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Defining and Contextualizing types of Experimental and Non-Experimental Research

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Abstract
Office management science is relatively a new evolving program that emerged from "business education" to what was known before now as secretariat administration within the polytechnic education has, further evolved into what is presently called "office management or office administration" depending which of the university is mounting the program and what their philosophy is toward the program. The basic foundation is on the content and context of running office space and the human resource management within the space in a contextual period and the challenges associated with it. One of the tools to circumnavigate the knowledge-based program is by understanding the basic rudiments of research technique and one of such is the challenge of Experimental and non-experimental research techniques are sometimes difficult to identify by budding researchers in office information management among students and other scholars whose intent are to develop knowledge-based research in their field. Since the field of study in office information management encompasses sometimes quasi systems of research it becomes important to understand experiment and non-experiment system of research properly, for the student to do exploits in new innovations in the principles of modern practice in office information management. This paper is an attempt to identify the meaning and importance of these techniques of creating knowledge for beginners in research to understand the process of locating where their interest lies and develop it gradually. The understanding of research techniques is very important in the development of the capacity of students in office information and management studies. What the authors' emphasis here is the basic understanding of research techniques so that the budding researchers within this discipline can locate clearly where and what are the problems in the field of students' studies and research.

Keywords: Experimental research, non-experimental research, cross-sectional studies, correctional studies and Office Management.

Introduction

This paper was born out of the desire to give an overview structure of research to the budding office management student peculiarly student of office administration and management of Yaba College of Technology. The idea is to give them the basic understanding of the kind of research design they would be encountering as they prepare for their project report in the final year in the college; and it is our hope this discussion would also enrich their basic knowledge in academic writing. The former name of this program from secretariat administration has emerged into more complex based social science program; so, the idea to understand the behavior of resource persons and the challenges of office space in the new century has become a critical challenge. Understanding the basic research and formal academic writing technique has become a frontal challenge by the present students of the program. Research technique is a new course in their syllabus and sometimes these students struggle to get the right materials for their reading and expansion of their knowledge. Office management is a discipline that in a way deals with human resource management and administrative unit it becomes important for the students to understand the basic research tools in engaging in a critical academic discourse that would lead to critical survey some of the quantitative and qualitative research ideas. As a discipline in social science understanding the behavioral pattern of resource person and how office is managed is a critical discourse within this emerging internet age. The experimental and non-experimental tools of investigation become an effective to tools to manage in this regard.

Study designs, according to Creswell (2017: 1), are strategies and procedures for research that shield everything from universal suppositions to exhaustive statistics gathering and scrutiny approaches. This strategy gave rise a number of pronouncements, none of which must be made in the order in which they make sense to someone and the other of their presentation. The ultimate decision entails deciding which design should be employed to investigate a subject. The researcher's perspective is premised on, procedure of inquiry, and distinct method of statistics gathering, discussion, and appraisal sums up to a position of agreeing. The nature of research problems or topics being discussed, as well as the study's audience, is all factors that go into the components of a research design. A systematic plan to examine a scientific subject is also known as research design. Different types of research designs can be classified into three categories: quantitative, qualitative, and mixed method research designs. Experimental research can be studied and its possibilities thoroughly investigated under the aforementioned three processes for the benefit of knowledge. The most prevalent kind of study, which many people refer to as scientific research since it takes a scientific approach to the major topic, is experimental research.

Experimental research

There is always scrutiny, sometimes difficulty faced by budding scholars in an office information, structure and innovation on the premise of new practice and scholarship on what is the best method to adopt during investigating new or current innovation on an office methodology, here both experiments, non-experimental and quasi method comes to focus. What is experimental or non-experimental and perhaps quasi research method? Experimental research is a precise method of investigation in which one or more self-governing factor is changed and applied to more reliable factors in order to determine their impact on the letter. The effect of the independent variable on the dependent variables is always observed and recorded throughout time to help researchers come to a logical conclusion about the link between these two types of variables. In the physical and social sciences, psychology, and education, the experimental research approach is frequently employed. It is based on a simple logic that compares two or more groups, but it can be challenging to implement. Experimental research designs, which are most commonly associated with laboratory test procedures, entail gathering quantitative data and doing statistical analysis on it during the study process. As a result, it might be considered a quantitative research method.

