

ESARBICA JOURNAL

**JOURNAL OF THE EASTERN
AND SOUTHERN AFRICA
REGIONAL BRANCH OF THE
INTERNATIONAL COUNCIL ON
ARCHIVES**

Volume 32

2013

ISSN 2220-6442 (Print), ISSN 2220-6450 (Online)

BLENDING QUALITATIVE AND QUANTITATIVE RESEARCH METHODS IN LIBRARY AND INFORMATION SCIENCE IN SUB-SAHARAN AFRICA

Patrick Ngulube

University of South Africa, School of Interdisciplinary Research and Graduate Studies
ngulup@unisa.ac.za

Received: 29 June 2012

Revised: 5 July 2012

Accepted: 1 January 2013

Abstract

This article explores how researchers for library and information science (LIS) journals in sub-Saharan Africa (SSA) blended both qualitative and quantitative methods into their articles between the period 2002 and 2010. The mixed methods research framework provided in methodological literature was used to determine how the LIS scientific community in SSA blended qualitative and quantitative methodological approaches. Content analysis and semi-structured telephonic interviews with editors and members of the editorial boards were used for collecting data. Seven hundred and ninety three (793) articles published in nine peer-reviewed LIS journals in SSA were reviewed, finding the dominant research methods to be survey designs and historical research. Fifty out of 793 articles integrated research methods. The study concluded that the blending of different research methods was limited in SSA. It is recommended that LIS researchers in SSA blend methods to inform each other to obtain a comprehensive picture of a phenomenon under investigation and to achieve their research purpose more effectively.

Keywords

Informetrics, methodological pluralism, mixed methods design, qualitative and quantitative methods, research in library and information science

Introduction and context

Researchers in library and information science (LIS) in sub-Saharan Africa (SSA) have contributed to the existing literature via LIS journals, monographs, chapters in books, patents, reports, and conference papers and proceedings. The results reported in this literature were influenced by the theoretical framework and the research methods employed. In the social and related sciences, “nothing can be studied empirically in the absence of theory and research methods” (Bergman 2011:99). Research methods influence how studies are conceptualised, measured and interpreted. The theoretical framework of a discipline informs its field’s methods. Whether or not valid and reliable knowledge can be produced using a certain theory depends on the methodology that is used in the inquiry. In the same breath, building a theory that is robust and rigorous relies on a sound methodological approach. Either the qualitative or quantitative field methods have dominated the research process in many disciplines, including LIS, over the past few decades.

By and large, researchers preferred a mono-method approach to multiple research because the prevalent view was that the two research perspectives were incompatible. The perception of the incommensurability of the two paradigms led to what is commonly referred to as the “incompatibility thesis” and the “paradigm wars” in the extant literature. Scholars who subscribe to the incompatibility and methodological purist schools consider the integration of methods as a violation of the philosophical assumptions on which the research process of the two approaches is based. The argument is that the approaches have different types of research questions, types of data collection and analysis strategies, and inferences or conclusions. The reason for these differences is that qualitative methods are linked to the paradigm of constructivism and interpretivism while quantitative methods are related to that of positivism.

Thus, a constructivist or interpretivist and post-positivist has different ontological (nature of reality), epistemological (nature of knowledge), axiological (values in inquiry) and methodological (process of research) assumptions which render the two paradigms incompatible.

The realisation that all research methods have strengths and weaknesses led to the emergence of mixed methods research (MMR) and a decline in the epistemological debates of the “paradigm wars”. However, “the [mixed methods] field is just entering its ‘adolescence’ and there are many unresolved issues to address before a more matured mixed methods research can emerge” (Teddlie & Tashakkori 2003:3). One of these unresolved issues relates to the varying verbs that are used to describe the research process. Stated differently, the nomenclature of the mixed methods approach is hotly contested. The terms used to describe this emerging paradigm include “blending”, “mixing”, “combining” and “integrating”. Bryman (2005) warns us that getting caught in the semantic trap over terminology is largely unproductive. We agree. Following Thomas (2003) we prefer to use the term “blending”. The blending or integration of aspects of qualitative and quantitative approaches in formulating the research question, identifying methods used in the research process, and drawing conclusions or making inferences has been referred to as “mixed methods” research. Stated another way, the term “mixed methods” has gained currency as an umbrella term applying to almost any situation where more than one methodological approach is used in combination with another, usually, but not essentially, involving a combination of at least some elements drawn from each of the qualitative and quantitative approaches to research (Bazeley 2008:133).

