Chapter – III

METHODOLOGY

Correct and reliable results depend upon the accuracy and reliability of data. The ultimate success of a research project depends largely upon the method employed therein. In this chapter the method adopted for collecting data, steps adopted in constructing the questionnaire, questionnaire development, administration of questionnaire and method for analysis of the data are described in details.

University Area Demarcation

Selected universities of North India covers various states and union territories such as Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Haryana, Punjab, Delhi, Chandigarh, Rajasthan, Uttar Pradesh, Bihar and Gujarat. These states and union territories are the part of North India.

Sampling

In insights, quality affirmation, and review technique, inspecting is concerned with the choice of a subset of people from inside of a factual populace to gauge attributes of the entire populace. Every perception measures one or more properties, (for example, weight, area, shading) of discernible bodies recognized as autonomous items or people. In review examining, weights can be connected to the information to modify for the example outline, especially stratified testing. Results from likelihood hypothesis and measurable hypothesis are utilized to guide rehearse. In business and medicinal examination, testing is generally utilized for get-together data around a populace.

Population

Fruitful factual practice is in light of centered issue definition. In examining, this incorporates characterizing the populace from which our example is drawn. A populace can be characterized as including all individuals or things with the trademark one wishes to get it. Since there is infrequently enough time or cash to
accumulate data from everybody or everything in a populace, the objective gets to be discovering an agent test (or subset) of that populace.

Here and there what characterizes a populace is self-evident. Case in point, a producer needs to choose whether a cluster of material from creation is of sufficiently high quality to be discharged to the client, or ought to be sentenced for scrap or revamp because of low quality. For this situation, the group is the populace.

Despite the fact that the number of inhabitants in interest regularly comprises of physical items, now and then we have to test after some time, space, or some mix of these measurements. For example, an examination of store staffing could look at checkout line length at different times, or a study on imperiled penguins may plan to comprehend their utilization of different chasing grounds after some time. For the time measurement, the emphasis may be on periods or discrete events.

**Sampling Frame**

In the most clear case, for example, the sentencing of a group of material from creation (acknowledgment inspecting by parts), it is conceivable to recognize and measure each and every thing in the populace and to incorporate any of them in our specimen. In any case, in the more broad case this is impractical. There is no real way to distinguish all rats in the arrangement of all rats. Where voting is not obligatory, there is no real way to distinguish which individuals will really vote at an expected decision (ahead of time of the race). These uncertain populaces are not agreeable to testing in any of the courses beneath and to which we could apply measurable hypothesis.

As a cure, we look for a testing edge which has the property that we can distinguish each and every component and incorporate any in our sample.[1][2][3][4] The most direct kind of casing is a rundown of components of the populace (ideally the whole populace) with suitable contact data. Case in point, in a supposition survey, conceivable testing edges incorporate a constituent register and a phone catalog.
Probability Sampling

A likelihood test is a specimen in which each unit in the populace has a chance (more prominent than zero) of being chosen in the example, and this likelihood can be precisely decided. The blend of these characteristics makes it conceivable to create fair-minded evaluations of populace aggregates, by weighting inspected units as per their likelihood of choice.

Example - We need to gauge the aggregate salary of grown-ups living in a given road. We visit every family unit in that road, distinguish all grown-ups living there, and arbitrarily select one grown-up from every family. (Case in point, we can dispense every individual an arbitrary number, created from a uniform dissemination somewhere around 0 and 1, and select the individual with the most noteworthy number in every family). We then meeting the chose individual and discover their wage.

Individuals living naturally are sure to be chosen, so we basically add their wage to our appraisal of the aggregate. Be that as it may, a man living in a family unit of two grown-ups has just an one-in-two possibility of determination. To mirror this, when we come to such a family, we would number the chose individual's pay twice towards the aggregate. (The individual who is chosen from that family can be inexact see as likewise speaking to the individual who isn't chose).

