Concept Of Variables

Abstract

Variables are qualities, properties, or characteristics of person, things, or situations that change or vary (Marudhar, 2019). Chin and Kramer, 2010 stated that 'variables are concepts at different level of abstraction that are concisely defined to promote their measurement or manipulation within study'. Variables are classified based on their nature, action, and effects on the variables. Variable is the characteristic or attribute of an individual, group, educational system, or the environment that is of interest in a research study. Variables can be straightforward and easy to measure, such as gender, age, or course of study. Other variables are more complex, such as socioeconomic status, academic achievement, or attitude toward school. Variables may also include an aspect of the educational system, such as a specific teaching method or counselling program. Characteristics of the environment may also be variables, such as the amount of school funding or availability of computers. Therefore, once the general research topic has been identified, the researcher should identify the key variables of interest.

Variable

"A variable, as the name implies, is something that varies"(Denise. F&Beck,C.T2004). It may be weight, height, anxiety levels, income, and body temperature and so on. Each of these properties varies from one person to another and also has different values along a continuum. It could be demographic, physical or social and include religion, income, occupation, temperature, humidity, language, food, fashion, etc. Some variables can be quite concrete and clear, such as gender, birth order, types of blood group etc while others can be considerably more abstract and vague(Kaur,S.P,,2013).

Variable is a property that takes on different values (Fred, K.N, 1983). It is also logical groupings of attributes (Babbie, E,, 1983).Attributes are characteristics or qualities that describe an object. For example if gender is a variable then male and female are the attributes. If residence is the variable then urban, semi urban, rural become the attributes. So attributes here describe the residence of an individual. Within the context of a research investigation, concepts are generally referred to as variables (Suduzai, S.A, 2021).

Variables are an essential part of quantitative research. Variables are characteristics, or a quantity of a phenomenon that is the focus of a research project. Variables can be measured or categorised, and their values vary across unit, or across time (Geol.N).Gender, hair colour, shoe size, income levels, disease status all of these are examples of variables. However, variables can also measure abstract concepts for example, self-esteem, well-being, sense of religiosity, intelligence, etc. Some variables are more complex, and may be studied through different dimensions of a particular item or phenomenon. It is essential to define the term as variables so that they can be quantified and measured. That is, the variable have to be able to work for you to operate, or becomes operational (Bhaduri. A).

Quantitative research places great emphasis on variables because the main goal of quantitative research is to examine the relationship between two or more variables. Therefore,

once the researcher identifies a research topic, the next step is to identify the key variables in the study. The best way to do this is to read studies that are similar to your chosen study. Once you analyse the different types of variables identified by other researchers, you will have a better idea of what variables might work best in your project.

The Role of Variables in Scientific Study

Variables play a critical role in scientific studies as they represent measurable traits or characteristics that researchers manipulate, observe, or control to understand relationships or phenomena. Variables are categorized into three main types:

Independent variables

Manipulated by researchers to observe their effect.

Dependent variables

The outcomes or responses measured in relation to the independent variable.

Controlled variables

Kept constant to ensure reliable results.

The proper identification and management of variables allow for clear hypotheses testing and reliable conclusions in scientific research (Creswell & Creswell, 2018).

Importance of Identifying The Appropriate Variables

- Variables provide focus to the study. So if you pick the wrong ones, the findings of the study may go in a direction that was not expected by you.
- It is also important to focus on the methods and tools for measuring the selected variables.
- Picking the wrong ones may also take the findings into an unintended direction.
- Variables are also useful when you are searching for other studies (for example in journal articles) that are similar to yours. Thus, the variables can serve as search terms.

- Identifying variables in Research Design.

After the key variables have been identified, the researcher needs to identify how those variables will be studied, which is the heart of the research design. There are four primary research designs.

Four Primary Research Designs

Descriptive

Describes the current state of variables. For example, a descriptive study might examine teachers' knowledge of literacy development. This is a descriptive study because it simply describes the current state of teachers' knowledge of literacy development.

Causal Comparative

Examines the effect of one variable that cannot be manipulated on other variables. An example would be the effect of gender on examination malpractice. A researcher cannot manipulate a person's gender, so instead males and females are compared on their examination malpractice behaviour. Because the variable of interest cannot be manipulated. Causal comparative studies (sometimes also called ex post facto) compare two groups that differ on the independent variable (e.g., gender) on the dependent variable (e.g., examination malpractice). Thus, the key identifying factor of a causal comparative study is that it compares two or more groups on a different variable.

