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# PMR

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Potential Contributors: Every research-oriented individual and institution, and every research student, faculty working anywhere in the world is invited to explore fruitful connections with PMR.

# *Contents*

# Roadmap to Quality Research

**Dr. Sarang Shankar Bhola**

*ABSTRACT:*

***This article is descriptive in nature providing information to the beginners in research, especially in social sciences and prescribes methodology to be adopted on the magnitude of quality research. The attempt has been made to conceptualize contemporary research scenario in social sciences and scientific research process is given with a few contemporary quality research indicators. The article also answers common queries raised by scholars and includes contemporary quality indicators, essential basics of research and ethics in research.***

***Carrying quality research is not thorny but entails way of thinking and cultivates quality culture.***

***Keywords: Quality research, scientific research, ethics in research, Basics of research.***

**'Those who know how to think need no teachers'**

-Mahatma Gandhi

**Introduction:**

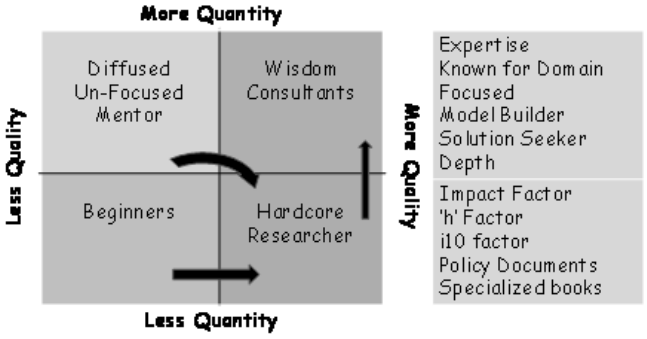
This article is descriptive in nature and mere arrangements of guiding thoughts have been shared with number of research associates and scholars. The trend in research has changed drastically and it has oriented towards quantity. Researcher feebly made an attempt to manifest quality of their research using intense statistical tools, unwarranted many a times and divorcing fundamentals of research.

This article is for beginner's shifts through various concepts depicting aspects of quality research in social sciences. It is heartening that the teaching fraternity has taken enormous interest into research. And that was warranted since masters say 'Teaching without research is sterile'. It is experienced over a period of time that research helps to change the attitude of researcher and provides entirely different dimensions to look at the aspect. Rather this change is expected which corroborate towards the right way of thinking. And the right thinking of teacher helps greatly to nurture students.

**Research Quality v/s. Quantity:**

The figure below depicts positioning of research scholar on the research platform and in subject domain on two variables i.e. quality of research and quantity of research. Owing to few reforms in Indian scenario like API Academic Performance Index, researchers are going after quantity of publications. As per the demand and supply equation to accommodate the flood of research output, number of journals has grown up opening a gateway for easy publication. Quantity is good and warranted at the initial stage, at least to show off as research scholar on academic diasporas. Quantity does not lead to satisfactory positioning due to poor quality of research. The figure contemporary approach to research quality v/s quantity explains the same.

**Fig1** : Contemporary Approach to Research Quality v/s. Quantity.




The figure has four quadrants made up of, quality on 'x' axis and quantity on 'y' axis with positive and negative powers. The lower left quadrant labeled as 'Beginners' upper left 'Diffused, un-focused mentors, lower right as 'Hardcore researcher' and upper right as 'wisdom consultants'. The research scholars falling in left two quadrants are more inclined towards confirmatory research and in right two quadrants are inclined towards exploratory research.

Beginners wish to have a few publications to their credit and strive for the same, this category mainly includes students at UG

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PG and research scholars. It is good to strive for a few early publications which may also help provide psychological warmth. Something is better than zero on scorecards. The researcher at this stage instead of increasing quantity should strive for quality and in-depth probing into subject to join hands with national and international researchers working in the same subject. They should strive for positioning themselves as hardcore researchers and not the diffused and unfocussed researchers.