In other words, mixed methods designs:

...integrate quantitative and qualitative approaches in a single study or a multi-phased study, comprising the following five specific designs: sequential studies, parallel/simultaneous studies, equivalent status designs, dominant-less dominant designs, and designs with multilevel use of approaches wherein researchers utilize different techniques at different levels of data aggregation (Leech & Onwuegbuzie 2009:273).

The essence of blending, combining and integrating is implied in both definitions given above.

Although mixed research has a long history in research practice, the growing popularity of blending qualitative and quantitative research methods can be attributed to several factors:

- the recognition that the complexity of current research issues warrants multifaceted research designs and methods
- the rise of a generation of scholars that challenged the conventional ways of thinking about the research process
- the existing examples of the successful applications of research methods that do not follow the quantitative–qualitative divide
- the admission that “the (constructivist account) may deny the reality of the very phenomena that the objectivist account seeks to understand” (Bryman 2007:16)
- the acceptance that bringing together both quantitative and qualitative research so that the strengths of both approaches are combined leads to a better understanding of research problems than either approach alone (Creswell & Garrett 2008)
- the popularisation of the integration of research methods by the extant literature (e.g. journals such as the *Journal of Counselling Psychology*(2004), *The International Journal of Social Research Methodology: Theory and Practice* (2005) and *Journal of Multiple Research Approaches* (2011) devoted an entire issue to articles that integrated research methods); and the publication of comprehensive mixed methods books and the *Journal of Mixed Methods Research*

Many fields, including LIS, are advocating and using mixed methods (Fidel 2008; Ngulube, Mokwatlo & Ndwandwe 2009). As a matter of fact, “an examination of recent social and behavioral research reveals that mixed methods are being used extensively to solve practical research problems” (Teddlie & Tashakkori 2003:ix-x). As a result we wondered about the prevalence of blending research methods in recent LIS journals in sub-Saharan Africa. We concede that choices relating to research methodology are determined primarily by the purpose of the research and the demands of the research question. However, it would be prudent for LIS researchers to examine the research methods they use, and investigate the advantages they may derive from blending qualitative and quantitative methods to study the complexities of the issues that affect the discipline. As LIS research asks a great variety of questions and draws on many theoretical frameworks from a range of disciplines, there is benefit in combining the complementary strengths of qualitative and quantitative research methods. Indeed, Fidel (2008) called upon LIS researchers to put mixed methods research on the LIS research map.

Following Ngulube, Mokwatlo and Ndwandwe (2009) and Ngulube (2010) the study used referred journal articles instead of monographs and other vehicles of scholarly communication to analyse research trends in SSA. We concede that scholarly communication is advanced not only by peer-reviewed journals. However, we agree with Creswell and Garrett (2008) that journals are one of the indicators that may be used in measuring the extent of the growth of MMR in a discipline. Furthermore, the trend to examine the prevalence rates of methodological approaches within the social sciences is a new area of research that has “emerged in mixed methods (MM) over the past 5 years” (Alise & Teddlie 2010:103).

Content analysis of some LIS journals published in Africa is not a new phenomenon. Previous analyses examined various trends over time. The choice of journals and the period analysed seem to have been largely determined by the purpose of the analysis, circumstances of the author (for instance, the availability of a reliable database) and the sample that is likely to establish the trends that are of interest to the researcher. Purposive sampling seems to be the dominant sampling technique when it comes to the analysis of trends in scholarly communication (Hart, Smith, Swars and Smith 2009; Ngulube 2010; Nwagwu 2007).

Thus, the purpose of this study is to report the results of our investigation which performed a comprehensive analysis of all articles published in the selected journals between 2002 and 2010; examined the research methodology used in the articles; identified the frequently used methods; and investigated the extent to which qualitative and quantitative research were blended and the perspective from which the blending was done.

The article is structured as follows: The following section presents mixed methods designs. Next the research story for the study, an analysis of the research trends in LIS research in SAA, and the prevalence of the blending of qualitative and quantitative research methods are offered. The last section presents the concluding remarks and directions for future research.