What Are the Different Types of Experimental Design?

The way the researcher distributes people to different conditions and groups determines the types of experimental study designs. Pre-experimental, quasi-experimental, and real experimental researches are the three types.

Design of Pre-Experimental Research

In a preparation of scientific learning strategy, a set or quantity of reliable collections is understood for the effect of a sovereign element which are believed to power change. This is the most primary factor of tentative study pattern, which seems not to have a regulator collection.

Explorative investigation, though, which seem critically important, cannot measure to the true-explorative requirements in various domains. There are three different sorts of pre-experimental research designs.

- **Research Design for Single Case study:**

Only a dependent group or variable are investigated within this sort of experimental research. It's posttest research since it's done after some sort of treatment that's supposed to induce change.

- **One-on-one Pre- and post-testing:**

By administering the examination to a cluster earlier and after handling, this research design incorporates both posttest and pretest studies. The former is given at the start of treatment, while the latter is given at the conclusion.

• Static-group Comparison:
In a stable-cluster judgment investigation, two or more clusters are observed, with only one of the groups receiving therapy while the others remain unchanged. All of the groups are retested after therapy, and witnessed modifications concerning them are presumed to be due to treatment.

Design of a Quasi-experimental Study:
"Quasi" indicates "partial," "half," or "false." As a result, while quasi-experimental research resembles actual experimental research, it is not the similarities. Participants in mixed -trials are not allotted at random, and as a result, they are employed in situations where randomization is problematic or impossible.

This is a typical occurrence in institutional study, where supervisors decline in tolerating students to be chosen at random for experimental samples. The period succession, no corresponding governor's cluster's strategy, and compensated schemes are all instances of quasi-experimental research designs.

True Experimentation in Research
To confirm or reject a theory, true experimental research relies on statistical analysis. It's the most precise sort of experiment, and it can be done with or without a pretest on at least two randomly assigned dependent participants.

A proper experimental study design must have a control group, a variable that the researcher may change, and random distribution. True experimental design can be classified as follows:

• Posttest-Only Control Group Design: In this design, individuals are randomly assigned to one of the groups (control or experimental), with only the experimental group receiving treatment. Both groups are post-tested after attentive observation, and a conclusion is made of the differences between them.

• Pretest-posttest Control Group Design: In this control group design, individuals are randomly allocated to one of two groups, both of which are presented, but only one is treated. Both groups are post-tested after close monitoring to determine the degree of change in each group.

• The Solomon four-group design combines the pretest-only and pretest-posttest control groups. In this scenario, the subjects are divided into four groups at random. A pretest-posttest approach is used for the first two of these groups, while the pretest-posttest technique is used for the remaining two.

Experimental Research Examples
Depending on the type of experimental research design being considered, different types of experimental research examples exist. Laboratory experiments are the most basic type of experimental research, and they can vary in nature depending on the research topic.

Scholars in a seminar are taught on exact sequences during the period of the programme, and an assessment is prearranged at the conclusion of the programme. The scholars are the focus or reliant

elements, in this case, while the discourses are the self-governing variables that are preserved on the scholars.

This investigation contemplates only one group of carefully selected subjects, creating a pre-tentative inquiry strategy sample. We would also notice that trials are only specified at the expiration of the programme instead of making it much easier for us to conclude that this is a one-time case study.

Employee Skill Assessment
Establishments accomplish trials to remove less qualified candidates from a pool of qualified contenders before hiring a job seeker. Establishments can regulate worker skill fixed at the time of hire in this method. Organizations bearing worker, exercise as part of their normal process in mandate to enhancement worker efficiency and enlarge the corporation as a whole. At the end of each gathering, the follow-up appraisal is steered and evaluates the efficacy of the exercise on worker skills and to classify ranges for expansion.

The worker is the subject here, and the conduct is the exercise that was initiated. This is an example of a pretest-posttest regulator group investigational study.

Methods of Teaching Evaluation
Think through a theoretical body that wants to liken the schooling methods of two lecturers to see which is the most active. Reflect settings in which each scholar's student is prudently selected, either as an outcome of a precise demand from parents or because of their firmness and acumen. Because models are not identical, this is an example of no corresponding set design. We can draw assumptions after a post-test by calculating the accomplishment of each scholar's teaching style in this way.

