Application of Scientific Methods in Library and Information Research: A Case Study of Librarians in South East Nigeria

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Abstract

This study is a survey of the application of scientific methods to research among librarians in South East Nigeria. It examines the purpose for the application of scientific methods to research, as well as the obstacles that librarians in South east Nigeria face in their bid to apply scientific methods to research. Survey method was adopted for the study, while a structured questionnaire was used as instrument for data collection. 120 questionnaires were distributed to librarians; 88 representing 73.3% were filled and returned. Result of the study shows that librarians use scientific methods in carrying out research. It also shows that librarians applied scientific methods to research for the main purpose of analyzing data and testing hypothesis. The study further revealed that application of scientific methods to research in librarianship helps the profession to be more scientific in outlook and also helps in collation and analyzes of data to solve professional problems. Lastly, It identified lack of funds as a major obstacle to the application of scientific methods to research among librarians in South east Nigeria.

The study recommended the need for government at both National and State levels to provide funds for scientific research in librarianship, considering the benefits of such researches to library and national development. There is also need for the Nigeria Library Association to organize awareness programmes to enlighten librarians on the need to apply scientific methods in their research investigations.

Keywords: Librarianship, Research, Scientific Research, Library and Information Research, Scientific Methods

Introduction

It has been widely accepted that librarianship is a social science discipline, adopting social science research methods in collection and analysis of data. Research itself is defined as a conduct of planned and structured investigation, as a systematic quest for knowledge (Busher, 1996). It is the process of arriving at dependable solutions to problems through planned and systematic collections, analysis and interpretation of data to discover new knowledge.

Scientific research tries to determine the relationship between factors in an event and isolate a given event as a central objective. However, in librarianship, factors of change cannot be easily isolated or measured in a thorough scientific manner. This is because in librarianship and other social science disciplines, the main element of study is the human element. This element is subjective in thinking, prone to bias and prejudices. But scientific method involves accurate observation, value classification, testing and verification of hypothesis and formulation of generalization which applies to all practical similar event (Gauch, 2003). Science itself is both an organized body of knowledge and method of modifying and extending what is known by means of careful research. Scientific research therefore involves investigating phenomena, acquiring new knowledge, or correcting and integrating previous knowledge. Busha,.and Harter (1980) posited that all sciences tend to pass through three stages: (1) a descriptive stage, which says, in effect, "This is what it is like"; (2) a pragmatic stage, which says, "When we did this, then that happened"; and (3) an investigative stage, which propounds hypotheses on why things happen and then tests these hypotheses to develop a unifying theory which can be used for predictions of future events. Librarianship has so far spent most of its time in the first stage; in the past few decades it has advanced to the second stage; and only in the very recent past-perhaps only since the mid-1970s-it has very gingerly begun to enter into the third stage. They further asserted that the status of librarianship as a viable profession and the position of library science as a meaningful and worthwhile field of study hinge upon the question of whether practicing professionals and scholars in the field can develop a structure of theoretical and practical knowledge; generate hypotheses relevant to pertinent theories; and plan, conduct, and evaluate both basic and applied research in a scientific manner. To be termed scientific, a research must be based on gathering empirical and measurable evidence, subject to specific principles of reasoning. In this sense, scientific research could be applied to librarianship. As far back as the early 70s, Harold (1973) posited that the application of even computers in the acquisition of library materials is an evidence of scientific research in librarianship. His position was based on the systematic and empirical process involved in the selection and acquisition of library materials. Be that as it may, there is paucity of information on whether librarians do actually use scientific methods in their research investigations. Because they are always at the beck and call of users, librarians are seen as those professionals whose functions begin and end with users' requests. This study is therefore an investigation into the application of scientific methods of research among librarians in south east Nigeria.

Objectives of the Study: The study has the following objectives:

1. To establish if librarians adopt scientific approach in their research investigations.
2. To find out the purposes for which scientific method is applied to investigations in librarianship.
3. To determine the effectiveness of scientific approaches in investigations in librarianship.
4. To identify the obstacles that hinder the application of scientific methods in librarianship researches.

