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Instructor: Dr Atif Ishtiaq sahib **Semester : 3rd**

ADVANCE RESEARCH METHODS QUANTITATIVE & QUALITATIVE TECHNIQUES

Final SEMESTER ASSIGNMENT

(Time Allowed: 06 hours)

Marks:50

Q 1. Distinguish between basic and applied Research. **(10 Marks)**

Ans : The difference between basic and applied research is :

Basic research is also called pure research or fundamental research it has the scientific research aim to improve scientific theories for improved understanding or prediction of natural or other phenomena. Though often driven by curiosity, basic research fuels applied science's innovations.

Applied research refers to scientific study and research that seeks to solve practical problems. Applied research is used to find solutions to everyday problems and develop innovative technologies.

Basic research is that research that fill the empty knowledge we dont have it tries to learn things that aren't always directly applicable or useful immediately

Applied research is that research which seeks to answer question in a real world and to solve a problem Basic has little application to real world policy and

management but could be done to guide applied research

In basic research the problem is selected by individual researcher.

In applied research the problem is selected by employer or sponser

In basic research the goal are generalized theroretical understanding tools and techniques are used

In applied research the goal are the co-effective reduction of social problems

In basic research the nature is analytical and In applied research the nature is synthetic.

Basic Research refers to the study that is aimed at expanding the existing base of scientific knowledge. Applied Research is the research that is designed to solve specific practical problems or answer certain questions. To add some of knowledge to the existing one. To find out a solution for the problem at hand.

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Q 2. What are the basic steps for conducting a research. Explain with a schematic diagram. **(10 Marks)**

Ans : The basic steps for conducting a research are:

1:Defining issues or problems of the research is initiated.

2:Next goals and objectives are formulated to deal with the question or problem of the research project or the question of problem.

3:Collecting relevant data of then the research design is developed to achive the objectives.

4:Results are generated by conducting the research.

5:interpretation and analysis of result follow .

How to choose a research topic and how to carry solving it

Step 1: First of all you should identify and deelop your topic selecting a topic is the most difficult and challenging part of a research.

step 2: Do a search for relent information.

step 3: ALocate materials.

step 4: Evaluate your sources.

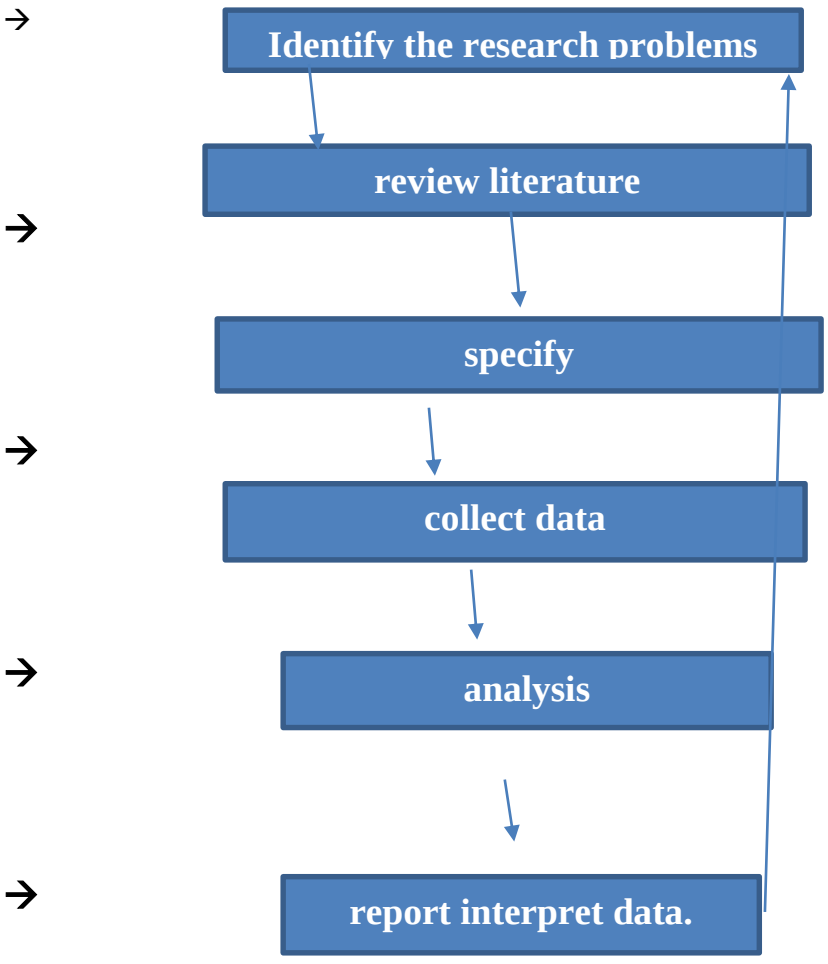
Step 5: Make some relevant notes.

