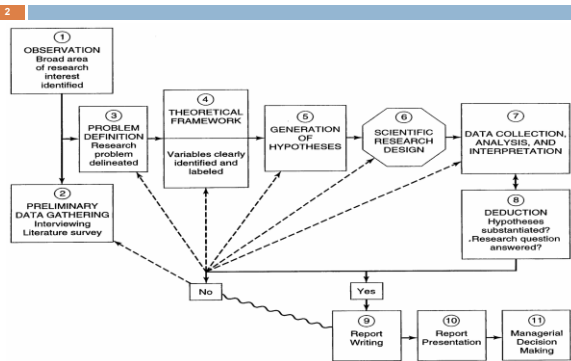


The Steps for Research process



THE RESEARCH PROCESS: THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

CHAPTER 4

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**

Theoretical Framework

- 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

6

- 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

5

- Any concept or construct that varies or changes in value
- Main types of variables:
 - Dependent variable
 - Independent variable
 - Moderating variable
 - Mediating variable (or intervening)

Example 2

8

- 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.

Examples

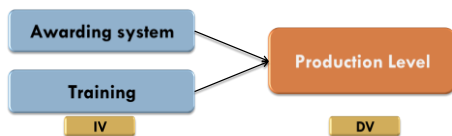
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- **What would be the dependent variable here?**
- **Example 1:** Party X would like to increase its votes which come from females.
- The **dependent variable** is votes which come from females because it is the primary variable of interest to the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

Example 4

10

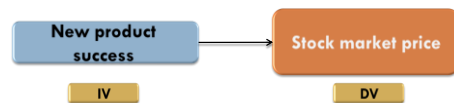
- A manager believes that awarding system and training would increase the production level of the workers.
- Answer
Dependent V.: Production level (Main variable of interest)
Independent V.: Awarding system and training (Help to explain the variance in production)



Example 3

9

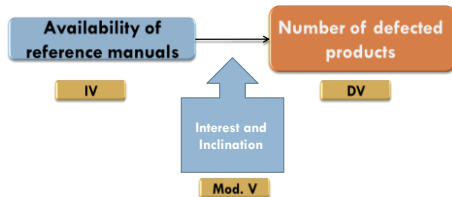
- Research studies indicate that successful new product development has an influence on the stock market price of the company. That is, the more successful the new product turns out to be, the higher will be the stock market price of the firm.
- **Independent Variable** is the success of the new product.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



Example 7 (Cont.)

12

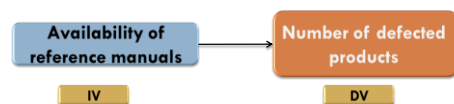
- Although this relationship is true in general for all workers, but it is **not true** for workers who **are not using the manual every time they need it**.
- Thus, the **interest and inclination** of the workers is a **Moderating Variable**.



Example 5

11

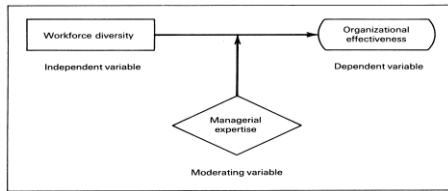
- It has been found that there is a relationship between the availability of **Reference Manuals** that manufacturing employees have access to, and the **product defects**. That is, when workers follow the procedures laid down in the manual, they are able to manufacture products that are flawless.
-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



Example 8

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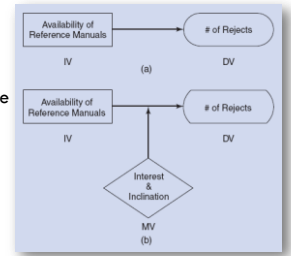
- A prevalent theory is that the **diversity of the workforce** (according to different ethnic origins, races, and nationalities) contributes more to **organizational effectiveness** because each group brings its own special expertise and skills to the workplace. This synergy can be exploited, however,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



Moderating Variables

13

- 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.



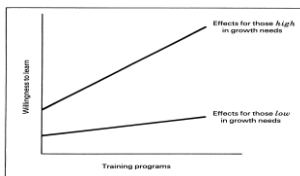
13

Independent vs. Moderating Variable

16

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.

