**Module 5 Questions:**

**Q1. Explain the difference between data collection and data capture (10mrks)**

Data collection is a process of collecting information from all the relevant sources to find answers to the research problem, test the hypothesis and evaluate the outcomes.

Some key steps are:

* defining data (quantitative, qualitative)
* defining methods: semi structured interviews, automated tools/models/conversion ratios, shot survey, group workshops/ focus groups, tracking relevant secondary information, internal records
* quality control (detection/monitoring and action)
* gathering information on the ground by enumerators with forms.

Data collection is prior to data capture.

Data capture is converting written text (changing it) into machine-readable form (that can be processed by a computer hardware and software).

The key steps to data capture include:

* Receipt of forms
* Editing
* Querying
* Imputation
* Coding
* Conversion
* Verification
* Validation

**Q 2: Explain the benefits of correctly interpreting data in an M&E process. (5 mrks)**

Data interpretation refers to the implementation of processes through which data is reviewed for the purpose of arriving at an informed conclusion. Interpretation data objectively leads to correct conclusions and makes the most informed decisions possible. If data are interpreted with a bias, the results can therefore be misleading or incomplete. Unfortunately, having a 100 percent bias-free and objective frame of mind is difficult.

Another data benefit is anticipating needs with trends identification. Data insights provide knowledge, and knowledge is power. For example, in marketing this helps to identify consumers needs.

Proper data analysis is cost efficiency. It gives the ability to alert management to cost-reduction opportunities.

Collecting and analyzing data gives clear foresight and allows for example enterprises to gain better knowledge about themselves, their processes and performance.

**Q3. Explain the main concerns for a data analyst while undertaking the task of data analysis. (10 mrks)**

It is important for the data analyst at the beginning to have a plan of analysis to see in advance where you are going and if this will be beneficial. Data analysis needs some skills. One of the big concern is to create meaningful information, transform data collected into credible evidence. Analysis of qualitative data is more difficult. It is important to organize and analyze data according to these criteria: relevance, effectiveness, efficiency, results/impact, sustainability and the goals and objective of the analysis. Data collected must also be measurable and quantifiable to be analyzed. Other big challenge for the data analyst is to have proper tools. Data analyzed must be beneficial to the audience. In order to meaningful information it is also important to explore relationships between variables and also use different sources of information.

Data analysis is challenging as there are more and more big data collected than important and sometime unstructured data.

**Q4. Describe key measures that are mandatory for data quality assurance at program level and explain the value of data quality assurance. (15 mrks).**

Key measures to ensure data quality are:

* Increasing the HR capacity: in general people in charge of monitoring and evaluation in NGOs are very few. Data quality insurance requires enough people for specific tasks: collecting, interpretating, analyzing, reporting. The problem is that project designers forget to budget enough staff for Monitoring and evaluation. It is the same programme staff who is in charge of this, what is incorrect to ensure data quality insurance;
* Strengthen national mechanisms: they are weak with less specialized, motivated people and functional systems. Many project don’t have a monitoring and evaluation plan.
* Establish an electronic/ web based data capturing, reporting and management system: the more the system is manual the more there are some errors and this is time consuming. Using for example Magpi, data collection with smartphones is atomically updated and graphs are automatically generated.
* Periodic reviews and revision of data collection and reporting tools: depending on context and the evolution of the situation, adapting tools is key to capture relevant information. This is a technical are which uses also technology.
* Provide training and mentorship in Monitoring and evaluation: tools and methods are evolving, so it is important to strengthen staff capacity building.
* Provide technical support to assist field staff: support is necessary for staff to correct misunderstanding and interpretation. Data and especially big data storage is sensitive and so it is important to develop data storage mechanism all time.

The value of data quality assurance is that it ensures accuracy, consistency, completeness and timeliness of data, which will result of conclusions suited to the reality. Imagine that are many errors in data or data are not reliable and effective, so analysis and conclusions will be false and decision making wrong. That is why processes and resources must be identified and budgeted for this.

**Q5: In about 350 words, describe the main challenges to effective data interpretation and analysis. (10 mrsk)**

* One of the most common data misinterpretation risks is correlation mistaken for causation: it is the tendency to mix the cause of a phenomenon with correlation. Actions can occur together absent a cause and effect relationship.
* Confirmation bias: it is based on subjective desires, when you have a theory or hypothesis in mind and analyze data solely to confirm it. You must analyze data with a team of objective individuals, trying to disprove a hypothesis not to prove it.
* Irrelevant data: analysis can focus on data that is irrelevant to the problem they are trying to correct. Clearly frame any data analysis variables and KPIs prior to engaging in a data review
* Qualitative data analysis have specific challenges. For example, sampling-related issues: qualitative approach uses limited sample size. Some other challengers are related to observational biases.
* Qualitative data are very difficult to interpret unless grouping responses in categories
* First data collected are meaningless. One of the challenges is to give to data some signification
* Another challenge is to be able to criticize data. This requires to have a strong background of information about the same subject so as to compare and analyze them.
* Statistics skill is also a big challenge. Mathematical calculations resulting in graphs and charts are necessary for quantitative data and analysis.