Step 6: Write and start your paper .

Step 7: You should cite your sources properly.

Step 8: Proofread.

2nd Diagram for process of research



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Q 3. Differentiate between any two types of research methodology. **(10 Marks)**

ANS 3: The two basic research approaches are quantitative and qualitative research. Both types have different purposes. Quantitative research is statistics-based.They take observations of people or events and analyze it through qualitative methods.

The two types of research methodologies are:

1)Qua**l**itative measures

2)Qua**n**titative measures

Qualitative measures :

- ➔ Descriptive
- ➔ Numbers not the primary focus
- ➔ Interpretive, ethnographic,
- ➔ naturalistic

Qua**l**itative measures: Qualitative measurements are ways of gaining a deeper understanding of a topic.Both are complex methods of research, however, qualitative measures typically deal with textual data or words while quantitative measures analyze numerical data or statistics.

Examples of qualitative measures : Pictures, paintings and photos can all be used to measure qualitative results. For example, vulnerable children could be asked to draw a picture showing their life before and after they joined the program.

- ➔ →Content analysis
- ➔ →Discourse Analysis
- ➔ →Focus Groups
- ➔ →interviews
- ➔ →Observation(obtrusive)
- ➔ →Observation(unobstrusive)
- ➔ →Think about protocols
- ➔ →Usability testing.

Quantitative measures :

- ➔ N for numbers
- ➔ Statistical
- ➔ Quantifiable

Quantitative measures : Quantitative information or data is based on quantities obtained using a quantifiable measurement process.

In contrast, qualitative information records qualities that are descriptive, subjective or difficult to measure. Quantitative may refer to Statisticss, also known as quantitative analysis..

Properties :

- ➔ CompareThings.
- ➔ Count Things.
- ➔ Survey People About Things.
- ➔ Comparision studies.
- ➔ Pre and post tests.
- ➔ Measures and scales.
- ➔ Numeric studies.

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Q 4. Give an introduction to Mixed Methods Research and identify situations in which mixed methods research can be applied. **(10 Marks)**

Ans 4 : A mixed methods design is characterized by the combination of at least one qualitative and one quantitative research component.Mixed methods research is the

type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches

There are four major types of mixed methods designs are the Triangulation Design, the Embedded Design, the Explanatory Design, and the Exploratory Design. The following sections provide an overview of each of these designs: their use, procedures, common variants, and challenges