Understanding mixed methods research

Johnson and Onwuegbuzie (2004:22) posit that “mixed research actually has a long history in research practice”. Mixed methods research perhaps has its genesis in the classic call of Campbell and Fiske (1959) to use multiple ‘quantitative’ methods in measuring a psychological trait. The idea was developed further and popularised by Denzin (1989:307) and it was argued that:

[b]y combining multiple observers, theories, methods, and data sources, [researchers] can hope to overcome the intrinsic bias that comes from single-methods, single-observer, and single-theory studies.

Therefore, triangulating methods in a single study is not new. The argument is that some scholars have been using closed question items (quantitative) and open-ended items (qualitative) in one questionnaire for a single study or series of studies, and that this constituted a mixed methods approach (Ngulube 2010:255). Ethnographers have a long history of collecting both qualitative data (e.g. through interviews) and quantitative data (e.g. surveys) when conducting research.

Some previous attempts were more aimed at methodological triangulation than mixed methods research. In triangulation, the ‘mixing’ is at a methodological or application level (i.e. collecting, analysing and interpreting data) and seeks convergence, whereas MMR moves beyond techniques and methods as it encompasses all the phases of the research process including the philosophical assumptions and the research question (Teddlie & Tashakkori 2009). It is apparent that the purpose of ‘mixing’ in MMR is multifaceted while the major purpose of triangulation, in the classical sense, is to check for inconsistency rather than to achieve the same result using different data sources (Patton 2002). For instance, in triangulation interviews may be used to confirm results obtained through the use of another method, whereas in MMR in-depth interviews are designed to explore in more detail the findings from a survey, for example.

A variety of mixed method research designs have been developed. However, there is a high degree of overlap among the types of mixed methods designs. According to Cameron (2009), the most popular typologies of mixed methods designs are the following:

- i. Caracelli and Greene (1997) typology included three component designs (triangulation, complementary and expansion) and four integrated designs (iterative, embedded/nested, holistic and transformative).
- ii. Teddlie and Tashakkori (2003) typology included six types of multi-strand mixed method and mixed model studies with procedures that are concurrent, sequential and conversion.
- iii. Creswell and Plano Clark (2007) typology included four types of designs (triangulation, embedded, explanatory and exploratory).

All the mixed method research design typologies suggested in the literature are useful in evaluating the rationale behind MMR studies, but we leave it up to the readers to choose their preferences. Explaining these designs is beyond the scope of this study as we were mainly interested in the extent to which the blending of methods was done and the perspective from which the mixing was done.

Creswell and Tashakkori (2007) give the following four perspectives on the blending of research methods:

- Method perspective. This emphasises the types of quantitative and qualitative data collected at different stages of research in response to research questions. The studies do not discuss much about the paradigms. This approach has been criticised for negating worldviews. The argument is that methods cannot be separated from paradigms and that data cannot be categorised into “a dichotomy of quantitative or qualitative data” (Creswell & Tashakkori 2007:304). This perspective has been termed “quasi-mixed” by Teddlie and Tashakkori (2006).
- Methodology perspective. This has a holistic focus and extends to all the phases of the research process as it features the philosophical assumptions, research questions, data collection, data analysis and interpretation of the findings. The methodology school differentiates between methodology and research methods. According to Teddlie and Tashakkori (2009), research methodology is a “broad approach to scientific inquiry specifying how research questions should be asked and answered, general preferences for designs, sampling logic, analytical strategies,

inferences made on the basis of the findings, and the criteria for establishing quality”. On the other hand, research methods refer to more specific strategies and procedures for collecting and analysing data (i.e. research design, sampling procedures, data collection, and data analysis strategies). Critics have raised issues about “what is being mixed and how it is mixed” (Creswell & Tashakkori 2007:305).

- Paradigm perspective. This emphasises more the philosophical assumptions that the researchers bring to their studies than the methods or the process of research. Ontological (nature of reality), epistemological (nature of knowledge), axiological (values in inquiry) and methodological (process of research) assumptions are fundamental to this perspective, and so are “the historical and sociological perspectives that individuals bring to research” (Creswell & Tashakkori 2007:305). The philosophical foundation of this perspective is pragmatism, which emphasises studying a social phenomenon from multiple worldviews and perspectives.
- Practice perspective. The need to integrate methods may arise during the execution of the research project. New methodological ideas emerge as the research is undertaken and they are embraced because they would be complementing the researchers’ conventional research designs such as action research, experimental studies, ethnography and so forth. This is a “bottoms up” approach to conducting research (Creswell & Tashakkori 2007:306).