Literature Review

Librarianship does not have a very long tradition of research scholarship (Eldredge,2004).It was only in the 1930s that a handful of members of the profession got interested and began to fully recognize the value of conducting careful studies pertaining to various library issues. Between 1930 and 1946, the first 50 doctoral degrees in library science were awarded to persons with research orientations at the University of Chicago, United States of America (Encyclopedia of library and information science, 1998). Normans (1970) observed that most of the early systematic inquiries by scholars and other persons in the field were primarily descriptive in nature. But since world War ll, a number of developments have activated the conduct of various kinds of research in library and information science. According to the Encyclopedia of Library and Information Science (1998), library collections have grown steadily because of the changing developments in the world. The ranks of librarians and information specialists have also swollen and the scale of library and information activities has expanded tremendously. It further asserted that the founding and growth of doctoral programmes in library schools have actually stimulated research in librarianship. Librarianship as a profession has also been faced with rapid and innovative changes in technology. These changes place more emphasis on scientific research, so that library and information science can keep pace with the complexities of the modern world.

According to Koufogiannakis and Crumley (2006), it has been accepted that systematic inquiries have touched upon many aspects of modern librarianship, including the following:

- Management collection development and personnel administration in libraries
- Utilization of a variety of communication media and technology in libraries
- Acquisition of books, periodicals and other print and non print materials

- Cataloguing, classification, indexing, filing, storage and retrieval of information
- Use of information systems, documentation, automation, and data processing in libraries.

The need for scientific research in librarianship cannot be overemphasized. Koufogiannakis and Crumley (2006) are of the view that research in library and information should not be limited to the classification of observations or the description of library and information phenomena; while these kinds of enquiries provide answers to such questions as what is a library? Or what is information?, they do not provide answers to "why" questions about some phenomena or principles that have already been recognized and variously described. Thus the need for scientific research in these areas becomes more imperative. Willard (1978) asserted that scientific research requires a logical approach comprised of several interdependent activities, the essentials of which include:

- Description of the problem and a critical review of relevant research reports and literature
- Mustering of previously produced facts by collecting pertinent information about the problem or topic
- Careful study of available evidence so that the research problem can be refined, specific hypothesis or exploratory question can be posed and solutions can be anticipated.
- Structuring and conduct of experiments or other careful studies to test the most feasible hypothesis in relation to the most crucial questions
- Analysis and evaluation of accumulated data and drawing of relevant conclusions
- Utilization of research findings to predict effects so that new hypothesis can be generated.
- Recording of methods, findings and conclusion in a written research report so that newly acquired insights and knowledge can be communicated to other persons.

Application of scientific research to librarianship provides a lot of benefits. Lundbery (1990) highlights some of the benefits to include helping to ensure the development of a body of theory for the practice of librarianship; fostering allowance for the testing of theories, assumptions and hypothesis on a regular basis; facilitating the improvement of quantification methods so that the precision and sophistication of statistical techniques are enhanced and boosting the promotion of the development and use of a consistent, objective and technical vocabulary. Day (1997)

observes that, “it is a means for students and librarians alike to investigate the cause and effect of phenomenon as it affects the profession and come out with possible solutions”. By implication the advancement of a discipline is based on the strength, types, and outcomes of research carried out and how these findings are judiciously put to use. However, it is sad to note that as important as scientific research is to librarianship, not much is being done in this regard. Obaseki, Ibrahim and Momoh (2010) assert that, “research output in librarianship is poor, as fifty percent of the librarians sampled with up to ten years experience have no publications.” They further argued that the growth and development of any profession depends on extensive research. Obaseki, Ibrahim and Momoh (2010) further attribute poor research output of librarians to the following challenges: dearth of research minded librarians, lack of opportunities for practicing librarians to participate in research and lack of funding.

However, there is a limit to the extent to which scientific research could be applied to librarianship. Science is concerned with those events that repeat themselves indefinitely (Gauch 2003). Therefore, to determine relationships among factors in an event and to isolate a given event is the central objective of a scientific research. But in Librarianship, factors of change cannot be easily located or measured; this is because, in librarianship, as in other social sciences, the main element of study is the human element, whose behavior is highly unpredictable. Another limitation is posed by the fact that mechanical laws cannot be applied to librarianship; rather statistical laws are used in librarianship and other social sciences.