Diffused are good mentors who indulge into variety of confirmatory research subjects with their research associates. The quality of research produced is moreover based on quality of research associates.

Hardcore researchers and wisdom consultants are better mentors who take their followers and associates along with them throughout their research voyage. Wisdom consultant is the ideal positioning in research since these people are known for their research outcomes on the magnitude of its applications. A study of leadership is not complete without reference to Bass, Yukla similarly a study of Quality is not complete without discussion of Deming, Juran, Crosby and the likes.

C.K Pralhad, Amrtya Sen are known as authorities in their specific domains Likewise at least at certain level a researcher should be well known in his subject as an authority to talk to and consult.

The arrows in the figure indicate repositioning directions.

**Contemporary Indicators of Quality Research**

The trend of academic research in India is influenced greatly by the quality modules laid down by University Grant Commission, India (UGC) and All India Council for Technical Education (AICTE). The former, exercise control over mostly undergraduate and government funded education and later controls the entire technical education viz. management, engineering etc. Within the decade 2000 to 2010 the said authorities have revised norms applicable to higher education and technical education a couple of times.

Ph.D. is made as qualifying criterion for senior academic posts like associate professor, professor, principal and membership of a few academic bodies at university level viz. board of studies, research and review committee, managing council, dean of faculty etc. Besides this, UGC has directed common admission procedure for Ph.D. course to universities in India. These two reforms have increased demand for Ph.D. course across all faculties in India.

The number of aspirants made the scenario competitive. Since admission to Ph.D. program has been channelized through common admission procedure conducted by respective university, people started taking a chance for getting admission which creates a culture of focusing on getting a degree and the very expected objective of output oriented research has disappeared.

To further strengthen quality initiatives in academics, one more reform is introduced by controlling bodies. For the appointment or promotion of a teacher for the post of Associate Professor, Professor and Principal, along with experience of teaching in number of years, academic and research work done is considered as qualifying criteria. To have uniformity in the determination of academic performance, UGC has prescribed a scale to measure academic and research work done by individual academician, known as Academic Performance Index (API). Since API is introduced, academicians are found to be more concerned about their individual API score. The entire focus has shifted to increase the API and very core of a quality and problem solving objective of research is lost.

Owing to API, academicians are trying desperately to get research papers published and presentations. To support this scenario number of journals especially online journals have mushroomed to accommodate overnight cooked research. Pay and publish culture has also developed. A few humorous reforms like, in absentia paper presentation, absence of peer review have cropped up. Merely paying processing fees at the time of article submission for publication, guarantees publication of paper and paper is not sent for revision or is rejected. The same is the case with conferences and seminars. The quality initiatives by UGC and AICTE are defeated in their purpose by all the participants involved.

In the crowd of research, quality research has its own place. There are few originators indulging into exploration, experimentation but majority are copycats, busy with confirmatory research. Confirmatory research is also warranted but repetition must be avoided.

Quality research manifest through, research papers published in Impact Factor Journals (that is in journals indexed in Scopus, Thomson Reuters, or similar journals of repute viz. Sage publication, Elsevier, Springer, journals by American marketing association etc.) , Monograph Publication, Case study Development, Reference Book Publications by internationally acclaimed publisher, Policy Documents and the like. It won't be surprising if in the days to come if 'h' factor becomes the qualifying criterion for appointments, promotions, increments etc. of teaching fraternity in higher education in India. Merely publication in ISSN journal do not indicate quality but the reputation of journal, number of citations received for the paper, the scholars who have cited the paper (not self citations) will determine the strength of the quality of the publication. Quality research brings out solutions to concurrent social and managerial problems in the form of well tested models. The model could be in a flow diagram form, structural equation model, statistical models, mathematical models and the likes.

Research process is an array of interrelated and interdependent stepladder as shown in figure number 02.

**Figure: 02 Research Process**


Aforementioned process of research is articulated with quality check aspects stepwise in further discussion.

