A Review on Primary Sources of Data and Secondary Sources of Data

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ABSTRACT

The paper discussed sources of data. Data is a set of values of qualitative or quantitative variables. Data is facts or figures from which conclusions can be drawn. Before one can present and interpret information, there has to be a process of gathering and sorting data. Just as trees are the raw material from which paper is produced, so too, can data be viewed as the raw material from which information is obtained. It is evident from the above discussion that primary data is an original and unique data, which is directly collected by the researcher from a source such as observations, surveys, questionnaires, case studies and interviews according to his requirements

Keywords: Data, Primary sources of data, Secondary sources of data.

I. INTRODUCTION

Data is a set of values of qualitative or quantitative variables. Data is facts or figures from which conclusions can be drawn. Before one can present and interpret information, there has to be a process of gathering and sorting data. Just as trees are the raw material from which paper is produced, so too, can data be viewed as the raw material from which information is obtained (Ajayi, 2016). Data as a general concept refers to the fact that some existing information or knowledge is represented or coded in some form suitable for better usage or processing. Data is collected and analyzed; data only becomes information suitable for making decision in some fashion. Gathering data can be accomplished through a primary source (researcher is the first persont oobtain the data) or a secondary source (the researcher obtains the data that has already been collected by other sources, such as data disseminated in a scientific journal).

Difference between primary data and secondary data

Data collection plays a very crucial role in the statistical analysis. In research, there are different methods used to gather information, all of which fall into two categories, i.e. primary and secondary data (Douglas, 2015). As the name suggests, primary data is one which is collected for the first time by the researcher while secondary data is the data already collected or produced by others. There are many differences between primary and secondary data, which are discussed in this work. But the most important difference is that primary data is factual and original where as secondary data is just the analysis and interpretation of the primary data. While primary data is collected with an aim for getting solution to the problem at hand, secondary data is collected for other purposes. The fundamental differences between primary and secondary data are; the term primary data refers to the data originated by the researcher for the first time while secondary data is the already existing data collected by the investigator agencies and organisations earlier. Primary data is a real-time data whereas secondary data is one which relates to the past (Mesly, 2015). Primary data is collected for addressing the problem at hand while secondary data is collected for purposes other than the problem at hand. Primary data collection is a very involved process. On the other hand, secondary data collection process is rapid and easy. Primary data sources includes surveys, observations, experiments, questionnaire, personal interview etc. on the other contrary, secondary data collection sources are government publications, websites, books, journal articles, internal records and so on.

Comparison between Primary Data and Secondary Data

Basis for Comparison	Primary Data	Secondary Data
1. Meaning	Primary data refers to the first hand data gathered by the researcher himself.	Secondary data means data collected by someone else earlier.
2. Data	Real time data	Past data
3. Process	Very involved	Quick and easy
4. Sources	Surveys, personal interview experiments, observations, questionnaire, etc.	Government publications, websites, books, journal articles, internal records etc
5. Cost effectiveness	Expensive	Economical
6. Collection time	Long	Short
7. Specific	Always specific to the researcher's needs	May or may not be specific to the researcher's need
8. Available	Crude form	Refined form
9. Accuracy and Reliability	More	Relatively

Sources of Primary Data

Primary data refer to the first hand data gathered by the researcher himself. Some sources of primary data are surveys, observations, questionnaires, focus groups, case study and interviews as highlighted:

i. **Survey:** Survey method is one of the primary sources of data which is used to collect quantitative information about items in a population. Surveys are used in different areas for collecting the data even in public and private sectors. A survey may be conducted in the field by the researcher. The respondents are contacted by the research person personally, telephonically or through mail. This method takes a lot of time, efforts and money but the data collected are of high accuracy, current and relevant to the topic. When the questions are administered by a researcher, the survey is called a structured interview or a researcher administered survey.

ii. **Observations**: Is one of the primary sources of data. Observation is a technique for obtaining information involves measuring variables or gathering of data necessary for measuring the variable under investigation. Observation is defined as accurate watching and noting of phenomena as they occur in nature with regards to cause and effect relation.

iii. **Questionnaires**: Questionnaire as one of the primary sources of data is an observational technique which comprises series of items presented to a respondent in a written form, in which the individual is expected to respond in writing. Here the respondents are given list of written items which he responds to by ticking the one he considers appropriate.

iv. **Focus Groups:** It explore a topic in depth through group discussion.

v. **Case Study:** Understand an experience or conduct comprehensive examination through cross comparison of cases.

vi. **Interview**: Interviewing is a technique that is primarily used to gain an understanding of the underlying reasons and motivations for people's attitudes, preferences or behaviour. Interviews can be undertaken on a personal one-to-one basis or in a group.

Source of Secondary Data

Secondary sources mean data collected by someone else earlier. Secondary data are the data collected by a party not related to the research study but collected these data for

some other purpose and at different time in the past. If the researcher uses these data then these become secondary data for the current users. Sources of secondary data are government publications websites, books, journal articles, internal records.