It was of interest to us to also find out the perspective from which the LIS authors in SSA blended their research methods.

Stating the statement of the problem and research questions

Little research has been carried out to assess the extent to which LIS researchers in SSA blend qualitative and quantitative research methods. Further, little is known about preferences regarding the research methods that they use. At the moment there is a strongly held view that bringing together both quantitative and qualitative methods opens up the possibility of obtaining a comprehensive picture of social phenomena because the methods complement and strengthen each other. In fact, “[a] field is strengthened when its researchers show an awareness of the weaknesses and strengths” of qualitative and quantitative approaches (Rocco, Bliss, Gallagher & Pérez-Prado 2003:23). The blending of research methods acknowledges that both qualitative and quantitative methods offer a one-sided glimpse of the social world, and suffer from certain shortcomings that may be overcome by combining the advantages of both methods in answering a research question. Thus, the use of multiple methods improves overall confidence in the findings of a study. In that regard, the following four primary research questions guided the study:

- What are the trends in the use of research methods in the LIS journals in SAA?
- How widespread is the blending of qualitative and quantitative research methods in LIS research in SAA?
- What factors influence the integration of qualitative and quantitative methods?
- Why is the degree of integration of qualitative and quantitative components in the examined journals limited?

The research story

This research triangulated data collection methods in order to satisfactorily answer the research questions. The first phase used informetric techniques in general, and content analysis in particular, to determine the research trends in the selected LIS journal. The second phase used

structured interviews with a purposive sample of journal editors and reviewers to find out the factors that influenced the blending of the research methods or otherwise. Informetric techniques were not able to provide any reasons for the patterns in the research trends. The qualitative and quantitative methods were used in the method perspective described above because the quantitative method (informetrics) was designed to collect numbers and the qualitative method (structured interviews) was meant to collect words (Greene, Caracelli & Graham 1989:256).

The data is presented sequentially and it shows that the study was qualitatively dominant. The initial selection of articles was done qualitatively resulting in nine spreadsheets each indicating the name of the journal by year, list of journal articles, publication year, lead author surname and country of origin, number of total articles, category of methods used and members of the editorial boards, including the editor-in-chief. The analysis of the data yielded numbers which were further analysed to get established patterns. The quantitative phase was followed by the qualitative one. Interviews were used to establish the probable reasons for the patterns that were uncovered by the informetrics analysis.

Informetric analysis

A sample of nine journals from a possible sixteen in the relevant population was identified (see Table 1).

Table 1: Sample frame for journals selected for the study

Name of journal	Availability online	Country of publication	No. of editors-in-chief
<i>African Journal of Library, Archives and Information Science (AJLAIS)</i>	2000-2010	Nigeria	2
<i>ESARBICA Journal: Journal of the Eastern and Southern Africa Regional Branch of the International Council on Archives (ESARBICA)</i>	2001-2010	South Africa	2
<i>Ghana Library Journal (GLJ)</i> (2004-2005, not available online)	2002-2008	Ghana	2
<i>Indilinga African Journal of Indigenous Knowledge Systems (INDILINGA)</i>	2001-2010	South Africa	1
<i>Information Manager (IM)</i>	2006-2007	Nigeria	1
<i>Information Technologist (IT)</i>	2004-2009	Nigeria	2
<i>Innovation: Journal of Appropriate Librarianship and Information Work in Southern Africa (Innovation)</i>	2000-2010	South Africa	Editorial collective
<i>Journal of Librarianship and Information Science in Africa (JLISA)</i>	2001	Nigeria	1
<i>Lagos Journal of Library and Information Science (LJLIS)</i>	2003-2005	Nigeria	1
<i>Mousaion: South African Journal for Information Studies (Mousaion)</i>	2000-2010	South Africa	1
<i>Nigerian Libraries (NL)</i>	2000-2002	Nigeria	1
<i>SA Archives Journal</i>	2001-2003	South Africa	Editorial collective
<i>Samaru Journal of Information Studies (SAJIS)</i>	2006-2008	Nigeria	1
<i>South African Journal of Information Management (SAJIM)</i>	2000-2009	South Africa	1
<i>South African Journal of Libraries and Information Science (SAJLIS)</i>	2002-2010	South Africa	2
<i>University of Dar es Salaam Library Journal (UDSLJ)</i>	2001-2008	Tanzania	2

The journals that were available online for the period 2002—2010 are sketched in Table 1. There are evident gaps in the data, and this was going to create difficulties in effectively comparing the

results across different journals. In that regard, some journals were purposively excluded from the sample that was studied.