Table: Process of Research and Quality Check

Column number 2 in following table is research process every researcher wishes to follow. The quality check parameters narrated in column number 3 are essential to ponder over. The in-depth thought backed up by practice of quality checks would help research shift their positioning from beginners to hardcore researchers and to wisdom consultants.

Scientific research is a gamut of following well developed steps.

1. Problem Identification and Formulation besides several ways of problem identification and formulation, two scientific ways of problem formulation are inductive method and deductive method. Inductive method is confirmatory research and deductive method is exploratory in nature. In inductive method from the existing established theory the hypothesis is formulated and with the help of data, observations are taken which help to confirm the existing theory or to some extent modulate or enrich the theory. With this kind of research problem the base of application is enlarged. Second method is deductive method. The problem is observed in the field which has certain pattern from which hypothesis is derived. Testing of hypothesis is expected to develop altogether a new theory and add new dimensions to the existing theory. Supplementary ways of research problem identification includes, scope for further research written in dissertation or thesis by earlier researchers, limitations and shortfalls profoundly mentioned in research article published.

**Table No. 1: Process of Research and Quality Check**

| Sr. | Process | Quality Check |
|---|---|---|
| 1 | 2 | 3 |
| 1. | Problem Formulation | Inductive Method<br>Deductive method |
| 2. | Hypothesis | Features of good hypothesis<br>Inductive Deductive<br>Supplement Hypothesis Testing<br>Parametric Non Parametric<br>Qualitative Observations |
| 3. | Review | Types Selection of appropriate type of review<br>Presentation of review in the report<br>Review is the gap finding process |
| 4. | Defining Objectives | In line with research problem and hypothesis. |
| 5. | Research Design | **Instrument testing**<br>Reliability analysis<br>Physical verification of instruments |
| | | **Sampling**<br>Consideration of population<br>Sample size calculations<br>Sampling method |
| | | **Interview**<br>Convey the Objectivity who are you? And for what purpose you are doing this?<br>Make sample relax<br>Personalized questions at the end of interview<br>Do observe more read between the lines and note down. |
| 6. | Pilot Testing | Must<br>Repetitive testing till nullifying errors. |
| 7. | Data Analysis | Designing data analysis scheme<br>Data feeding<br>Put Validation Check<br>Variable Coding Development of Code Sheet<br>Data validity<br>Outliers pruning |
| 8. | Testing of Hypothesis | Use of appropriate tool<br>Take into consideration conditions to use the tool. |
| 9. | Findings | Must discuss with the findings of earlier research<br>Sufficient discussion is expected<br>Correlate with secondary - concurrent data |
| 10. | Prescriptions | Addition to the Body of Knowledge<br>Practical Implementation of Prescriptions |

2. Hypothesis hypothesis should bear all features of good hypothesis i.e. conceptual clarity, Specificity, Testability, Availability of techniques, Theoretical relevance and Consistency i.e. two or more propositions logically derived from the same theory must not be mutually contradictory. The decision on acceptance or rejection of null hypothesis is supposed to be qualitatively discussed. Particularly in social sciences the test of hypothesis be supplemented alternatively using parametric and non parametric tests.

3. Review - A literature review discuses published information in a particular subject area and sometimes information in a

particular subject area within a certain framework. Appropriate type of review which aligns with the title of research problem should be selected. Scholarly review is always presented in synthesis form. Review is a discussion of a series of findings so interwoven that it leads to a definite conclusion and pave the way to further research.

4. Defining Objectives objectives are derived from hypothesis and since hypothesis is a statement of tentative preposition drawn from research problem these three factors i.e. research problem, hypothesis and objectives are connected.

5. Research Design it is a blueprint of research which includes; sampling design, statistical design and operational design. The design is done in the light of resources available. Nature of population is considered to decide method of sample to be used. Owing to non availability of sample list in case of finite population, non probability sampling method is used errors may sneak in. The list of population in case of controllable population can be prepared to avoid sampling errors. Array of statistical methods are available to compute appropriate sample size.