Methodology

The survey method of research was adopted for the study. The researchers used the questionnaire as data gathering instrument. A total number of 120 questionnaires were distributed to practicing librarians in public, academic and research libraries in Abia and Imo States, South East Nigeria. A total of 88 (73.3%) questionnaires were filled and returned. Collected data were analyzed descriptively using statistical tables where necessary and other statistical computations like percentage frequencies for an appropriate summary.

Data Analysis

Data collected were analyzed with the use of tables.

Table 1: Pattern of Questionnaire Distribution

Libraries	Number Distributed	Number Returned	Percentage (%) Returned
ABSU	22	20	17
ASLB	20	16	13.3
ISLB	20	14	12
FUTO	18	12	10
AICE	16	10	8.3
IMSU	14	10	8.3
FPN	10	6	5
Total	120	88	73.3

Key : ABSU – Abia State University, ASLB – Abia State Library Board, ISLB – Imo State Library Board, FUTO – Federal University of Technology, AICE – Alvan Ikoku College of Education, IMSU – Imo State Library Board, FPN – Federal Polytechnic ,Nekede

Table 1 above shows the number of questionnaires distributed and returned in each of the libraries used for the study

Table 2: Use of Scientific Research Approach in Librarianship

Use of Scientific Approach	No of Respondents	Percentages (%)
Yes	88	100
No	-	-
Total	88	100

Table 2 reveals that all the respondents employed scientific approach in their researches. The reason for this is not far-fetched. It is because these researches are published in learned journals which most times insist on scientific approaches in methodology and data analysis.

Table 3: Purposes of the Use of Scientific Methods in Library and Information Research

Purposes	No. of Respondents	Percentages (%)
To quantify and analyze data	27	30.6
To test hypothesis and show relationships among variables	36	41
For accuracy in search investigation	25	28.4
total	88	100

Table 3 reveals that 27 (30.6%) of the respondents employed scientific methods to quantify and analyze data, 25 (28.4%) employed scientific methods to check for accuracy in search investigation while the highest number of respondents (36 or 41%) employs scientific purposes to test hypothesis and show relationships among variables. This may be because testing hypothesis and showing relationships among variables require proven scientific formulas and processes; thus respondents are forced to apply these formulas and processes if their results and conclusions must be valid and meet standards

Table 4: Effectiveness of Scientific Methods in Library and Information Research

Item	No. of Respondents	Percentages (%)
Yes	78	88.6
No	10	11.4
Total	88	100

The table shows that 78 (88.6%) of the respondents agreed that scientific methods of investigation are very effective in carrying out research while the remaining 10 (11.4%) disagreed. The respondents that agreed on the effectiveness of scientific methods in investigations did so, on the basis that application of scientific methods enables them to draw valid and logical conclusions. The respondents who disagreed argue that scientific methods, though logical, are error prone and most times not efficient as they are time consuming.

Table 5: Obstacles to the Use of Scientific Methods in Library and Information Research

Obstacles	No. of Respondents	Percentages (%)
Inadequate Fund	58	65.9
Lack of Equipment and Expertise	13	14.8
Time Constraint	10	11.4
Purpose and Case Studies of the Research	7	7.9
Total	88	100

Table 5 reveals that 13 (14.8%) indicated lack of equipment and expertise as an obstacle to the use of scientific methods, 10 (11.4%) indicated time constraint, while the major constraint to the application of scientific methods to research in librarianship is inadequate fund as indicated by 58 (65.9%). The challenge of inadequate fund is a general phenomenon especially in the present face of global financial crisis.

Discussion of Findings

The study found out that all the respondents use scientific research approach in their research investigations. With regards to the purpose for the use of scientific methods, 27 (30.6%) of the

respondents used scientific methods to quantify and analyze data while 36 (41%) of the respondents applied scientific methods to test hypothesis and show relationships among variables. This is particularly significant because most empirical research in librarianship rely on formulated hypotheses and test of relationships among variables.