The scope of the journals' published articles pertained to the management of data, information and knowledge by LIS professionals mostly from SSA. The affiliations of the authors showed that they mostly came from countries such as Botswana, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Namibia, Nigeria, Lesotho, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zanzibar and Zimbabwe. The study by Ocholla and Ocholla (2007) confirmed that LIS research output in Africa was published by researchers from some of these countries.

The analysis of the articles took place at three levels. Firstly, the research strategies employed in the journal articles were identified manually. Secondly, articles that utilised both qualitative and quantitative methods were selected for further analysis. Finally, based on the typology of evaluating research perspectives advanced by Creswell and Tashakkori (2007), the articles were scrutinised to determine the perspective that was embraced by the researchers.

A total of 685 published articles (see Table 2), excluding theoretical articles, editorials, reactions, book reviews, tributes, and non-research contributions categorised as general and short communications, were analysed (see Table 2). They were excluded in order to provide a sample that was representative of the research commonly presented in the journals.

The number of articles used in the study was considered to be adequate when compared to studies by Rocco *et al.* (2003) that assessed 16 articles published in 1999 through 2001, by Fidel (2008) that analysed 465 articles published between 2005 and 2006, by Ngulube, Mokwatlo and Ndwandwe (2009) that evaluated 613 articles published between 2002 and 2008, and by Ngulube (2010) that examined 685 articles published between 2004 and 2008. Consistency in the quality of the selected journals and the examination of every article from a number of issues across the time period offered a possibility of gathering a valid pool of data for the purpose of the research.

Table 2: Summary of selected articles and approaches employed

<i>Approach</i>	<i>AJLAIS</i>	<i>ESARBICA</i>	<i>Indilinga</i>	<i>Innovation</i>	<i>IT</i>	<i>Moussion</i>	<i>SAJIM</i>	<i>SAJLIS</i>	<i>UDSLJ</i>	<i>Total</i>
Mixed	6	-	4	2	5	1	10	4	16	48
Qualitative	35	38	80	68	42	47	3	19	33	365
Quantitative	26	9	24	7	54	20	72	48	12	272
All paradigms	67	47	108	77	101	68	85	71	61	685

Semi-structured interviews

The informetric analysis was followed by semi-structured telephonic interviews with a purposively selected sample from among those editors and members of the editorial and review boards of the journals in the study who agreed to be interviewed. Many of the interviewees were selected in the course of the content analysis of the articles and the websites of the journals. The target sample was likely to shed light on how various journals viewed research that blended research methods. Telephone interviews were carried out with 15 respondents. The interviews were recorded, transcribed and analysed thematically. Each interview lasted approximately 15 minutes. A large number of questions were asked relating to their views on the blending of methods in the articles that they read during the review process.

Editors and members of the editorial boards act as the major gatekeepers in scholarly communication. They have the mandate to control the quality of the journal, decide what goes into the journal, ensure that articles that are published are within the scope of the journal and

facilitate the timely publication of the journal. They are also experts in judging what the target audience of a journal wants to read. Experts' surveys have been frequently used to determine the quality of journals.

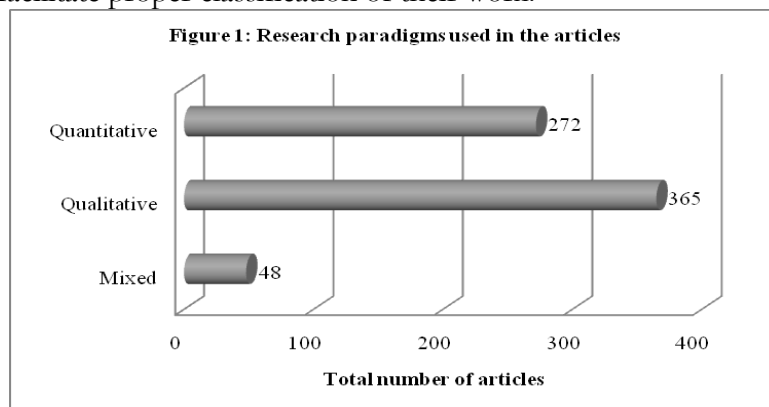
Precedents for the use of experts' surveys include the study by Bryman (2007), which focused on the views of 20 United Kingdom social scientists about research that combines quantitative and qualitative approaches. Ngulube (2010) recommended that combining informetric techniques with interviews with experts was likely to provide a better view about the prevalence of mixed methods research approaches. Short, Ketchen, Combs and Ireland (2010) surveyed the members of the editorial boards of the various journals as a method of data collection.

