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IDENTIFYING QUALITY CRITERIA OF A SCIENTIFIC RESEARCH ADOPTED BY ACADEMIC COMMUNITY: A CASE STUDY

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ABSTRACT

This study aims to provide a realistic viewpoint based on academicians' views about what the quality of scientific publication means and to provide criteria / recommendations for determining the quality of a scientific research. From qualitative research methods, case study has been preferred in this study which allows comprehending an event or situation in detail. From purposeful sampling techniques, criterion sampling has been used for selection of participants. Participants involve 22 academicians who work at a higher education institution and take academic incentive payment. 22 percent of participants (n=5) include research assistants, 22 percent (n=5) assistant professors; 31 percent (n=7) associate professors; and 27 percent (n=6) professors. Semi-structured interview form has been used for collecting qualitative data. When themes and codes are analyzed which appear as a result of study, it is observed that academicians regard the following criteria as an indicator of quality in a research: "Appropriateness of Abstract" theme; "Contribution to Literature" theme, "Originality" theme, "Identification of Scope and Focus" theme, "Scientific" theme, "Comprehensiveness" theme, "Reporting" theme, "Ethic" theme. There comes out 8 themes and 28 codes within the category of research quality criteria adopted by academicians.

Keywords: Research quality criteria, quality of a scientific publication, indicators of quality in a research.

INTRODUCTION

In academic community, there is always a debate about the standards for a qualified research. It would be a notable effort to define these standards and also create strategies for developing research quality. There are terms used interchangeably which mean research quality such as quality evidence, scientific standards of research and high quality research. These terms might lead to confusion among researchers within different scientific communities. Therefore, it becomes crucial to determine whether there exist some certain criteria which indicate the quality of a research.

Gersten, Baker and Loyd (2000) claim that although this issue is mostly discussed in academic communities, it is also a hot topic in multidisciplinary fields of health, education, social welfare etc. When literature is reviewed, it is recognized that there is a need for determining certain criteria -adopted by most of the researchers- for identifying the quality of a scientific research. Wickson and Carew (2014) claims that there is a need for quality criteria which succeeds the balance between comprehensiveness and rigid rules, concrete enough for a real guidance; but flexible enough to be adapted into specificities of different contexts. Likewise, Szklo (2006) asserts that -as in the American Journal of Epidemiology- quality items typically include originality, design, conclusions, importance/interest, presentation, and documentation. However, the reviewer is not given instructions as to how these should be assessed.

First of all, speaking of research quality, it should be noted that there is not only one form of research as there are qualitative, quantitative and mixed studies which have their own understanding of quality in a research. However, rather than emphasizing reporting differences between different types of research, we must focus on the key points which are common in a good research. Some of these key points include that research quality provides not personal thoughts but evidence, it complies with ethical rules and is transparent in terms of its data collection and analysis. Although it is hard to write a list of rules, researchers in academic communities immediately realize a good research. Heale and Twycross (2018) point out that quality research is necessary in order to ensure the knowledge generated to be both accurate and trustworthy. Considering how to evaluate quality of research in academic communities, Mårtensson, Fors, Wallin, Zander and Nilsson (2016) regard it difficult to find a globally accepted definition of what constitutes good scientific practice. West, King and Carey (2002) points out the differences between three concepts, namely quality, quantity and consistency. They stress the "bias" factor when speaking of quality in research. They define quality as "the aggregate of quality ratings for individual studies, predicated on the extent to which bias was minimized in the study designs", quantity as "the number of studies, the sample size, the study design's statistical power to detect meaningful effects" and finally consistency as "for any given topic, the extent to which similar findings are reported using similar and different study designs".