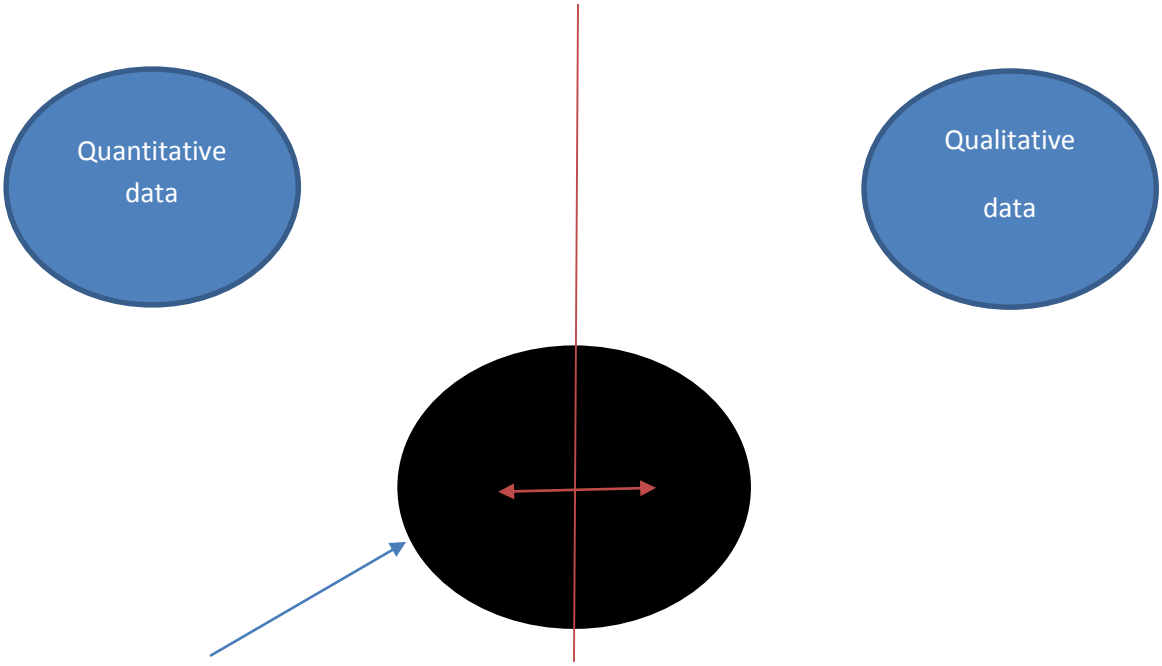
You can identify a find mixed-method research studies by searching in the Library databases using methodology terms as search keywords. Possible keywords include the type of study, data analysis type, or terminology are used to describe the results.

Mixed methods are especially useful and important in understanding contradictions between quantitative results and qualitative findings. Reflects participants point of view. Mixed methods give a voice to study participants and ensure that the study findings are grounded in participants' experiences.

The disadvantages of mixed method research are the following :

- This research design can be very complex and big.
- It takes much more time and resources to planned and implement this type of research. ...
- Planning and implementing one method by drawing on the findings of another method always prove to be more difficult .

Core idea of mixed methodologies:



Methodology called mixed methodologies research.

Basic components involved in mixed methods research

• Mixed methods research is a methodology for conducting research that involves collecting, analyzing, and integrating quantitative and qualitative research in a single study or a longitudinal program of inquiry.

• The purpose of this form of research is that both qualitative and quantitative research, in combination, provide a better understanding of a research problem Or issue than either research approach alone.

Situations in which mixed methods research are applied:

Mixed methods are especially useful in understanding contradictions between quantitative results and qualitative findings. Reflects participants' point of view. Mixed methods give a voice to study participants and ensure that study findings are grounded in participants experiences.

→ If you are measuring a concept on an instrument. You have to sense that scores are not telling you the entire story. If you are just asked a few people about the concept you might obtain a better understanding. then mixed methods research provides a more complete understanding of the research problem than either quantitative or qualitative alone.

→ If you will have to look over the instruments available to study a concept.They were developed from a different sample/population than the one you are studying. You consider that you will need to develop an instrument before you can administer it to your sample. Mixed methods is a methodology for developing better, more context specific instruments.

→ If you have gathered data about a factors that predict a concept on several instruments. Although if you have general information about the importance of predictors, you can only guess as to what explains why the results

occurred. Mixed methods helps to explain results (or how mechanisms work) in causal models.