Results and discussions

The results and discussions are presented below. They are linked to the research questions that guided the study. The informetric results were not different from the results obtained by Ngulube (2010) although the sample data set was extended from 2008 to 2010, but they are repeated here in minor detail in the interest of presenting one composite and comprehensive piece. These results make a significant contribution to the understanding of the data collected from the qualitative strand, and advance the mixed methods research discourse.

Preferred research methods by LIS journals in sub-Saharan Africa

The studies that were investigated used mainly mono-methods. A limited number blended methods in any part of the study. Table 2 depicts the results. A few articles used the terms "integrated", or "mixed", or "blended", or "combined" methods in the abstract. When it came to articles that employed qualitative methods it was difficult to fit the studies into the framework that was used to categorise the studies because the authors did not describe their research methodology. In fact, many methods' sections and abstracts did not explicitly describe the research methodology. Understanding and categorising the various research methods can be a daunting task if there are no explicit explanations of the research methodology. A lack of detail on how studies are conducted by the researchers is not confined to SSA. Hernon and Schwartz (1994) observed that many LIS researchers have tended to focus on the findings and implications of the studies without giving details of the methods used in their studies. As Alise and Teddlie (2010) pointed out, researchers should consider making their paradigm preferences more explicit to facilitate proper classification of their work.

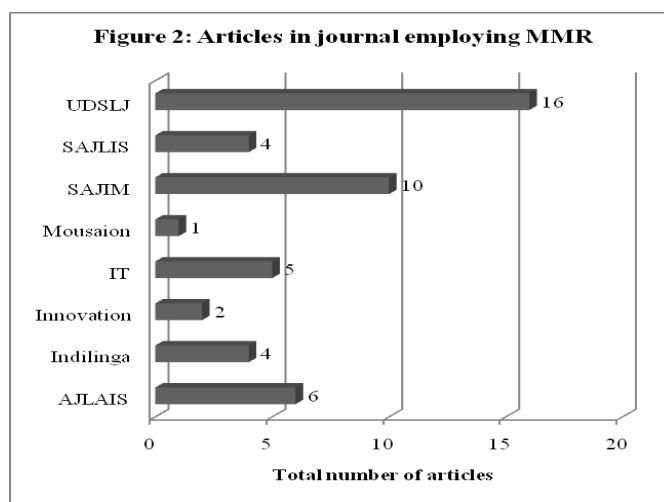


Overall, the qualitative approach dominated the research outputs during the period under review. The same cannot be said of articles published in *SAJIM* and *SAJLIS* where quantitative methods were more dominant than qualitative ones (see Figure 1 above). MMR research was not prevalent when compared to other research methods. The *ESARBICA* journal did not publish

any MMR article. As in a study conducted by Ngulube, Mokwatlo and Ndwandwe (2009) historical research seemed to be prevalent followed by the survey research design. The data collection tools included questionnaires, interviews (i.e. face-to-face and focus groups), observations and secondary data. Steps that were taken in order to increase instrument fidelity were only discussed by 12 (0.02%) researchers. It is essential for researchers to discuss the validity of their instrumentation as this enhances the confidence assigned to the findings.

Prevalence of the blending of qualitative and quantitative research methods in sub-Saharan Africa

The current study determined that 7% (48) of the researchers blended qualitative and quantitative research methods. Previous studies conducted elsewhere in education, library sciences and business indicated prevalence rates for MMR to be between 5% and 29% “with an approximate average of around 14% to 15%” (Alise & Teddlie 2010:120). SSA is evidently below that international average. The prevalence of MMR research in journals published in SSA is depicted in Figure 2. *UDSLJ* accounted for 33.3% of the articles that used MMR followed by *SAJIM* with 21%.