Heale and Twycross (2018) explain why quality of research is a big matter of issue because they state that quality research provides a rich source of information and it helps to get a "better understanding of today's most pressing and complex social and scientific issues such as making in new educational policies, educational rights,

cultural diversity, human rights, disease prevention, and climate change". Recently, there is observed an increasing concern among researchers about distinguishing "good" and "poor" quality research and how to evaluate a research and this interest has manifested itself in the number of guidelines for good research. For instance, in Sweden, the quality of research practice is related to the attention a research makes concerning the scientific, technological and socio-economic significance, including whether research results can be practiced in real society (External Research Assessment, 2010). Specifically, quality is inherently relevant to scientific process including all aspects of study design as stressed by Boaz and Ashby (2003) and it has a close relation with protection against systematic bias, nonsystematic bias, and inferential error (Lohr, 2004). To conclude, there should be some common criteria which feature the difference between good and poor research. Boaz and Ashby (2003) come up with alternative quality criteria which are explained below:

1. Quality and transparency in reporting – so that the research can be appraised and used by others.
2. Methodological quality – was the research technically well executed?
3. Quality of the signal - does the research address important policy and practice questions?
4. Fitness for purpose - Does the research approach match the defined purpose of the study?

Although these quality criteria are expressed in literature, there is a need to prove whether there is an agreement among academicians on criteria of a good research. This research puts emphasis on how academicians perceive quality of a research and whether there exist some common criteria adopted by academicians.

METHOD

This study aims to provide a realistic understanding of what the quality of scientific publication means from academicians' perspectives and also to provide criteria / recommendations for determining the quality of a scientific research. Case study has been preferred in this study as research method which allows comprehending an event or situation in detail. Woods and Calanzaro (1980) describe a case study as "an intensive, systematic investigation of a single individual, group, community or some other unit in which the researcher examines in-depth data relating to several variables". However, there are some misunderstandings about case study method. Flyvbjerg (2006) lists five common misunderstandings in scientific communities about case-study research: (a) value: theoretical knowledge or practical knowledge?; (b) generalization: whether the single-case studies or studies with small groups develop science; (c) usefulness: whether case studies are suitable for hypotheses testing; (d) justification: whether the case studies include bias; and (e) conclusion: the difficulty of summarizing specific case studies.

Participants

Among purposeful sampling techniques, criterion sampling technique has been used for selection of participants. Participants involve 22 academicians who work at higher education institutions and take academic incentive payment. This criterion has been determined because participants should be those who are involved in research practice and whose studies are scientific enough to be published in journals. At total, participants include 23

academicians in Education Faculty of a state university. In terms of seniority, 22 percent of participants (n=5) include research assistants, 22 percent (n=5) assistant professors; 31 percent (n=7) associate professors; and 27 percent (n=6) professors.

Data Collection Tools

During data collection of this study, semi-structured interview form including open-ended questions has been used for collecting qualitative data. Interview form has been developed after asking three experts' views including one professor and two associate professors from discipline of Educational Sciences. Interview has been conducted one by one sessions. Gill, Stewart, Treasure and Chadwick (2008) emphasize that interviews can be used to explore the views, experiences, beliefs and motivations of individual participants. Britten (1999) claim that semi-structured interviews consist of several key questions that help to define the areas to be explored, but also allows the interviewer or interviewee to diverge in order to pursue an idea or response in more detail.

Data Analysis

In the analysis of the qualitative data collected within the scope of research, inductive data analysis method was used. This is a method of discovering patterns, themes and categories within the data through coding (Patton, 2014, p. 453). The data collected in the first stage of this study were transferred to a qualitative data analysis program and the program was used in the analysis of qualitative data. In the second stage, the researcher coded the qualitative data and after the coding was completed, the codes were examined by two instructors experienced in qualitative research. Qualitative data were given to the coders and re-coded according to the code definition table. Miles and Huberman (1994, p. 64) were applied to the encodings made by the two encoders in order to ensure the reliability of the qualitative analysis. In this study, the agreement between author and the first researcher is found to be 0.84; with the second researcher to be 0.89. It is stated that the percentage of agreement should be over 80% for the reliability of the coding of the researchers (Miles and Huberman, 1994). Within the scope of the reliability of the analysis, academicians' views are synthesized and the results of the study are shared with research participants. In the presentation of the data, the distinction (different view), clarification (compatibility with the theme), diverse and extreme views have been taken into consideration (Bümen, Ünver and Baflbay, 2010).