In the above case, not everyone has the same likelihood of determination; what makes it a likelihood test is the way that every individual's likelihood is known. At the point when each component in the populace has the same likelihood of choice, this is known as an 'equivalent likelihood of choice' (EPS) outline. Such outlines are additionally alluded to as 'self-weighting' in light of the fact that every single inspected unit are given the same weight.

Probability sampling includes:

- Simple Random Sampling,
• Systematic Sampling
• Stratified Sampling
• Probability Proportional to Size Sampling
• Cluster or Multistage Sampling

These various ways of probability sampling have two things in common:

• Every element has a known nonzero probability of being sampled
• Involves random selection at some point.

**Non Probability Sampling**

Nonprobability examining is any testing strategy where a few components of the populace have no possibility of determination (these are once in a while alluded to as 'out of scope'/'under secured'), or where the likelihood of choice can't be precisely decided. It includes the choice of components in view of suspicions with respect to the number of inhabitants in interest, which shapes the criteria for choice. Henceforth, on the grounds that the determination of components is nonrandom, nonprobability testing does not permit the estimation of examining blunders. These conditions offer ascent to avoidance inclination, putting breaking points on the amount of data an example can give about the populace. Data about the relationship in the middle of test and populace is constrained, making it hard to extrapolate from the specimen to the populace.

**Illustration:** We visit each family unit in a given road, and meeting the first individual to answer the entryway. In any family unit with more than one inhabitant, this is a nonprobability test, on the grounds that a few individuals are more prone to answer the entryway (e.g. an unemployed individual who invests the majority of their energy at home is more prone to reply than an utilized housemate who may be grinding away when the questioner calls) and it's not pragmatic to figure these probabilities.

Nonprobability examining systems incorporate comfort testing, standard inspecting and purposive testing. What's more, nonresponse impacts may transform
any likelihood plan into a nonprobability outline if the qualities of nonresponse are not surely knew, subsequent to nonresponse successfully adjusts every component's likelihood of being tested.

Sample Size

Total 30 (thirty) universities was selected for the purpose of the study. 10 (ten) universities each from Central universities, State universities and Private universities of North India which was given below:

- **Central Universities** –
  i. Central University of Bihar, Bihar
  ii. Delhi University, Delhi
  iii. Central University of Gujrat, Gujrat
  iv. Central University of Haryana, Haryana
  v. Central University of Himachal Pradesh, Himachal Pradesh
  vi. Central University of Punjab, Punjab
  vii. Central University of Rajasthan, Rajasthan
  viii. Banaras Hindu University, Varanasi, Uttar Pradesh
  ix. Hemwati Nandan Bahuguna University, Garhwal, Uttarakhand
  x. Central University of Kashmir, Jammu & Kashmir

- **State Universities** –
  i. The Maharaja Sayajirao University of Baroda, Gujrat
  ii. Punjabi University, Punjab
  iii. Saurashtra University, Gujrat
  iv. Kurukshetra University, Haryana
  v. Himachal Pradesh University, Himachal Pradesh
  vi. University of Jammu, Jammu & Kashmir
  vii. University of Kashmir, Jammu & Kashmir
  viii. University of Rajasthan, Rajasthan
  ix. Chhatrapati Shahu Ji Maharaj University, Uttar Pradesh
  x. Punjab University, Chandigarh
Private Universities –

i. Maharshi Markandeshwar University, Haryana
ii. Dev Sanskriti Vishwavidyalaya, Uttarakhand
iii. Lovely Professional University, Punjab
iv. Shri Jagdishprasad Jhabarmal Tibrewala University, Rajasthan
v. Amity University, Noida
vi. Ganpat University, Gujrat
vii. Chitkara University, Himachal Pradesh
viii. Babu Banarasi Das University, Uttar Pradesh
ix. Swami Vivekanand Subharti University, Uttar Pradesh
x. Shiv Nadar University, Uttar Pradesh

Sample Technique

For the purpose of this study purposive and convenience sample techniques were used under non-random method.