Co relational

Describes the relationship between Variables. Co relational studies must examine two variables that have continuous values. For example, academic achievement is a continuous variable because students' scores have a wide range of values oftentimes from 0 to 100. However, gender is not a continuous variable because there are only two categories that gender can have: male and female. A co relational study might examine the relationship between motivation and academic achievement both continuous variables. Note that in a co

relational design, both variables must be studied within the same group of individuals. In other words, it is acceptable to study the relationship between. Academic achievement and motivation in students because the two variables (academic achievement and motivation) are in the same group of individuals (students). However, it is extremely difficult to study two variables in two groups of people, such as the relationship between teacher motivation and student achievement. Here, the two variables are compared between two groups: teachers and students. I strongly advise against this latter type of study.

Experimental and Quasi-Experimental

Examines the effect of a variable that the researcher manipulates on other variables. An experimental or quasi-experimental study might examine the effect of telling stories on children's literacy skills. In this case, the researcher will "manipulate" the variable of telling stories by placing half of the children in a treatment group that listens to stories and the other half of children in a control group that gets the ordinary literacy instruction.

Table 1

Example for variable

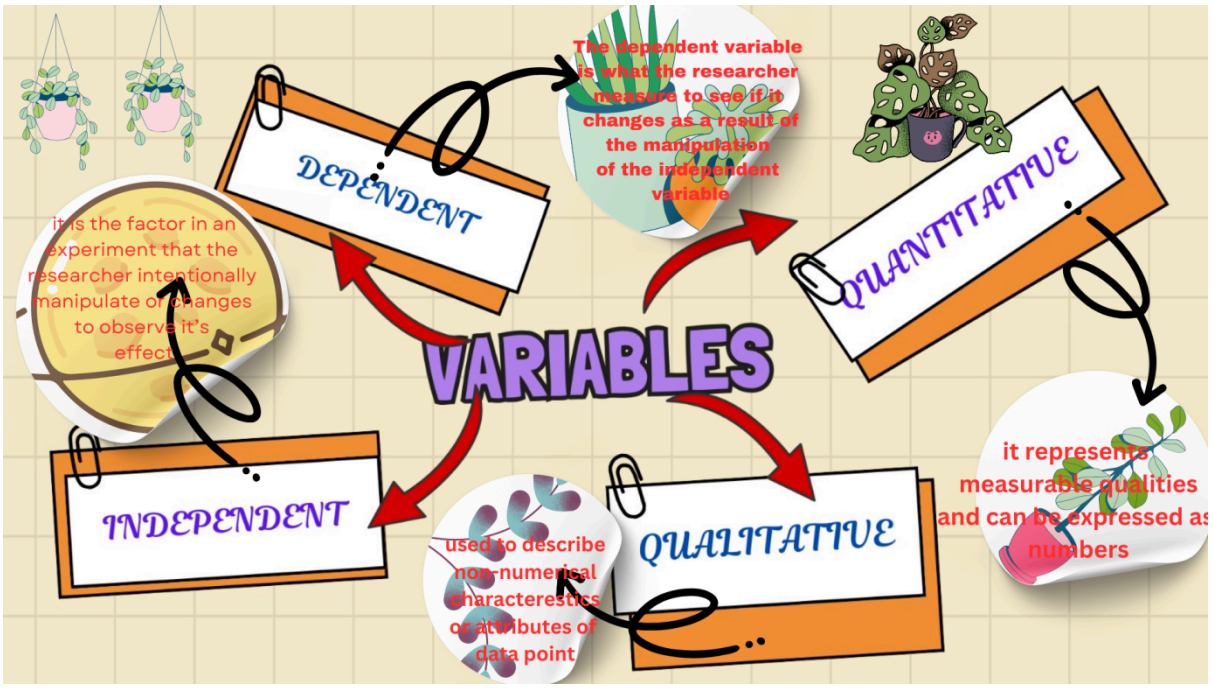
Variable	Data	Type of variable	Scale of measurement
Gender	Male Female	Qualitative	Nominal
Age	22 years old 25 years old 21 years old 34 years old 30 years old	Quantitative	Ratio

Education level	Diploma		
	Bachelor degree		
	Master degree	Qualitative	Ordinal
	PhD		

Note

Figure 1

Types of variable.



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