FINDINGS (RESULTS)

The data obtained from interviews have been analyzed with content analysis and it comes out common codes and themes as a result of analysis. There exist eight themes at total including appropriateness of abstract, contribution to literature, originality, identification of scope and focus, scientific, comprehensiveness, reporting and ethics. When examined in detail, it is observed that there are common quality criteria which are adopted by academicians. Table 1 shows detailed information about "appropriateness of abstract" theme:

Table 1. Appropriateness of Abstract

Codes	Frequency
referring to main sections	12
falling within word limits	10
keywords reflecting the topic	10

When Table 1 is reviewed, it is seen that academicians regard appropriateness of abstract as an indicator of quality of a research. Under this theme, they state that a quality research should refer to main section in its abstract, be within word limits and the keywords should reflect what the research problem is about.

Table 2 shows detailed information about "contribution to literature" theme:

Table 2. Contribution to Literature

Codes	Frequency
creating a high effect size	14
creating realistic and applicable solutions	14
filling a gap in literature	12

When Table 2 is reviewed, it is seen that academicians regard contribution to literature as an indicator of quality of a research. Under this theme, they state that a quality research should create a high effect size, have realistic and applicable solutions to the real problems and if possible it should fill a gap in literature. This last criterion might not be applicable for all studies as filling a gap requires a very high level of analysis and synthesis.

Table 3 shows detailed information about "originality" theme:

Table 3. Originality

Codes	Frequency
originality of research question	18
originality of findings and discussion	12
Originality of title	10

When Table 3 is reviewed, it is seen that academicians regard originality as an indicator of quality of a research. Under this theme, they state that in a quality research, title, research questions, findings and discussion should not be a copy of previous studies. Also, the research should have a certain degree of significance in terms of findings.

Table 4 shows detailed information about "identification of scope and abstract" theme:

Table 4. Identification of Scope and Focus

Codes	Frequency
clarity of research purpose (hypothesis or problem, subproblems)	12
limiting the scope of research	12

When Table 4 is reviewed, it is seen that academicians regard identification of scope and focus as an indicator of quality of a research. Under this theme, they state that the purpose of research should be clearly clarified in a quality research. It should be visible its hypothesis or research problems. Also, a quality research should be neither too broad nor too narrow, instead it should identify its scope and focus on a research problem within this scope.

Table 5 shows detailed information about "scientific" theme:

Table 5. Scientific

Codes	Frequency
selecting method appropriate for the study	20
avoiding bias	16
appropriateness of statistical analysis	14
appropriateness of study group	13
appropriateness of data collection tools	12
adequacy of citations	12

When Table 5 is reviewed, it is seen that academicians regard scientific aspect of research as an indicator of quality. Under this theme, they state that the method should be selected according to research problem. If research problem requires an experimental design, a correlation study would fail to answer research problems. Also, a quality research should make away with any kind of bias such as "not taking account all the possible variables, selecting a biased sampling to generate desired outcomes". Thirdly, participant, data collection tools and statistical analysis selected should be appropriate in a quality research. Lastly, there should be sufficient number of citations and references in a quality research which might include the first basic studies in that area and the recent studies conducted later.

Table 6 shows detailed information about "comprehensiveness" theme:

Table 6. Comprehensiveness

Codes	Frequency
referring to current research related to subject	14
involving both supportive and contrasting studies	13
referring to primary research related to subject	12

When Table 6 is reviewed, it is seen that academicians regard comprehensiveness as an indicator of quality of a research. Under this theme, they state that a quality research should refer to both the recent studies in addition to oldest primary studies. Also, its discussion should be comprehensive including both supportive and contrasting studies.