This, nonetheless, may be changed by reasons such as a student's intrinsic pleasantness. A particularly bright student, for example, will grasp more easily than his or her peers, regardless of the manner of instruction.

What distinguishes experimental research from other types of research?

• Constraints
There are reliant, independent, and extraneous issues in scientific inquiry. Dependent elements, most times understood as the learning topic, are the variables which are treated perhaps manipulated. The trial dealing being smeared to the reliance element is understood as the self-governing factors. Extraneous variables, on the other hand, are additional things that influence the experiment and may influence the outcome.

• Setting
The experiment takes place in a specific location. Many experiments are conducted in the laboratory, where extraneous variables may be controlled and thus eliminated.

Other experiments are conducted in a less controlled environment. The type of environment utilized in research is determined by the nature of the experiment.

• It is multivariable
Multiple independent variables may be included in experimental studies.

Non-Experimentation

On the other hand, it is simple to classify non-experimental research. It does not involve any control or independent variable modification. When a researcher does not have a precise study question of a causal relationship between two variables, and manipulation is not an option, this method is used.

None experimental designs, according to Maheshwari (2012: 56), are studying designs in which the researcher observes things as they occur spontaneously. It is a research design in which no external factors are introduced, and the variables are not changed. In this regard, he also stated that the researcher has no control on the surroundings. The information gathered is examined, and many of the findings lead to hypotheses that can be tested through experiments. Non-experimental research modes include the following:

(1) Cross-sectional studies (2) Correlation studies/ex post facto studies
(3) Descriptive Research (4) Quasi-Experimental Research (6) Single-Variable Research (7) Developmental Research (8) Epidemiological Design (8) Survey Research Design.

1. **Cross-sectional Research:** Developmental psychologists who study aging and researchers interested in sex differences frequently do cross-sectional research. Developmental psychologists use this design to compare groups of persons of different ages (for example, young individuals aged 18-25 with older adults aged 60-75) on a variety of dependent variables (e.g., Memory, depression, life satisfaction). Of course, employing this design to explore the impacts of aging has a major drawback: differences in the groups other than age may account for variation in the dependent variable. Differences across groups, for example, may reflect the generation from which people originate (a cohort effect) rather than a direct influence of age. Longitudinal studies, in which one group of people is tracked as they age, are thought to be a better way of researching the impacts of aging. Milgram (1974) compares two or more previous groups of people using the same criteria, piloting one or more control variables in study participants, and measuring the effect of the manipulation on the subject.

2. **Correlational Research**: This is a method of assessing the relationship between two continuous variables with little or no attempt to adjust for extraneous variables. For example, if you want to do research on the relationship between self-esteem and academic accomplishment, you can collect data on students' self-esteem and GPA to see if the two variables are statistically related. Because there is little or no distinction between correlation and cross-sectional research, they are frequently used interchangeably. Correlational research includes comparing two continuous variables rather than forming and comparing groups. Correlational research is concerned with statistical correlations between variables that are measured but not changed. Internal validity is low in correlational research. Correlation is not the same as causation. The existence of a statistical association between variables C and D does not imply that C causes D. It's also plausible that C and D, or a third variable Z, are both responsible for C and D. Correlational research cannot be utilized to prove causal correlations between variables, and it also prevents researchers from achieving a variety of other essential goals (establishing reliability and validity, providing converging evidence, describing relationships and making predictions.) Another reason why researchers would prefer a correlational study over an experiment is that the statistical link of interest is assumed to be causal, which means the researcher, cannot change it. (Allen Kanner, Coyne, Schaefer, &Lazarus, 1981;1) hypothesized that the number of "everyday inconveniences," such as impolite salespeople, that people encounter can influence the amount of physical and psychological symptoms they suffer. They had to settle with evaluating the number of daily

hassles together with the number of symptoms using self-report questionnaires because they couldn't control the number of daily hassles their subjects encountered.

3. **Single-Variable Research**: According to Milgram (1974), participants in this sort of study must do the same task under the same conditions. Loftus and Pickrell's (1995) study is an excellent example of single-adaptable investigation, in which the variable was whether participants "remembered" having proficient unimportantly traumatic youthful dealings (e.g., getting lost in a shopping mall) that they had not actually understood, but that the researcher repeatedly asked them about. Singular-variable research provides answers to fascinating and crucial topics like statistical correlations between two variables.