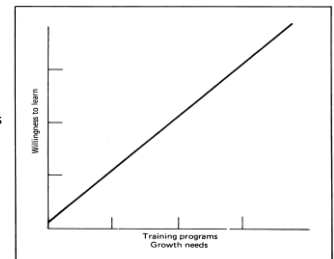


Independent vs. Moderating Variable

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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



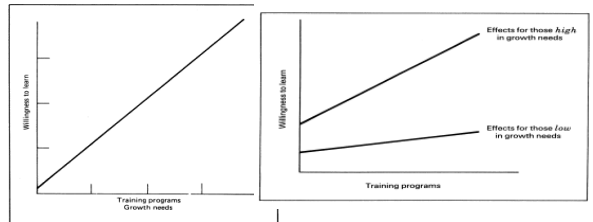
The Mediating (Intervening) Variable

18

- 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.

Independent vs. Moderating Variable

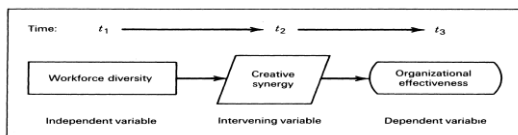
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Example 9

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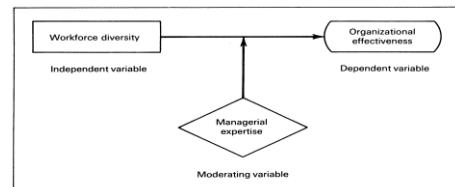
- **The dependent variable:** the organizational effectiveness.
- **The independent variable:** the workforce diversity.
- **The intervening variable:** that surfaces as a function of the diversity in the workforce is creative synergy.



Example 8

19

- 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.



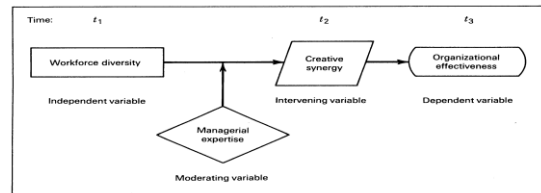
Theoretical Framework

22

- 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.

Figure 7

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FIGURE 5.7

Hypotheses Development

24

- **Definition of Hypotheses:** Is a logical relationship between two or more variables expressed in the form of a testable statement.

Hypothesis

23

- A proposition that is empirically testable. It is an empirical statement concerned with 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

26

- 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

25

- **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

28

- 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**,
 μ_M is the mean motivational level of the men,
 μ_w is the mean motivational level of women.

The Alternate Hypotheses

27

- 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

30

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

29

- The **alternate hypotheses** for the above example:
 - HA : $\mu_M < \mu_w$
 - Which is the same as
 - HA : $\mu_M > \mu_w$
- Where HA represents the alternate hypotheses.

Examples for the nondirectional relationship

32

- For the example: The greater the stress experienced in the job, the lower the job satisfaction of employees.
 - The **null hypotheses** would be:
 - Ho: There is no relationship between stress experienced on the job and the job satisfaction of employees.
 - This would be statistically expressed by:
 - Ho: $P = 0$
- where **P** represents the correlation between stress and job satisfaction, which in this case is equal to 0 (no correlation).

Examples for the nondirectional relationship

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- The **alternate hypotheses** for the above example would statistically be set as:
 - HA: $\mu_{AM} \neq \mu_{AR}$
- where HA represents the alternate hypotheses.

Examples for the nondirectional relationship

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- For the example: *There is a relationship between age and job satisfaction.*
- For this **nondirectional statement**, the **null hypotheses** would be statistically expressed as:
Ho: $\rho=0$
- The **alternate hypotheses** would be expressed as:
Ho: $P \neq 0$

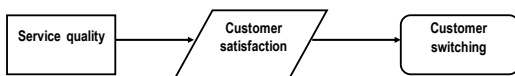
Examples for the nondirectional relationship

33

- The **alternate hypotheses** for the above null, can be stated as:
HA: $P < 0$ (the correlation is negative)

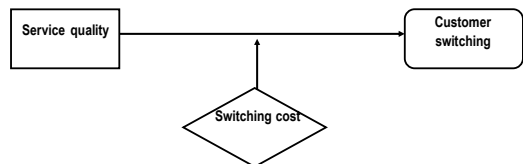
Exercise

Give the hypotheses for the following framework:



Exercise

Give the hypotheses for the following framework:



37

- 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.