Table 7 shows detailed information about "reporting" theme:

Table 7. Reporting

Codes	Frequency
appropriateness of in-text citations and references	12
appropriateness of tables-figures-graphics	10
reporting statistical values	10
the quality of written language	10

When Table 7 is reviewed, it is seen that academicians regard reporting as an indicator of quality of a research. Under this theme, they state that any in-text citation should be included in references and author should pay attention to APA 6 style when creating tables, figures and graphics. Also, they claim that some authors are directly copying from SPSS statistical packet; however, there are certain procedures which guide how to display statistical results produced by SPSS.

Table 8 shows detailed information about "ethic" theme:

Table 8. Ethic

Codes	Frequency
avoiding ethic violations (plagiarism, diving a research etc.)	18
not to manipulate a research	13
avoiding use of anonymous sources (blogs etc)	11
not to falsify others' texts (translation mistakes)	9
avoiding self-citations	8

When Table 8 is reviewed, it is seen that academicians regard ethic as an indicator of quality of a research. Under this theme, they state that a research can achieve quality only if it avoids ethic violations such as plagiarism, dividing a research in order to produce more studies. Then, a quality research is one that is never manipulated in any process. Thirdly, academicians claim that it is not right to resort often to sources such as personal blogs or discredited sites. The texts created in these environments might not be having scientific standards which are very prominent for researchers in academic communities.

When the findings obtained in this study are reviewed, it is seen that there are common research quality criteria adopted by researchers in academic communities. Academicians desire a certain degree of criteria which should serve as indicators of quality in a research.

CONCLUSION and DISCUSSION

When the findings obtained in this study are reviewed, it is seen that the research quality criteria which are emphasized by most of the academicians include selecting method and analysis techniques appropriate for the study, avoiding ethic violations, originality of research question, creating high effect size, avoiding bias, having reporting standards, referring to current studies related to subject, offering realistic and applicable solutions and finally involving both supportive and contrasting studies. Szklo (2006) analyzes the difficulties of judging the quality of a research emphasizing that peer review fail to ensure such an evaluation because according to him it

is an imperfect system in terms of optimal reliability and uncertain validity. After this emphasis, Szklo comes up with some common faults made by authors involuntarily; however for creating a good research authors should pay attention to some criteria such as avoiding "excessively long abstracts, extensive use of abbreviations, failure to report results of parsimonious data analyses, and misinterpretation of statistical associations identified in observational studies".

However, Mårtensson et al. (2016) put forward that there are few widely acknowledged quality standards for research practice. Therefore, the main objective should not be come up with a list of quality criteria applicable to all kinds of research, rather it should be developed a broader understanding of what constitutes a good research and how concepts related to quality tend to take its own form in contexts of different disciplines. In order to exemplify, Rubin and Rubin (1995) state that the concepts of "validity and reliability" are more appropriate in contexts of quantitative research than qualitative research. West, King and Carey (2002) explains quality from a scientific perspective and it is explained as "the extent to which a study's design, conduct, and analysis have minimized biases in selecting subjects and measuring both outcomes and differences in the study groups other than the factors being studied that might influence the results". Albuquerque (2009) claim that quality issue in scientific publications become recently a hot topic and there are really troubles when creating research texts in disciplines. Albuquerque makes a list of misconducts in process of creating scientific papers which Revista Médica de Chile editors come across most often: "duplicating the same study in two different journals, copying a previous study with its methods and results, plagiarizing (presenting an idea or product derived from an existing source without crediting that source), too general introduction, the aim of study being confusing, the results not discussed in a scientific way, findings not contextualized and unacceptable language such as misspellings and semantics.