Purposive Sampling

The analyst picks the example taking into account who they think would be fitting for the study. This is utilized basically when there is a set number of individuals that have mastery in the region being inquired about, or when the enthusiasm of the exploration is on a particular field or a little gathering.

Convenience Sampling

Coincidental examining (now and then known as snatch, accommodation testing or opportunity inspecting) is a sort of non-likelihood examining that includes the specimen being drawn from that a piece of the populace that is near hand. That is, an example populace chose in light of the fact that it is promptly accessible and helpful, as scientists is drawing on connections or systems to which they have simple access. The analyst utilizing such an example can't deductively make speculations about the aggregate populace from this specimen in light of the fact that it would not be sufficiently illustrative. Case in point, if the questioner was to lead such a study at a strip mall at a young hour in the morning on a given day, the individuals that he/she could meeting would be restricted to those given there at that given time, which
would not speak to the perspectives of different individuals from society in such a territory, if the review was to be directed at distinctive times of day and a few times each week. This kind of inspecting is most valuable for pilot testing. Believability of an analyst's outcomes by comfort testing will rely on upon persuading the peruse that the specimen picked compares to a huge level of the populace from which they are drawn.

**Data Collection**

The researcher made personal approach to the respondents during various University tournaments and on the other academic events and request them to provide the desired information. Motivational measure promise to ensure better response. An assurance is given to keep all the receive information confidential. The scholar, assure to all the respondents to supply a copy of the summary of the findings. Data was collected from selected Central, State and Private Universities of North India. The selected universities names were given below:

- **Central Universities** –
  1. Central University of Bihar, Bihar
  2. Delhi University, Delhi
  3. Central University of Gujrat, Gujrat
  4. Central University of Haryana, Haryana
  5. Central University of Himachal Pradesh, Himachal Pradesh
  6. Central University of Punjab, Punjab
  7. Central University of Rajasthan, Rajasthan
  8. Banaras Hindu University, Varanasi, Uttar Pradesh
  9. Hemwati Nandan Bahuguna University, Garhwal, Uttarakhand
  10. Central University of Kashmir, Jammu & Kashmir

- **State Universities** –
  1. The Maharaja Sayajirao University of Baroda, Gujrat
  2. Punjabi University, Punjab
  3. Saurashtra University, Gujrat
  4. Kurukshetra University, Haryana
Method Used

The questionnaire technique was used to collect the necessary data from the top officials of sports and physical education working in different universities of North India. Research scholar personally visited different selected universities and held discussions with various experts and persons concerned, which help in collection of necessary information.

Broad Survey of the Questionnaire

The purpose of the study was to evaluate the sports facilities at selected central, state and private universities of North India. The instrument for this broad survey was a questionnaire has been prepared carefully under the supervision of the guide. The questionnaire was arranged in logical order to receive desired answers without undue problem for the respondent. Care was taken to frame each question in such a way that they were precise and logical without ambiguity.
Special attention was given to touch all the necessary sections while constructing and developing the questionnaire. The questionnaire thus contained various sections like general information about staff, facilities, equipment, funds and annual budget etc., so as to gain maximum worthwhile detailed and meaningful information about the samples.

**Construction of the Questionnaire**

The questionnaire was frame and construct under the supervision and in consultation with the guide and well qualified and experienced faculty of physical education and utmost care and seriousness is employ.

Taking into consideration the maximum coverage of the area that was survey, great attention was paid to all relevant aspects of the study, so as to get maximum worthwhile and meaningful responses from the subjects.

Further the construction and the arrangement of the questions were made in logical way so that sequence in the response statements would be readily available in an orderly manner. Attempts were made to make the questions simple, clear and relevant leaving no room for ambiguity of vagueness. The following steps were followed in the construction of questionnaire.