Conclusion

It is evident from the above discussion that primary data is an original and unique data, which is directly collected by the researcher from a source such as observations, surveys, questionnaires, case studies and interviews according to his requirements. As opposed to secondary data which is easily accessible but are not pure as they have undergone through many statistical treatments. Some sources of secondary data are government publications, websites, books, journal articles and internal records.

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Mesly,O.(2015). *Creating models in psychological research.* Etats-Unis: Springer press.

About the author

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SECTION A: BIODATA

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Place of Birth and State of Origin: Ado Ekiti/ Ekiti State

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SECTION B: EDUCATIONAL INSTITUTIONS ATTENDED AND QUALIFICATIONS WITH DATES

1.	Benue State University, Makurdi	Doctor of Philosophy (PhD) Science Education	2017-2019
2.	Benue State University, Makurdi	Master of Education (M.Ed) Science Education	2014-2016
3.	Benue State University, Makurdi	Certificate in Statistical Package for Social Sciences (**SPSS**)	2015
4.	University of Nigeria, Nsukka	Bachelor of Science (B.Sc.) in Education/Chemistry (**Second Class Upper Division**)	2006-2009
5.	SUBEB Computer Training Institute in Affiliation with University of Ado Ekiti now Ekiti State University, Ado Ekiti.	Diploma in Computer Studies (**Upper Credit**)	2006
6.	Government Science College, Ayede Ekiti	Senior School Examination Certificate (SSCE)	2003-2005
7.	Christ School, Ado Ekiti	Junior Secondary School Examination Certificate	1999-2002
8.	St. Michael Catholic Pry School, Ado Ekiti	Primary School Leaving Certificate	1993-1998

SECTION C: WORKING EXPERIENCE WITH DATES

Teaching Experience

1.	Lecturer, Science Education	2013-till date

SECTION E: MEMBERSHIP OF PROFESSIONAL/LEARNED ASSOCIATION WITH DATES

1.	Member, Teacher Registration Council of Nigeria (MTRCN)	2012
2.	Member, Science Teachers Association of Nigeria (MSTAN)	2013
3.	Fellow, Strategic Institute for Natural Resource and Human Development (FRHD)	2013
4.	Member, International Strategic Management Institute (MISMI)	2013
5.	Certified Professional, Professional Project Management (PPM) (PPL/2013Jal/018)	2013
6.	Certified Member, Health, Safety, Security, and Environment (HSE)	2013

SECTION F: EDITORIAL EXPERIENCE WITH DATES

1.	Reviewer and Member, Open Journals of Education Development (OJED)	2021-till date
2.	Editor, International of Scientific Literacy and Education (ISLD)	2020-til date
3.	Assistant Editor, International Journal of Literacy and Education (IJLD)	2019-till date
4.	Advisory Board Member, Journal of Humanities and Education Development (JHED)	2018-till date

SECTION G: PRIZES AND AWARDS WITH DATES

1.	PhD Scholarship Award for Outstanding Students of Ekiti State Origin Pursuing Postgraduate Studies in Nigerian/Foreign Tertiary Institutions	2018
2.	Merit Award for Meritorious Service, being a member of the NDLEA/NYSC drug free club (Ardo-Kola Chapter, Jalingo Taraba State)	2013
3.	Merit Award for Meritorious Service as President, National Association of Nigeria Students (NANS), University of Nigeria, Nsukka	2010
4.	Merit Award for Meritorious Service as President, Students Chemical Society of Nigeria, University of Nigeria, Nsukka	2010

5.	Merit Award for Meritorious Service as Honourable Member, Legislative Arm of Students' Union Government, College of Education, Ikere Ekiti	2010
6.	Merit Award for Meritorious Service as Course Representative, Chemistry Department, University of Nigeria, Nsukka	2010
7.	Merit Award for Meritorious Service as Constitution Review Secretary of Students' Union Government Legislative Arm of College of Education, Ikere Ekiti	2010
8.	Scholarship Award for Brilliant Undergraduate Students of Ekiti State Origin in Nigerian Tertiary Institutions	2008; 2009
9.	Merit Award for Meritorious Service in Coordinating Government Science College Ayede School Assembly Debate	2005
10.	Best Graduating Student in Agricultural Science from Government Science College, Ayede Ekiti	2005

SECTION H: PROJECT/DISSERTATION/THEIS

1. **Ajayi, V.O.** (2020). *Effects of predict-explain-observe-explain and Vee heuristic strategies on students' achievement, metacognitive awareness and self-efficacy belief in organic chemistry in Ekiti State, Nigeria.* Published PhD. Thesis, Benue State University, Makurdi.

2. **Ajayi, V.O.** (2017). *Effect of hands-on activities on achievement and retention of senior secondary chemistry students in stoichiometry in Zone C of Benue State*. Published M.Ed. Dissertation, Benue State University, Makurdi.

