

**IQRA National University**  
**Department of Electrical Engineering**  
**Subject: Research Methodologies**



**Assignment**

**Name: Majidferoz**

**Student ID: 15496**

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**Question No: 1**

- a) Differentiate between Search and Research. (05)  
 b) Why it is necessary to know about different methods in Research Methodology? (05)

**Question No: 2**

- a) Explain the following: (05)  
 i) Epistemology  
 ii) Methodology  
 b) Differentiate between Qualitative and Quantitative Methods of research. (05)

**Question No: 3**

Assume that you are the Mayor of Greenwood, a small town in Illinois, and you've got to make decision based on the information collected from the following research study.

The chief of police wants to experiment with increasing the number of patrol officers (X) to reduce the crime rate (Y). The chief invites all twelve area captains to participate in the experiment; only the 103<sup>rd</sup> volunteers participated. In October, patrol officers in the 103<sup>rd</sup> are increased by 15%. Reported crime drops 5% between September and December. The chief now wants to implement the program citywide.

Test your research survey with the following case. (10)

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☺ Good Luck ☺

## **Question No.1 Part (A)**

### **DIFFERENCE BETWEEN SEARCH AND RESEARCH**

#### **SEARCH**

Search is a random process of trying to identify something in a non-systematic manner.

- An act of finding something, which have lost before or missing.
- Search does not require any specific set of skills or expertise; anyone can conduct a search.
- The goal of a search is to simply find something, such as a lost item or the meaning of something etc.
- Searches do not take time and can last even up to a few seconds.
- A search process is simple, requires less tools and strategies. Searches don't necessarily require any steps or stages to be followed.
- Searches are not monitored and may require legal authorization.

#### **RESEARCH**

Research is a logical and systematic search for new and useful information on a particular topic.

- One of the ways to find answers to your questions.
- It is implication of a process and the process;
  - i. Is within a framework of a set of philosophies.
  - ii. Uses procedures, methods and techniques that are tested for validity and reliability.
  - iii. Is designed to be unbiased and objective.
- Research is mostly used to improve the world as it forms the systematic foundation through new knowledge is attained, existing knowledge is improved and new techniques and processes are developed.
- In conducting a research, the researcher should have a specific set of skills and great expertise in order to conduct it successfully. Certain aspects of the research process such as the results analysis require additional training.
- Research takes up a longer time than search. Research could last for even months or years.
- The research process involves the use of specific tools and strategies and is more regulated when compared to a search process.

## **Question No.1 Part (B)**

It is important to know about different methods in Research Methodology because;

### **As a graduate student:**

To be able to read and understand the empirical literature in your field; to become a critical consumer of information.

### **As a graduate student preparing for a thesis or dissertation:**

To be able to both design and implement your thesis or dissertation as well as future studies that interest you.

### **As a future practitioner:**

To be able to intelligently participate in research projects, evaluations, and studies undertaken by your institution.

### **As an educated citizen:**

To understand the difference between scientifically acquired knowledge and other kinds of information.

Moreover learning different methods in Research Methodology have been importance, Undergraduate students need to learn it for a stronger foundation for their future; postgraduate students have no choice as a thesis/dissertation is the requirement for a Master's degree. General practitioners or consultants involved in private practice cannot shy away from understanding research as they have to deal with different types of cases which may not be straight forward enough. Consultants holding teaching posts, have to guide their students for conducting their thesis. All those who hold administrative posts have to take decisions for their organizations and the research outcomes help them to a large extent in this regard. Policy makers take the help of research while framing policies. Hence, anyone who is related to science field needs to understand different methods in research methodology.

## **Question No.2 Part(A)**

### **i)EPISTEMOLOGY:**

An epistemology is a theory of knowledge.

According to Albert Einstein "It is the theory that decides what can be observed." Epistemology in a business research as a branch of philosophy deals with the sources of knowledge. Specifically, epistemology is concerned with possibilities, nature, sources and limitations of knowledge in the field of study. Alternatively, epistemology can be branded as the study of the criteria by which the researcher classifies what does and does not constitute the knowledge.

### **ii)METHODOLOGY:**

The underlying theory and analysis of how research does or should proceed, often influenced by a discipline.

Methodology is the philosophical framework within which the research is conducted or the foundation upon which the research is based.

Research Methodology describes research methods, approaches and designs in detail highlighting those used throughout the study, justifying my choice through describing advantages and disadvantages of each approach and design taking into account their practical applicability to our research.

Firstly, the methodology should be the most appropriate to achieve objectives of the research.

Secondly, it should be made possible to replicate the methodology used in other researches of the same nature.

## **Question No.2 Part (B)**

### **Differentiate between Qualitative and Quantitative Methods of research**

#### **i)Qualitative Method of Research:**

Qualitative research is a type of empathic, empirical, exploratory, direct, physical research. It helps you understand reasons, motivations, opinions, trends that hide behind the more quantitative data of quantitative research.

Data that describes meanings and experiences.Eg. Ethnography, Case study, Survey/Sampling, Focus groups, Discourse/Text Analysis, Quantitative Description, Prediction/Classification.

**Provides depth and detail:**

Looks deeper than analyzing ranks and counts by recording attitudes, feelings and behaviors.

**Creates Openness:**

Encouraging people to expand on their responses can open up new topic areas not initially considered.

**Simulates people's Individual Experiences:**

A detail picture can be built up about why people act in certain ways and their feelings about these actions.

**Attempts to avoid Pre-judgments:**

If used alongside quantitative data collection, it can explain why a particular response was given.

**ii) Quantitative Methods of research:**

Quantitative research helps to quantify, use numeric data or just data that can then be easily transformed into statistics, and it measures behavior, opinions and attitudes of a large sample of respondents.

Data that focuses on numbers, frequencies and describes experiments. E.g. True Experiment, Quasi-Experiment and Meta-analysis.

Allows for broader study, involving a greater number of subjects, and enhancing the generalization of the results.

**Can allow for greater objectivity and accuracy of results:**

Generally, quantitative methods are designed to provide summaries of data that support generalizations about the phenomenon under study. In order to accomplish this, quantitative research usually involves few variables and many cases, and employs prescribed procedures to ensure reliability.

**Using standards means that the research can be replicated, and then analyzed and compared with similar studies:**

Quantitative methods allow us to summarize vast sources of information and facilitate comparisons across categories and over time.

**Personal bias can be avoided:**

By researchers keeping a 'distance' from participating subjects and employing subjects unknown to them.

### **Question No.3**

Being a Mayor, from above statement I predict that:

By increasing the number of patrol officers the crime ratio went down between September to December but still it's not clear whether the reduction is caused by weather condition (in winter most of the people stay at their homes so crime ratio is less) or by addition of patrol officers hence there is uncertainty that heighten the number of patrol officers will drop-off in summer too.

Also implementation of this experiment citywide will have more cons than its pros because citywide execution of patrol officers will acquire more number of patrol officers which leads to financial issues by providing each patrol officer with special kits, patrol cars and other operational expenses like fuel cost and salaries etc.

Analogously, here is a question mark on transparency in the recruitment process as well. May be the chief officer pretends to improve the crime situation citywide but in this way he wants to recur his own persons as patrol office. So here is the possibility that the chief officer can take the advantage for his vested interest.

Another possible reason is the lack of crime control skills in existing patrol officers. So as a Mayor I would suggest the chief officer to make improvement in the existing patrol officers by giving them special crime control training and provide them special kits ,patrol cars etc. and install the CCTV cameras citywide which will be helpful in crime reduction citywide.

### **Survey Match:**

The overall survey is based on predictions so it is Prediction/Classification type survey.

**THE END**