Support of samples or sometimes collaboration of samples is at the center of research in social sciences. Researcher needs to win the confidence of sample conveying objectivity of research and the important role sample has to play. Psychologically in a relaxed and normal mood samples share honestly and also extend additional information.

6. Pilot Testing it is an opportunity to interact with samples with developed data collection instrument to test its validity. It is imperative to know that samples are receiving questions asked and are able to reply spontaneously. In case of close ended questions sufficient options are provided to opine on it. It is likely that few options are never marked and new options arise. Reliability of instrument using tools like chronbach alpha or split half method provides assurance of uniformity into samples feedback. Physical checking of questionnaires helps arrest pattern type of responses which are faulty in nature and rejected. Repetitive testing of schedule, questionnaire and observational design is a demand in case of major changes during pilot testing. Zero error in social science research is a dream but a conscious effort needs to be made to minimize errors.

7. Data Analysis Planning of data analysis envelops, variable coding, development of code sheet, validation checks, outliers pruning and development of data analysis scheme in line with use of statistical tools.

8. Testing of Hypothesis Conditions for applying the statistical test are supposed to be followed. Appropriate tool which satisfies conditions of use should only be selected.

9. Findings Findings are drawn on data analysis and discussed in sufficient length to obviate possible ambiguity in the mind of reader. Findings are expected to be discussed in the light of earlier researcher's findings as well as correlate with concurrent secondary data if available from reliable sources.

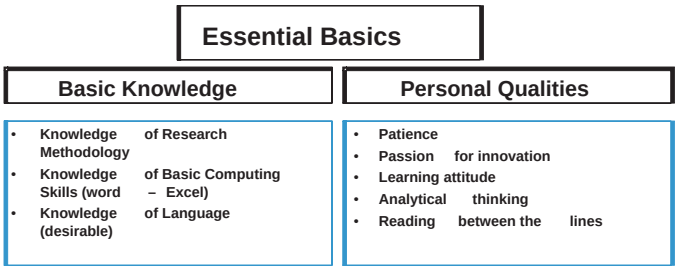
10. Prescriptions These are based on findings and have practical relevance on the scale of implementation. Concrete prescription plans with its intervening variables (hurdles) are desirous.

The most substantial part of research outcome is model building followed by its testing to determine its applications and generalization of results. Model testing paves way to further advanced research which strives for new errorless model(s) which is likely to supersede existing outcomes. Since research is a continuous process, obsolescence of researchers own findings in changing socio-cultural scenario provide wide sphere of applications and generalizations.

**Essential Basics**

Dilemma could exist on whether; researcher is born or made? Quality research demands few essential basics, either inherent or imbibed in due course, as mentioned in following figure, classified in two categories, one is basic knowledge and another is personal qualities. Basic knowledge regarding scientific research methodology, computing skills and knowledge of language in which report is to be written is absolutely essential. Personal qualities viz. patience, passion for innovation, learning attitude, analytical thinking and reading between the lines is concurrently required.

**Figure 3 - Essential Basics of Resarch**




Besides above set of essentials researcher requires three desirable attitudes, one is asking questions to sample stakeholders on the magnitude of clear understanding of topic and research problem. Second is seeking answers for the questions from all possible angles. The answers may be obvious or they need to be hunted. Hardcore researcher keeps on thinking over a problem until solution is reached. The entire effort needs to be carried out in an unbiased manner. Researcher never proves but it is tested impartially and he puts forth outcomes before researchers in the domain.

**Additives:**

Research is a well thought out and continuous process. It is a voyage of improvised versions that never ends. Quality research is unbiased in presenting findings and quoting the limitations of research. Adequate use of statistical tools is expected. Major challenge before the social scientist is to control errors. Errors like random error which is a sample selection error, random misclassification error, occur at the time of data coding or data feeding and confounding i.e. role of extraneous variables and biasness of samples is not noticed. The errors need to be identified and minimized through rigorous pilot testing of research design.