4. **Observational Research**: behavior is methodically observed and recorded in this form of study. The primary goal of reflective inquiry is to define an adapter or a group of variables. Above all, the aim is to determine the characteristics of a specific, cluster, or an environment. It is non-experimental in the sense that it is not manipulated or controlled, and as a result, we can't draw any conclusions about causality using this method. Data collected in this or related studies are frequently qualitative, although it can also be quantified or mixed approach. The focus of research has been on observing behavior in a natural or laboratory situation without changing anything. Participants are observed as their behavior is recorded in observational research, with no researcher meddling or influencing any variables. For example, an academic institution may wish to award scholarships to its top students in recognition of their academic achievements. As a result, each faculty group students into eligible and ineligible groups based on their degree class. Because it is unethical, the student's degree class cannot be modified to qualify him or her for a scholarship in this circumstance. Observation Research is concerned with observing the respondent's actions. It is tested in either a natural or a laboratory environment. It does not require the use of an independent variable.

For example, if you're looking into crowd psychology or the psychology of a specific group of individuals, imagine there are six ATMs in a location, but only one of them is occupied, while the other is abandoned. Because of the crowd effect, the bulk of newcomers will forsake the other ATM as well. There are various types of observational research, including:

a. **Naturalistic Observation**: this observational method entails monitoring people's behavior in their natural surroundings. In contrast to laboratory research, this is a sort of field research. For example, observing the rain falling in a certain environment as it falls. Observational research could simply entail watching youngsters play on the school playground. Naturalistic researchers frequently make their own clarifications as soon as it is realistic, so that applicants are unaware that they are being observed. Concealed Naturalistic Observation is another name for this. If the individual remains anonymous and the activity occurs in a public environment, this strategy is considered acceptable. We also conduct undisguised naturalistic observations, in which contributors are made responsive of the investigator's existence and their deeds is monitored.

b. **Participant Observation**: In this case, the researcher takes an active role in the situation they are studying. It's comparable to naturalistic observation in that the information gathered can include interviews and other sources. A sociologist (Amy, Wilkins, 2008:2) conducted research in which she spent a year, joining and contributing in set consultations and societal occasions, as well as interviewing numerous members. Wilkins discovered how organizations may "force" happiness.

c. **Structured Observation** In this case, the researcher is looking at spontaneously occurring behavior.

However, acquiring quantitative rather than qualitative data is prioritized.
Structured observation was employed by Levine & Norenzayan, (1990;3) to investigate differences in the "pace of life" among countries. In which people in a large city were observed to see how long it took them to walk 60 feet. People in some nations, such as Canada and Sweden, crossed 60 feet in 30 seconds, while people from North America, such as Brazil and Romania, took nearly 17 seconds.

5. **Developmental Research**: Richey, and Rita C. (1994:9) indicates that this can be seen as a systematic study of designing, developing, and evaluating instructional programs, process, and product that must meet up criteria of internal consistency and effectiveness. Developmental Research in particularly important in the field of instructional technology. The most common types of developmental research involve situations in which the product-development process is analyzed and described, and the final product is evaluated. The second type of developmental research focuses more on the import of product on the learner or the organization. While the third type of study is oriented towards a general analysis of design development or evaluation processes as a whole or as components. Developmental Research as contributed to the growth of the field as a whole, often serving as a basis for model construction and theorizing.

6. **Quasi-Experimental Research**: the prefix quasi means" resembling" Thus, quasi experimental research is the research that resembles experimental research but it is not true experimental research. Although the independent variable is manipulated, the participant is not randomly assigned to the conditions or orders of conditions. (Cook & Campbell, 1979) because the independent variable is manipulated before the dependent variable is measured, quasi experimental research eliminates the problem of directionality. But because the participant is not randomly assigned, making it are likely that there are other differences between the conditions. Quasi experimental research does not eliminate the problem of confounding variables. In terms of internal validity, the quasi experiments are generally somewhere between correlational studies and true experiments.