Berezow and Hartsfield (2012) refer quality criteria as "clear definitions of terminology, quantifiability, highly controlled conditions, reproducibility, and predictability and testability" and they detect that the real problem is to decide whether the same criteria can be appropriate and feasible for both natural science and social science. Bryman, Becker and Sempik (2008) make an analysis of social policy researchers' views in the UK related to the quality criteria in quantitative and qualitative research. They stress that most of social policy researchers think that two criteria validity and reliability should be "sine qua non" which means an indispensable condition and element when speaking of quality in quantitative research. Social policy researchers focus on two more criteria -replicability and generalizability- for quality in quantitative studies. When it comes to qualitative studies, the quality concept changes into another form; and credibility, confirmability, dependability , conformability and transferability terms show up as indicators of quality. While it is important to generalize findings to a population in quantitative studies, it stands out in qualitative studies whether findings are convincing and fit into reality (credibility), relevant to other settings (transferability), whether the data accurately represent the information that the participants give and personal biases are avoided (conformability), and the stability of data over time and under different condition (dependability).

Straus, Richardson, Glasziou and Haynes (2005) prefer strength of evidence and they focus on the concepts of closeness to the truth, size of the effect and applicability. In any quality research, there should at least be a description about the population of interest, an explanation of the process used to select participants, definitions of key variables and concepts, a description of the analytic techniques and reporting standards. Mårtensson et al. (2016) have attempted to develop a framework for the assessment of research quality and argued that their framework is a useful one for evaluating research and its quality from many aspects within and across disciplines. Their conceptual hierarchy of research quality is given in Figure 1:

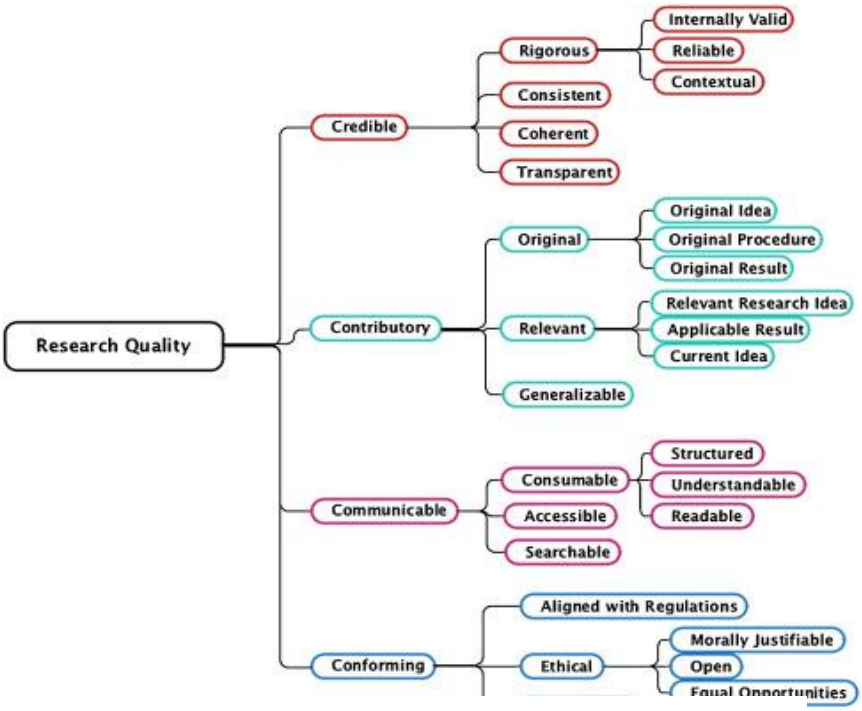

Figure 1. Concept Hierarchy of Research Quality

For some disciplines and especially educational research, it might become ineffective to practice the same quality criteria in a rigorous way. Each research should be assessed in its own contextual design. However, especially when examining research exploring the same questions should be evaluated based on common standards of quality and research that fails quality standards should not be taken for granted with regards to explaining the facts it attempts to explore. Therefore, there is developed in this study a concept map of research quality criteria based on qualitative analysis of academicians' views about quality. Research quality concept map is displayed in Figure 2:

Figure 2. Research Quality Concept Map

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