Quality research in India has a few hurdles. Not all people share honest information with researcher, even government statistical department faces challenge to collect factual data on which many socio-economic reforms are based on. The sample source lists are not updated for instances it is very difficult to get list of all hotels in Mumbai or working women in Pune or number of cars sold in Satara for the last five years and the like. Such data is warranted for exact calculation of sample size and even randomization of sampling. In absence of such list non probability sampling is used in which some error may creep in.

**Ethics in Research**

Rules of plagiarism must be followed not only because leading journals scan articles through plagiarism software. Besides stealing someone's outcome of research is immoral. Credit in the form of citations should be given to the researchers. Willing samples are expected to share honest information hence liberty to samples should be given for participation in research with a promise to keep their shared information confidential. As mentioned in aforesaid discussion researcher should be unbiased and similarly the reporting also should be unbiased.

**Common Queries … Research**

A Few common queries are raised by scholars getting into research fray.

1. What should be the topic for research or Ph.D. researcher is supposed to go by his interest area to select area of research and topic. Over a period of time of studies a researcher finds at least one academic area of specialization alluring leads additional in-depth probing into the same subject area helps crystallizing research problem. The general way is to delve into concurrent happenings and contemporary research output in the interested subject domain by referring to research journals. This would lead to determining gap into research which can be bridged initiating new research. Researcher should select topic by what his heart goes after rigorous readings into subject and not the topic borrowed from someone. The process of selecting a topic is time-consuming and does not happen overnight.
2. Topic expectation from guide expecting topic from guide is not a bad idea but the area of research interest of guide and scholar should match. It is quite possible that candidate remains in active association with guide and over a period of time the area of research is finalized. Generally the research guides are equipped with alternative subjects in mind but because of paucity of time, guide cannot address several research topics at a time. To interested and capable candidates such topics can be extended for research. The most scientific and even natural expectation is, researcher should have his own field of interest.
3. Is hypothesis needed?A hypothesis is a prerequisite for any research. When a research question arises that is spontaneously answered by researcher on the basis of his knowledge and experience. The answer expressed in affirmative statement is hypothesis. The statement is skeptical in nature and put forth to test is hypothesis. The statement needs empirical testing for which research design is developed. The spontaneous answer to a research question is alternative hypothesis and statistical tests applied on null hypothesis.
4. How many hypothesis/objectives should be stated there is no numerical limit to state the hypotheses. The number of research questions research has, that numbers of hypothesis there would be. The numbers of hypotheses can be clubbed using category characteristics instead of stating age, gender, income, family members one can say demographic profile of samples. Objectives are derived from hypothesis. Since objectives gives direction towards data collection. The data is to be collected to test the hypothesis. When the hypothesis is set, testing of hypothesis is must.
5. How much review is adequate this quantitative question arouses in case, formulation of research problem is followed by review of literature. This is unscientific way of conducting research. Review of literature is a gap finding process help enormously to formulate research problem. Until the gap finding process reached reviews are necessary.
6. How many variables to process - The minimum number of variables to be processed which suffice the data for hypotheses testing and objectives.
7. Minimum Sample Size - Adequacy of sample size is determined statistically. Enough statistical sample determination techniques for finite and infinite population are in existence.
8. Time required completing research - The queries asked are prone to quantitative aspects. No definite period of completing research can be stated. The period required to complete research to the limit to test the hypothesis depends on number of parameters such as time required for pilot testing and data collection and the like.
9. Confidentiality in research - The results of ongoing research should bring before the subject community in the form of research paper for discussion.
10. Size of research report - The research report that may be article, dissertation or thesis substantiated with research design used for and supported data should be given. There is no standard page size determined for any kind of research report.

To conclude the discussion, on the magnitude of setting culture of quality research, it feels essential to follow above discussion. It is tough but quality is never an accident it is outcome of hard efforts.

■