3. **Ajayi, V.O.** (2010). *Perceived areas of difficulties in senior secondary school Chemistry syllabus in Ado Local Government Area of Ekiti State*. Unpublished B.Sc. Project, University of Nigeria, Nsukka

SECTION I: RESEARCH AND PUBLICATIONS
Journal Papers (View my research on my SSRN scholar page: http:ssrn.com/author=2731803)

1. Ogbeba, J., & **Ajayi, V.O.** (2016). Effect of hands-on activities on achievement and retention of senior secondary chemistry students in stoichiometry. *Journal of the International Centre for Science, Humanities and Education Research, 2*(2), 54-59.

2. **Ajayi, V.O.** (2017). Effect of hands-on activity-based method on interest of senior secondary students in organic chemistry. *Scholarly Journal of Education, 6*(1), 1-5.

3. **Ajayi, V. O.** (2017). Relationship between teachers' content knowledge, qualifications, experience and students' achievement in chemistry. *Scholarly Journal of Education, 6*(1), 14-20.

4. **Ajayi, V.O.**, & Ogbeba, J. (2017). Effect of gender on senior secondary chemistry students' achievement in stoichiometry using hands-on activities. *American Journal Educational Research, 5*(8), 839-842.

5. Ogbeba, J., & **Ajayi, V.O.** (2017). Effect of hands-on activities on skills acquisition of senior secondary students in physical chemistry. *Nnamdi Azikiwe University, Journal of Science, Technology and Mathematics Education, 2*(1), 40-50.

6. **Ajayi, V.O.**, & Ogbeba, J. (2017). Effects of hands-on activity-based and demonstration methods on senior secondary students' achievement in physical chemistry. *University of Jos, Institute of Education Journal of Educational Studies, 9* (1), 521-533.

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8. **Ajayi, V.O.,** Achor, E.E., & Agogo, P.O. (2017). Use of ethnochemistry teaching approach and achievement and retention of senior secondary students in standard mixture separation techniques. *Journal of the International Centre for Science, Humanities and Education Research, 3*(1), 21-30.

9. **Ajayi, V.O., &** Angura, M.T. (2017). Improving senior secondary students' retention in electrolysis using collaborative concept mapping instructional strategy (CCMIS). *Greener Journal Educational Research, 7*(6), 087-092.

10. **Ajayi, V.O.,** Agamber, S.T., & Angura, M.T. (2017). Effect of gender on students' interest in standard mixture separation techniques using ethnochemistry teaching approach. *Sky Journal Educational Research, 5*(5), 053-059.

11. **Ajayi, V.O.,** Audu, C.T., & Ajayi, E.E. (2017). Influence of class size on students' classroom discipline, engagement and communication: A case study of senior secondary schools in Ekiti State, Nigeria, *Sky Journal of Educational Research, 5*(5), 060-067.

12. Audu, C.T., **Ajayi, V.O**., & Angura, M.T. (2017). Do guided and structured inquiry instructional strategies have any comparative effects on students' achievement in basic science and technology? A field report. *Journal of Education and Practice, 8*(33), 81-88.

13. Ajayi, E.E., Aboho, D.A., & **Ajayi, V.O.** (2018). Effects of experiential and inquiry teaching strategies on upper basic students' achievement in social studies. *Journal of Education, Benue State University Makurdi, 18*(1), 119-129.

14. **Ajayi, V.O.** (2018). Improving senior secondary students' self-efficacy belief in organic chemistry using Kolb's and 5E's learning models. *Journal of Education, Benue State University Makurdi, 18*(2), 219-230.

15. Agamber, S.T., Achor, E.E., & **Ajayi, V.O.** (2019). Enhancing students' motivation and self-efficacy belief in solving biology related problems using frequent practical work. *Journal of the International Centre for Science, Humanities and Education Research, 4*(2), 20-30.

16. Ogbeba, J., Enemarie, V., & **Ajayi, V.O.** (2019). Students' Achievement in basic science and technology as a predictor of quality science education. *Journal of the International Centre for Science, Humanities and Education Research, 4*(2), 178-187.

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26. Audu, C.T., & **Ajayi, V.O.** (2017). Science and Technology Education as tools for acquisition of innovative and entrepreneurial skills for poverty eradication towards sustainable development. *Intuition Journal, 3*(1), 1-16.

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Chapter Contributions

32. Enemarie, V., Ogbeba, J., & **Ajayi, V.O.** (2019). Students' Achievement in basic science in basic education certificate examination as a predictor of their performance in biology in senior secondary certificate examination. In Emaikwu, S.O., Obinne, A.D.E., Okwara, O.K., & Wombo, A.B. (Ed,). *A discourse on educational issues* (pp. 281-295). Makurdi: Hipex Monarch Academy and Consult Limited.

Conference Attended

1. Participated in the 1st National Conference on issues of quality education in Nigeria. Held on 25th-27th July, 2018 at the Twin Lecture Threatre A, Benue State University, Makurdi.

2. Participated in the 5th National Conference on Research in Education for Sustainable development in Nigeria. Held on 7th-10th November, 2018 at the Benue State University, Makurdi.