**Initial Writing**

Rating scales are one of the best methods for recording observations and focusing the attention of the teacher on the more important aspects of the variables being observed and judged. Ratings are based on subjective opinions and estimates, and such subjective decisions must be made many times daily in the physical education programme as teachers and coaches work with the “whole” student. The rating scale itself is a tool used to help teachers or coaches understand better what they are looking for and to identify the degree or amount of the trait under observation. Rating scales are a valuable tool in a testing programme. Many
of them are constructed and used locally and never appear in the literature. The majorities of these is adapted to a particular situation and group and fulfill a specific need. In general, rating scales serve a multiplicity of purposes and can be applied both to the product and the process.

In the first attempt, various questions, which required either ‘Yes’ or ‘No’, or ‘tick mark’ etc. responses were formulated and afterwards it was change from time to time according to the recommendations of the experts.

**Trial Run**

After formulation of the questionnaire to the satisfaction of the researcher, with the inclusion of all the essential items in an organized manner, the questionnaire was sent for trial run. The purpose of trial run was to discover if the meaning of all statement in the questionnaire was clear and well understood by the respondents. This was also to assess if the question were adequate to obtain the desired information. During the trial run the questionnaire was given to University Director, Deputy Director, Registrar, Assistant Registrar and Head of the Department of Physical Education. They were requesting to answer the questions and critically evaluate the items of the questionnaire, and to offer their suggestion, if any.

**Rewriting**

On the basis of the evaluation of the responses and considering the suggestions, the necessary changes are made in the questionnaire and it was finally formulated after again obtaining the approval of the experts.

**Administration of the Questionnaire**

The copies of the questionnaire were distributed to top management i.e. Director, Deputy Director, Registrar, Assistant Registrar and Head of the Department with the request to give correct and accurate answers. These questionnaires were sent to all respondents and receive by post and the researcher himself had visited some place to collect personally.
Method of Analyzing the Data

The responses obtained from respondents from various universities were interpreted. For the purpose of analyses and interpretation of the findings descriptive statistics was use.

Descriptive Statistics

Illustrative measurements are the order of quantitatively portraying the principle elements of an accumulation of data, or the quantitative depiction itself. Enlightening insights are recognized from inferential measurements (or inductive measurements), in that graphic insights mean to condense a specimen, instead of utilization the information to find out about the populace that the example of information is thought to speak to. This for the most part implies that unmistakable measurements, dissimilar to inferential insights, are not created on the premise of likelihood hypothesis. Notwithstanding when an information investigation makes its primary inferences utilizing inferential insights, enlightening measurements are by and large additionally introduced. Case in point in a paper giving an account of a study including human subjects, there ordinarily shows up a table giving the general example size, specimen sizes in vital subgroups (e.g., for every treatment or presentation gathering), and demographic or clinical attributes, for example, the normal age, the extent of subjects of every sex, and the extent of subjects with related comorbidities.

Use in Statistical Analyses

Expressive insights give basic synopses about the example and about the perceptions that have been made. Such rundown may be either quantitative, i.e. synopsis measurements, or visual, i.e. easy to-comprehend charts. These outlines might either frame the premise of the beginning portrayal of the information as a feature of a more broad measurable examination, or they may be adequate all by themselves for a specific examination.

For instance, the shooting rate in ball is a spellbinding measurement that outlines the execution of a player or a group. This number is the quantity of shots made separated by the quantity of shots taken. For instance, a player who shoots
33% is making pretty nearly one shot in each three. The rate outlines or portrays various discrete occasions. Consider additionally the evaluation point normal. This single number depicts the general execution of an understudy over the scope of their course encounters.

The utilization of clear and rundown measurements has a broad history and, without a doubt, the basic classification of populaces and of financial information was the first way the point of insights showed up. All the more as of late, an accumulation of outline procedures has been figured under the heading of exploratory information examination: a sample of such a system is the case plot.

