Theoretical Framework

- Basic steps:
  - Identify and label the variables correctly
  - State the relationships among the variables: Formulate hypotheses
  - Explain how or why you expect these relationships

A theoretical framework represents your beliefs on how certain phenomena (or variables or concepts) are related to each other (a model) and an explanation on why you believe that these variables are associated to each other (a theory).
Dependent and Independent Variables

- **Dependent variable (DV)**
  - Is of primary interest to the researcher. The goal of the research project is to understand, predict or explain the variability of this variable.

- **Independent variable (IV)**
  - Influences the DV in either positive or negative way. The variance in the DV is accounted for by the IV.

Variables

- Any concept or construct that varies or changes in value

- Main types of variables:
  - Dependent variable
  - Independent variable
  - Moderating variable
  - Mediating variable (or intervening)

Examples

- **Example 1:** Party X would like to increase its votes which come from females.
  - Answer: The dependent variable is votes which come from females because it is the primary variable of interest to the party, who wants to increase the number of votes.

- **Example 2:** A marketing manager wonders why the recent advertisement strategy does not work. What would be the dependent variable here?
  - Answer: The dependent variable is advertisement strategy because the marketing manager is interested in knowing why the recent strategy does not work.
Example 3

- Research studies indicate that successful new product development has an influence on the stock market price of the company. That is, the more successful the new product turns out to be, the higher will be the stock market price of the firm.
- **Independent Variable** is the success of the new product.
- **Dependent Variable** is the stock market price.

Example 4

- A manager believes that awarding system and training would increase the production level of the workers.
- **Answer**
  - **Dependent V.**: Production level (Main variable of interest)
  - **Independent V.**: Awarding system and training (Help to explain the variance in production)

Example 5

- It has been found that there is a relationship between the availability of Reference Manuals that manufacturing employees have access to, and the product defects. That is, when workers follow the procedures laid down in the manual, they are able to manufacture products that are flawless.
- **Dependent Variable**: Number of defected products.
- **Independent Variable**: Availability of reference manuals.

Example 7 (Cont.)

- Although this relationship is true in general for all workers, but it is not true for workers who are not using the manual every time they need it.
- Thus, the interest and inclination of the workers is a **Moderating Variable**.
Example 8

- A prevalent theory is that the diversity of the workforce (according to different ethnic origins, races, and nationalities) contributes more to organizational effectiveness because each group brings its own special expertise and skills to the workplace. This synergy can be exploited, however, only if managers have special talents to manage the diverse work group; otherwise, they will be useless.

Moderating Variables

- Moderator (e.g., gender, race, education level or level of reward) variable that affects the direction and/or strength of relation between independent and dependent variable.

Independent vs. Moderating Variable

Situation 2

Another research study indicates that the willingness of the employees to learn new ways of doing things is not influenced by the quality of the training programs offered by the organizations to all people without any distinction. Only those with high growth needs seem to have the yearning to learn to do new things through specialized training.

Independent vs. Moderating Variable

Situation 1:

- A research study indicates that the better the quality of the training programs in an organization and the greater the growth needs of the employees (where the need to develop and grow on the job is strong), the greater is their willingness to learn new ways of doing things.
- The dependent variable: the employees willingness to learn.
- The independent variables: the training programs and growth need strength.
The Mediating (Intervening) Variable

- Is one that surfaces between the time the independent variables start operating to influence the dependent variable and the time their impact is felt on it.

Example 9

- **The dependent variable**: the organizational effectiveness.
- **The independent variable**: the workforce diversity.
- **The intervening variable**: that surfaces as a function of the diversity in the workforce is creative synergy.

Example 8

- A prevalent theory is that the **diversity of the workforce** (according to different ethnic origins, races, and nationalities) contributes more to **organizational effectiveness** because each group brings its own special expertise and skills to the workplace. This synergy can be exploited, however, only if managers have special talents to manage the diverse work group; otherwise, they will be useless.
Theoretical Framework

- Having examined the different kinds of variables that could operate in a situation and how the relationships among these can be established, it is now possible to see how we can develop the conceptual model or the theoretical framework for our research.

