation of the keywords by the end of the abstract up to 5 keywords containing the main research topics.

Introduction: (aims, questions and hypotheses)
Relying on one of the referencing styles adopted in the publishing journal, such as:

Citation styles as MLA, APA, Chicago style, etc.

- To highlight the research methodology and tools used in the study including the tests - Methods and statistical programs - Data collection tools - Questionnaires (Özden, Bülent May 2016).
- Include previous studies or literature Review when needed.
- Determining the main research Chapters and Parts.
- Include results
- Include Conclusions
- Include Recommendations
- List of references
- Preparation of list of appendices (if any)

3.10. **The tenth topic:** implementation of the institutional policies in scientific research

Universities should implement programs and projects to develop scientific research and create a stimulating research environment that encourages researchers and students in all fields. Lamanauskas, Vincentas; Augiene, Dalia Jan 2017). In addition, they have to comply with the globally accredited ethical, publication, academic, administrative and technological standards of a full program of operations management for research projects, thereby enhancing participation and collaboration with scientific and industrial communities.

In this context, universities have to set clear policies for scientific research in order to achieve a sustainable development of scientific research to meet the strategic orientations of the university. These measurements allow enhancing knowledge and technology through the promotion of scientific partnerships and investment in research, scientific communication and exchange of experiences among scientific research institutions locally, regionally and globally. (Kerry, Christopher; Danson, Michael, Feb 2016).

Universities should seek a specific strategic plan based on keeping pace with scientific and technological changes at the global level through developing knowledge and providing an ideal research environment that supports and stimulates creativity and excellence in scientific research.

Drawing upon the mentioned above strategic plan, the university must unify the adopted conditions and controls, which are considered as a reference for the implementation of the scientific research plan at all stages, provided that the universities provide the following necessary statistical evidences:

- Quarterly official reports and annual scientific research books according to the needs of the university senior management.
- To describe, catalogue and document the work stages of publishing scientific research by the end of each academic year according to the adopted data in this field.
- The preparation of a comprehensive analytical catalogue according to the standards of issuing international scientific indexes, including the auxiliary indexes under the name of (analytical catalogue for academic research), which covers the supported research by the university research institution.

3.11. **The 11th topic:** implementing and developing supported research programs in universities

The university encourages the participation of faculty members and students in scientific research through the supported scientific research program, which is implemented and supervised by the university. At this stage many types of scientific research projects are supported, they are as follows:

- Scientific studies that are conducted once a year and periodically for the faculty members.
- Developmental scientific research that serve the university or the local community directly and implemented during the school year or a longer period.
- Research that help graduate students to carry out their scientific research for one time during their academic career.
- Students' research in the bachelor level to carry out creative research projects. These projects are implement periodically and once in the academic year.

3.12. **The 12th Topic:** Cooperation with scientific and industrial communities

Universities should benefit from the results of scientific research aiming at fostering cooperation with local and regional scientific and industrial communities. They also need to include a strategic plan in order to establish a unit to promote research and entrepreneurship culture. (Stephen, Timothy D. 2011).

The universities should commit to encourage faculty members and their subordinates and particularly those who are new to conduct competitive scientific research. They should also cooperate with universities and scientific institutions locally or abroad to engage in the process of scientific research movements on solid bases. Universities must strictly abide by the research ethics university strategies in the implementation of scientific research (BOUTARAA, T 2017).

4. Results

The present study leads to the following main results:

Academic evaluation in universities is one of the main determinants of total quality in education.

- Solid scientific research is one of the main pillars of the advancement of research institutions and universities at the international level.
- There are concrete and unlimited efforts to support scientific research policies in universities.
- The rise of many newly established universities in the global ranking of scientific research based on publishing standards on the Web of Science.
- The comprehensive application of the standards and determinants of the scientific is not implemented in all universities.
- Non-application of integrated electronic systems to manage scientific research operations in all universities.
- Non-compliance with the standards of global publishing on Web of Science for researchers in many universities.
- The lack of clarity of many universities vision and those who belong to it in publishing in the hijacked magazines.

5. Recommendations

- The need to support annual and long-term funded scientific research to disseminate the culture of knowledge and employ the available research potential at the university to enrich its competitiveness in strategic areas.
- The need for universities to use specialized cadres and expertise in the field of scientific research through the establishment of an integrated organizational structure for all necessary needs.

- Adoption of a comprehensive legal framework through the provided contracts by the universities that ensure the completion of scientific research stage. These contracts should be effective and comply with the lists of regulations, rules and procedures governing the support of research.
- Commitment to the International Academic Standards for Scientific Research publication at the University in accordance with the publishing standards of Thomson Reuters - Web of Science.
- The keenness of universities to adhere to the international publication standards will enable universities to improve their ranking among international universities.
- Universities' encouragement to researchers to submit scientific papers and participate in scientific conferences after the final publication of research.
- Strict compliance with the scientific research ethics and work according to the universities' strategies in the implementation of scientific research.
- Determining an academic policy for the fields of scientific research priorities in accordance with the general strategy of both the state and the universities.
- Motivate universities to establish research partnerships with its members and other local, regional and international universities, which results in increasing knowledge, exchange of experiences and enhancing the outputs of scientific research.
- Encouraging faculty members, especially the new ones, to carry out competitive scientific research in cooperation with universities and scientific institutions in the country and abroad.
- Enable postgraduate and undergraduate students to participate in scientific research as a base for building a trained generation of researchers.
- Universities work to preserve data and use the results of scientific research in general.
- Establishment of integrated electronic systems to manage all scientific research operations of universities.
- Preparation of periodic reports according to the needs of universities related to scientific research, evaluation and academic accreditation.
- Preparation of analytical indexes for supported and published scientific research in universities.
- Preparation of annual reports and books for the scientific research of universities.
- Preparation of annual budgets for the follow-up of the implementation of scientific research projects in universities.
- Work on fostering partnerships between academia and community as well as diversifying supporting bodies.
- Attracting special research chairs for universities.

- Design specific and published plans for the development of scientific research to meet the needs of sustainable development.
- Establishing a cooperative framework with the industrial sector and local, regional and international scientific research bodies.
- Establishing an administrative, financial, legal and intellectual framework for patents in universities.
- To increase and consolidate cooperation with universities and local, regional and international scientific research networks.
- Establishment of a research centre or an institute in universities.
- Allocate a budget for long-term scientific research to support developmental research.
- Increase the presence of postgraduate students in universities to participate in scientific research.
- Establishment of integrated processing labs to support research activities in universities.
- Increase the allocated support for hardware and software applications and statistical analysis in the research budget.

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