The study also probed into the effectiveness of the scientific method employed in library and information and information researches. 78(88.6%) of the respondents agreed that scientific methods of investigation are very effective in carrying out researches. When asked to indicate the impact of scientific methods on their researches, the respondents all agreed that scientific methods make the findings from their researches more reliable, useful and authentic. They also agreed that scientific methods create a viable platform for logical conclusions in research. More specifically, 40 (45.5%) of the respondents indicated that application of scientific methods in library and information science research helps the profession to be more scientific in outlook and also helps in collation of data to solve professional problems. In addition, 23 (26.1%) of the respondents indicated that the application of scientific methods in research helps to boost the status of the profession in the research world. They also agreed that scientific methods help them to easily collate and analyze data as well as draw scientific conclusions.

On the various obstacles hindering the application of scientific methods to research in librarianship, 58 (65.9%) of the respondents indicated lack of funds as a major obstacle. This is followed by lack of equipment and technical know-how indicated by 13 (14.8%) of the respondents. The equipment include conducive office space, vehicles to ease transportation problems, computers and their accessories e.t.c. 10 (11.4%) of the respondents indicated time as a major constraint. This is further complicated by the fact that they are practicing librarians who have very tight work schedule, with very little time allowance for research. 7 (7.9%) indicated that the purpose and case studies of the research may pose a problem to the use of scientific methods.

Conclusion

The use of scientific methods in carrying out researches is on the increase especially among academics in Nigeria. Librarians should not be left behind in this trend. Findings from scientific research are the only reliable sources of solutions to the various challenges facing libraries in the

country. Librarians therefore need to be exposed to the techniques of carrying out researches scientifically. Though librarians may not carry out laboratory experiments like chemists and physicists, they are involved in determining relationships among variables. This can be carried out scientifically through the formulations and mathematical tests of hypotheses. Librarians should keep abreast with various mathematical methods they need to carry out empirical analysis of data in order to draw valuable conclusions from their researches.

Recommendations

The government should make more efforts to fund scientific oriented researches in librarianship. This is because researches which are scientific in nature are too capital intensive for an individual to execute. It is hoped that when adequate funds are made available, many librarians will become involved in scientific research and research investigation itself will be made easy. The individual, the government and society at large will benefit. Adequate funding will enable researchers to acquire needed equipment and other materials to carry out their investigations.

Librarians themselves should take up the challenge of carrying out scientific researches that will make contributions to national development. They should be self-motivated to engage in researches that will proffer solutions to problems in their professions.

Awareness programmes such as seminars, orientations and workshops should be regularly organized by the Nigeria Library Association to enlighten librarians on the need to apply scientific methods in carrying out their researches.

References

Busher, C (1996) Research Methods. *The Library and Information Scientist, 25(10),* p.73

Busha, C. H. and Harter, S. P. (1980) Research Methods in Librarianship; Techniques & Interpretation. New York: Academic Press. 417 p.

Day, J. (1997). Curriculum change and development. In Kume, J.E.L., & Wilson, T. (Eds.) *The education of library and information professionals in the United Kingdom*. London: Mansell: p.31-52.

Eldredge,J.D (2004) Inventory of Research Methods for Librarianship and Informatics. *Journal of Medical Library Association,92(1),*p83-90

Encyclopedia of Library and Information Science,Vol.19 (1998), New York : Marcel Dekker

Gauch,H (2003) Scientific Method in Practice.London : Cambridge University Press

Harold,J (1973) Scientific Inference.3rd ed. London : Cambridge University Press, p.110-114

Koufogiannakis,D and Crumley,E (2006) Research in Librarianship :Issues to Consider. *Library Hitech*, 24 (3),p.324 -340

Lundbery,G(1990) Social Research.6th ed. New York : Longman

Normans,C (1970) Review of the Origins and Development of Research Information and its Retrieval. *Ashs, 22(10),*p.538 -548

Obaseki, T, Ibrahim, S and Momoh, J (2010) Scientific Research in Librarianship: A Panacea for Library Development in Nigeria. *Library Philosophy and Practice*, 2010.
Available at : http://www.webpages.uidaho.edu/~mbolin/obaseki-ibrahim-momoh.htm

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