1. The variables considered relevant to the study should be clearly defined.
2. A conceptual model that describes the relationships between the variables in the model should be given.
3. A clear explanation of why we expect these relationships to exist.

Hypotheses Development

- Definition of Hypotheses: A proposition that is empirically testable. It is an empirical statement concerning the relationship among variables.

   - Good hypothesis:
     - Must be adequate for its purpose
     - Must be testable
     - Must be better than its rivals

   - Can be:
     - Directional
       - the direction of the relationship between the variables (positive/negative) is indicated.
     - The greater the stress experienced in the job, the lower the job satisfaction of employees.
     - Women are more motivated than men are.

     - Non-directional
       - There is a relationship between age and job satisfaction.
Null and Alternate Hypotheses

- The **null hypotheses** is a proposition that states a definitive, exact relationship between two variables.
- It states that the population correlation between two variables is equal to zero (or some definite number).
- In general, the null statement is expressed as no (significant) difference between two groups.

Statement of Hypotheses: Formats

- **If-Then Statements**
  Can be used to test whether there are differences between two groups. It takes two forms:
  - (1) Employees who are more healthy will take sick leave less frequently.
  - (2) If employees are more healthy, they will take sick leave less frequently.

Examples for the Directional Relationships

- The **null hypotheses**: In past example were we state that: **Women are more motivated than men are.** Then,
  - \( H_0: \mu_M = \mu_W \)
  - Or
  - \( H_0: \mu_M - \mu_W = 0 \)
  Where \( H_0 \) represents the **null hypotheses,**
  - \( \mu_M \) is the mean motivational level of the men,
  - \( \mu_W \) is the mean motivational level of women.

The Alternate Hypotheses

- The **alternate hypotheses** is the opposite of the null hypotheses, is a statement expressing a relationship between two variables or indicating differences between groups.
Examples for the nondirectional relationship

- There is a difference between the work ethic of American and Arabian employees.
- The null hypotheses would be:
  \[ \text{Ho: } \mu_{AM} = \mu_{AR} \]
  Or
  \[ \text{Ho: } \mu_{AM} - \mu_{AR} = 0 \]
  Where \( \mu_{AM} \) is the mean work ethic value of Americans and \( \mu_{AR} \) is the mean work ethic value of Arabs.

- The alternate hypotheses for the above example:
  \[ \text{HA: } \mu_{AM} < \mu_{AR} \]
  Which is the same as
  \[ \text{HA: } \mu_{AM} > \mu_{AR} \]
  Where HA represents the alternate hypotheses.

Examples for the nondirectional relationship

- For the example: The greater the stress experienced in the job, the lower the job satisfaction of employees.
- The null hypotheses would be:
  \[ \text{Ho: } \text{there is no relationship between stress experienced on the job and the job satisfaction of employees.} \]
  This would be statistically expressed by:
  \[ \text{Ho: } \rho = 0 \]
  where \( \rho \) represents the correlation between stress and job satisfaction, which in this case is equal to 0 (no correlation).

Examples for the nondirectional relationship

- The alternate hypotheses for the above example would statistically be set as:
  \[ \text{HA: } \mu_{AM} \neq \mu_{AR} \]
  where HA represents the alternate hypotheses.
Examples for the nondirectional relationship

- For the example: There is a relationship between age and job satisfaction.
- For this nondirectional statement, the null hypotheses would be statistically expressed as:
  \[ H_0: \rho = 0 \]

- The alternate hypotheses would be expressed as:
  \[ H_a: \rho \neq 0 \]

Examples for the nondirectional relationship

- The alternate hypotheses for the above null, can be stated as:
  \[ H_a: \rho < 0 \] (the correlation is negative)

Exercise

Give the hypotheses for the following framework:

![Diagram: Service quality → Customer satisfaction → Customer switching]

Exercise

Give the hypotheses for the following framework:

![Diagram: Service quality → Customer satisfaction → Customer switching → Switching cost]
After formulating the null and alternate hypotheses, the appropriate statistical tests (t tests, F tests) can be applied, which would indicate whether or not support has been found for these hypotheses.