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Q 5. Give a brief overview of your final research project. **(10 Marks)**

Ans : A brief overview of my final research project :

My research paper is own smart homes, I am in interested in this paper because I am looking after my fathers real estate business my future plan is to build smart technologies houses integrated with artificial inteligence . I have worked about 60 percent on the follwing paper ..

Smart technologies are pervasive.Embedding information and communication technologies in consumer appliances such as phones and TVs and in infrastructures such as cities and grids promises enhanced functionality, connectivity and manageability. Major technology developers, service pro- viders and energy utilities are now lining up to extend smartness beyond specific devices to the home as a whole and link these smart homes into the meters, wires and pipes of the utility networks. The market for smart home appliances alone is projected to grow from $40 m in 2012 to $26bn in 2019 The advent of smart homes may ensure smart technologies become a commonplace feature of people's lives, whether they are wanted or not

Scientific and technological research on smart homes is beginning alongside this wave of applied technology development. Behind both the technology developers and researchers, advancing applied knowledge in this field is a clear sense of purpose. Smart homes, it is argued, will ''undoubtedly make our lives much more comfortable than ever'' .But will they?

A smaller, but growing, number of social science researchers are asking: Who are the users of smart homes, and why do they want or need them? Will the technological promise of ''customized, automated support that is so gracefully integrated with our lives that it 'disappears''' be fulfilled? Might there be unexpected or perverse consequences? Are smart homes an inevitability or a choice? The essence of a smart home is information and com- munication technologies (ICTs) distributed throughout rooms, devices and systems (lighting, heating, ventilation) relaying information to users and feeding back user or automated commands to manage the domestic environment Irrespective of the particular technological configuration of a smart home, its purpose—according to

tech- nology developers is ‘‘to improve the living experience’’ in some way . This may be through new func- tionality such as remote control and automation of appli- ances, through enhancement of existing functionality such as heating management, through improved security or through the provision of assisted living services by monitoring, alerting and detecting health incidents .Smart homes are also the end-use node of the smart energy system that allows utilities to respond to real-time flows of information on energy demand fed back by smart meters from millions of homes .

Despite this broad range of potential and assumed benefits, a clear user-centric vision of smart homes is currently missing from a field being overwhelmingly ‘‘pushed’’ by technology developers .This is a critical oversight given that the overall success of smart homes, whatever eventual form they may take, hinges fundamentally on their adoption and use by real people in the context of their normal everyday lives. This article takes stock of what is understood to date about smart homes and their users.

Why the smart home

Why is the smart home a growing and potentially important field of research and development? Three broad views are evident in the literature: a functional view; an instrumental view; and a socio-technical view. The functional view sees smart homes as a way of better managing the demands of daily living through technology. The view emphasises smart homes' potential for managing and reducing energy demand in households as part of a wider transition to a low-carbon future. The socio-technical view sees the smart home as the next wave of development in the ongoing electrification and digitalisation of everyday life.

Concusion :

Smart homes are an advancing wave of technological development whose success depends on a coalescence between the visions of technology developers for enhanced functionality and energy management, and the needs and demands of households in the complex places that are homes. User-focused research on smart homes is growing, dominated by engineering, technical sciences and design, but with a sizeable niche of health care-related research, and increasing attention from social scientists ranging from ethnographers and domestication theorists to economists and applied energy researchers. Yet there is a wide and growing recognition of the need to develop a better picture of who users

are and how they might use smart homes .Although two of the themes analysed from the literature (on ‘‘user-technology interactions’’ and ‘‘accept- ability and usability’’) are most strongly informed by research on user-centred design, these themes have not typically been entry points for thinking about the purpose and use of smart homes. Rather, they have emerged as a consequence of a technological vision that is struggling to gain user acceptance. The result is that current visions of smart homes have a limited appeal to users and are per- ceived as failing to meet user needs .,This has given rise to what smart home developers think the appeal of smart homes is in emerging and updating because the basic functionality they offer has not proven as attractive as initially hoped.

A diagram of

SMART HOME TECHNOLOGY