Quasi experiments are most likely to be conducted in the field setting in which random assignment is difficult or impossible. They are often conducted to evaluate the effectiveness of a treatment for instance a type of psychotherapy or an educational intervention.

Types of Quasi Experiment

1. **Non-Equivalent Group Design:** Recall that when participants in between subject are randomly assigned to conditions, the resulting groups are like to be similar, and then researchers consider them to be equivalent. But when participants are not randomly assigned to conditions, the resulting groups are likely to be dissimilar in some ways. Because of this, researchers consider them to be non- equivalent. In summary, a non -equivalent groups design is the one between-subjects design in which participants have not been randomly assigned to a condition. For instance, a researcher who wants to introduce a new method of teaching fractions to third grade students, would conduct a study with a treatment group consisting a of one class of third grade students and a control group consisting of another third -grade students, this would be like a non- equivalent group design because the students are not randomly assigned to a class by the researcher, which means there could be important differences between them. For instance, parents of higher achieving students might

have been more likely to request that their children be assigned to Ms. Dave's class. Or the head teacher might have assigned the troublemaker to a particular class whom the teacher is believed to be a strong disciplinarian. Of course, teacher styles and the environment might be very different and might cause different levels of motivation among students. If at the end of the study there was a difference in the two classes' knowledge of fractions, it might have been caused by the difference between the teaching methods, which can also be caused by any of the confounding variables. Anyone using a non- equivalent groups design can take steps to ensure that their groups are as similar as possible.

2. **Pretest-posttest Design**: in this type of research, the dependent variable is measured once before the treatment is implemented and once after it is implemented. For instance, a researcher who is interested in the effectiveness of an antidrug education program on elementary school students' attitudes towards illegal drugs. The researcher could measure the attitudes of the students at a particular elementary school during one week, implement the antidrug program during next week, and finally measure their attitude again the following week. The pretest-posttest design is like a within-subjects experiments in which participant is tested first under the control condition and then under the treatment condition. If the average posttest score is better than the average pretested score, then makes sense to conclude that the treatment might be responsible for the improvement.
Having looked at the various types of non -experimental designs, there are so many reasons why researchers think that it is good.

Advantages of non -experimental design:

1. Non- experimental research is close to real life situations.
2. They are rarely criticized for their artificiality.
3. They are most suitable for the field of nursing as they help us to understand the real world.
4. Not all the human characteristics are inherently subjected to experimental manipulation, therefore, the roles of these variables cannot be studied experimentally.
5. In situations where it is simply not practical to conduct a true experiment, in such cases non experimental researches are most suitable.

Disadvantages of Non -Experimental Research Design.

1. The result of the non-experimental researches and the relationship between the variables of study can never be absolutely clear and error free.
2. The mere existence of a relationship between the variables is not enough to warrant the conclusion that one variable caused the other.
3. Since non-experimental research is conducted for comparative purposes using non randomly selected groups, which may not be homogenous and tend to be dissimilar in different traits or characteristics may affect the authenticity and generalizability of the results.

Conclusion

These methods are credible in any given research process, which can be applied in science and social science investigation process. For example, in discussing constructivism (an essential research tool) Crotty (1998) insists that meaning is constructed by human being as they engage with the world they are interpreting, This, we claim, offers an appropriate practical complement to hermeneutical modus operandi. Understanding what is entailed in an idea is not a matter of reconstructing or re-experiencing its claims: rather, it is learning how to 'think with' a way of reasoning by applying it in new and unanticipated ways. Qualitative research tends to use open-ended questions that the participants can share their view. This is true in the context of qualitative techniques while

quantitative deals with scientific clarity of results from experimentations. Whichever, one chooses to conduct an academic investigation the results are good and clear in many instances. The budding students of office practice often engage in finding about quality of resource human capacities within a manageable space in the office and the true functions. This little explanation of the basic techniques of inquiry would go a long way to help the basic foundation of their research techniques. The expansion of office, information related practice can grow theoretically when the correct tools of research are applied to investigate new process and methods of developing new understanding in an office manageable space practice. Gradually the office scholarship and practice are evolving through multimedia technique such as zoom, and other forms of virtual meeting platforms, bringing virtual office as the new order of office practice, only good use of research tools and technology would continue to expand the scope of this practice.

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