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Quantification and its significance in geographical study

- Geography is the science that describes the earth's surface and the relationship between earth, man, and his environment.

- What is where and how? What is where and why?

- Geography over the years faced varying degrees of difficulties in explaining and quantifying complex geographical phenomena in space.

- Over the years and more recently Geography has further extended its scope and interest in understanding more geographic knowledge with regard to multiple number to complexity of phenomena and at the same time concerned more than others with individual cases.

- Geography now is viewed as applied science which advocate for problem solving approach.

- Aristotle, Ptolemy and many other geographical scholars having been confronted with different complex variables on the earth surface with unanticipated complexity such that the need to apply quantification in other to separate similar but varying geographical data became inevitably clear.

- Use of mathematical application in solving geographical data; relying on the improvement and the usefulness of geographical data in resolving complex geographical variables.

- The quantification method which deal with measurable data, can easily be quantifiable phenomena and as such can employ or use mechanistic, stochastic, statistics models and quantitative techniques in resolving such controversy in geographical explanation of phenomena in space.

Quantification in Geography

- Geography as empirical science.
- From physical and human geography to man-environment relationship.
- The decade starting from 1950 witness what is referred to as the quantitative revolution in geography.
- The level of sophistication of the quantification technique involved in the handling of complex geographical phenomena in space which generate data analysis.
- The early geographers identified the need to apply quantification in geographical application of phenomena.

- Plato, Aristotle, Ptolemy, Erasthotenes, Strabo, Kant, Humbolt, Ritter, Semple, Sauer, etc .

- Collection of data or information about the problem identified with a view to subjecting these data to the rigour of statistical analysis as a means to arriving at geographical truths of explanation.

- The geographical researcher does this through the use of two different data platform available at the disposal of geographical explanation; these data are the qualitative and quantitative data.

The Qualitative Data:

- Observation with no notion of numerical magnitude.
- Data are measured on the nominal or ordinal scales.
- Normally nominal scales are mainly classified and there is no natural order between the categories which are also mutually exclusive, as no individual can belong to more than one category.
- E.g.: Individual eye colour: Red, white, green, brown, and yellow, Gender personality: Male, female, Types of chair: Plastic, ion, wood and rope, Building types: Glass, block, wood and metal building, Students result: Pass or fail.

- In ordinary scale of measurements an ordering of data exists as such the mutually exclusive categories are graded and classified for categorical explanation of each of the data measurement. It is however sometimes referred to as ranking scale.

- E.g: Educational qualification: Teachers grade II certificate, NCE, B.Ed, B.Scor B.A, PGDE, Masters and PhD degrees, Socio-economic status: Rich, moderatly rich, poor, or high class, middle or low class, and Level of pain: Severe, moderate and mild, Death and survival.

- The assemblage of data collected on these scales are referred to as categorical data which is in turn quantified for either descriptive purpose or for drawing inferences or both.

Quantitative data:

- The quantitative data has the influence or notion of numerical magnitude. This is to say that the values are expressed in numbers such that the units of measurements are well known; this is because they are measured on the interval scale; even though they may have all the properties of norminal and ordinal scales.
- Any data on these scales of measurements are said to be discrete of the measurements are integers-assuming only whole numbers or counts. Examples are number of building in an area, number of students in a class.
- They are continues if the measurements can take on any value. A good example of this is the students score in a geography test, this is seen as a discrete variable while weight for instance is a continuous variable in this instance.

The application of statistical and mathematical techniques theorems and proofs in understanding and explaining geographical systems is in its self quantification in geography; and these amount to counting figures or measuring how many cells you have in a specific tissues or culture.

i. Land capability
ii. Per-capita income
iii. Percentage of share of work in secondary sector
iv. Percentage index of industrialization and urbanisation
v. Literacy rate
vi. Index of income inequality
vii. Share of the deprives community
viii. Share of female workers in total female population

Significance of quantification

The quantification generally gives the following forms:

i. To tabulate data methodologically and systematically.
ii. To extract sample from a large and unmanageable universe in such a manner that anlaysis with the same become valid for the universe.
iii. To identify, classify and extract the inherent characteristics of phenomena.
iv. To study distribution frequency, gradient and measure of inequality among the variation of growth and development along the temporal scale variation, concentration, clustering and dispersion along the spatial scale.
v. Analysing matrix of close across space and the characteristic of network.

vi. To identify association and corelation between and combination of phenomena and and space through time
vii. To composite and synthesize relevant variables in hierarchical regional system
Viii. To explain to relate cause with their effects and effects with their cause in a system of unidirectional, bidirectional, multidirectional relationship.
ix. To project process and time to predict
x. To simulated and build spatial model
xi. To optimize in the light constraint of programming technique giving construct.