In the business world, engaging insights gives a valuable rundown of numerous sorts of information. Case in point, financial specialists and representatives may utilize a verifiable record of return conduct by performing observational and explanatory investigations on their interests so as to settle on better putting choices later on.

**Descriptive and Inferential Statistics**

At the point when dissecting information, for example, the imprints accomplished by 100 understudies for a bit of coursework, it is conceivable to utilize both expressive and inferential insights in your investigation of their imprints. Commonly, in most research led on gatherings of individuals, you will utilize both clear and inferential measurements to examine your outcomes and reach determinations. So what are distinct and inferential measurements? What's more, what are their disparities?

**Descriptive Statistics**

Illustrative measurements is the term given to the investigation of information that helps depict, indicate or abridge information in an important manner such that, for instance, examples may rise up out of the information. Expressive measurements don't, on the other hand, permit us to make conclusions past the information we have broken down or achieve conclusions with respect to any speculations we may have made. They are basically an approach to portray our information.
Distinct measurements are vital in light of the fact that on the off chance that we basically introduced our crude information it is difficult to envision what the information was demonstrating, particularly if there was a great deal of it. Clear measurements hence empower us to exhibit the information in a more important manner, which permits less complex understanding of the information. Case in point, on the off chance that we had the aftereffects of 100 bits of understudies' coursework, we may be keen on the general execution of those understudies. We would likewise be keen on the conveyance or spread of the imprints. Engaging insights permit us to do this. Instructions to legitimately depict information through insights and charts are a vital subject and examined in other Laerd Statistics guides. Normally, there are two general sorts of measurement that are utilized to depict information:

**Measures of Central Tendency**

These are methods for depicting the focal position of recurrence dissemination for a gathering of information. For this situation, the recurrence appropriation is essentially the circulation and example of imprints scored by the 100 understudies from the most reduced to the most noteworthy. We can portray this focal position utilizing various measurements, including the mode, middle, and mean. You can read about measures of focal propensity here..

**Measures of Spread**

These are methods for condensing a gathering of information by depicting how spread out the scores is. For instance, the mean score of our 100 understudies may be 65 out of 100. On the other hand, not all understudies will have scored 65 imprints. Maybe, their scores will be spread out. Some will be lower and others higher. Measures of spread help us to compress how spread out these scores is. To portray this spread, various measurements are accessible to us, including the reach, quartiles, supreme deviation, fluctuation and standard deviation.
Inferential Statistics

We have seen that expressive insights give data about our quick gathering of information. For instance, we could ascertain the mean and standard deviation of the exam marks for the 100 understudies and this could give significant data about this gathering of 100 understudies. Any gathering of information like this, which incorporates all the information you are keen on, is known as a populace. A populace can be little or substantial, the length of it incorporates all the information you are keen on. Case in point, if you were keen on the exam signs of 100 understudies, the 100 understudies would speak to your populace. Illustrative insights are connected to populaces, and the properties of populaces, similar to the mean or standard deviation, are called parameters as they speak to the entire populace (i.e., everyone you are occupied with).

Regularly, in any case, you don’t have entry to the entire populace you are keen on examining, yet just a set number of information. Case in point, you may be occupied with the exam signs of all understudies in the UK. It is not possible to quantify all exam signs of all understudies in the entire of the UK so you need to gauge a littler specimen of understudies (e.g., 100 understudies), which are utilized to speak to the bigger populace of all UK understudies. Properties of tests, for example, the mean or standard deviation, are not called parameters, but rather insights. Inferential insights are systems that permit us to utilize these specimens to make speculations about the populaces from which the examples were drawn. It is, consequently, vital that the example precisely speaks to the populace. The procedure of accomplishing this is called examining (testing methodologies are talked about in subtle element here on our sister site). Inferential insights emerge out of the way that testing normally acquires examining mistake and along these lines an example is not anticipated that would flawlessly speak to the populace. The systems for inferential insights are (1) the estimation of parameter(s) and (2) testing of factual theories.