The qualitative and quantitative elements were not weighted equally. The quantitative element was always dominant. Studies that balanced the two elements, or had their dominance in the reverse order, were not evident. Mixing was sequential during data collection or analysis. It was always done from a quantitative angle to the qualitative one. No study reported the use of qualitative tools such as focus group discussions to construct the research instruments for its study, although this evidently happened in some of the studies during their preliminary stages when identifying constructs to measure.

Although the frequently cited way of mixing in MMR is that it may occur at any point within a research project, from the purpose statement and statement of the research problem, to the data collection and analysis, to drawing inferences from the interpretation of the findings, most of the mixing in the articles that were evaluated happened during data collection or analysis.

Reasons for blending of qualitative and quantitative research methods

Authors who used multiple methods or blended research did not refer to it as MMR. Generally, reference was made to the use of combined qualitative and quantitative approaches. Unlike authors of articles in *UDSLJ* who explained why they used multiple research methods, other authors seem to have chosen mixed methods research because it was trendy rather than for its ability to answer certain kinds of research questions as suggested by Bryman (2005).

Based on the five purposes identified by Greene, Caracelli and Graham (1989), the authors used mixed methods according to the triangulation purpose. The main reason for using MMR seems to have been aimed at the enrichment of the researcher's interpretation of data. The other three rationales for mixing approaches suggested by Collins, Onwuegbuzie and Sutton (2006), which include participant enrichment (for example, increasing the number of participants); instrument validity and reliability (for instance, pretesting and piloting the study); and treatment integrity (that is, assessing the reliability of interventions and programmes) were not evident in the articles that were analysed.

Ways of blending of qualitative and quantitative research methods

Although mixed methods designs may be parallel, sequential, conversion, multilevel and fully integrated as suggested by Teddlie and Tashakkori (2009), all articles that were examined used a sequential mixed methods design in the context of triangulation. The sequential or two-phase design provides the flexibility to adapt the second stage to the findings from the first research stage (Feilzer 2010), but the studies did not highlight this fact. The studies seemed to be content to use multiple methods in the classical way of triangulation where the concern was not to get a deeper understanding of the social phenomenon, but rather to detect inconsistencies in the findings. The bias was toward triangulating methods rather than mixing them. The other mixed methods designs such as expansion, initiation, development and complementarity (see Greene, Caracelli & Graham 1989 in the previous sections) were conspicuous by their absence.

Extent of integration of the two approaches

The investigation of the degree of integration of qualitative and quantitative components in MMR studies is important (Teddlie & Tashakkori 2009). While proponents of MMR agree that an MMR project includes a mix of both quantitative and qualitative components, there is not consensus on how these components should be linked and integrated during the research process.

Greene, Caracelli and Graham (1989) and Woolley (2009) have demonstrated that quantitative and qualitative data and findings are not considerably integrated in most research studies. In fact, many MMR researchers are struggling with true integration of the methods (Feilzer 2010). The reasons for inadequate integration of methods range from a lack of good examples that "genuinely integrate" qualitative and quantitative components in one research (Bryman 2007; Yin 2006) to limited information written about the research processes and techniques by which integration can be achieved (Woolley 2009). In proposing a framework that may be employed in the process of integration in mixed methods studies, Yin (2006:42) emphasised that "the more that a single study integrates mixed methods across five procedures, the more that methods research, as opposed to multiple studies, is taking place". Those research procedures include research questions, units of analysis, sample for the study, instrumentation and data collection methods and analytic strategies (Ngulube 2010).

Using the framework provided by Yin (2006), it is evident that MMR was used during data collection and analysis as illustrated in Table 3. Only 8 (0.17%) of the 48 MMR articles that were analysed used mixed methods during the data collection and analysis stages.

Most of the articles that were analysed were quasi-mixed as characterised by Alise and Teddlie (2010). The majority of the authors (40 out of 48) presented findings from different data collection methods alongside each other and the findings were discussed separately rather than

being ‘blended’. Although the researchers used both qualitative and quantitative methods, the presentation of results reflected the quantitative/qualitative divide as they were “totally or largely independent of each other” (Bryman 2007:8).

Table 3: Data collection and analysis procedures for which MMR was utilised

Procedure	AJLAIS	Indilinga	Innovation	IT	Mousaion	SAJIM	SAJLIS	UDSLJ	Total
Collection	5	3	2	4	1	8	2	15	40
Collection and analysis	1	1		1		2	2	1	8
All procedures	6	4	2	5	1	10	4	16	48

Results from the semi-structured interviews

Results from the qualitative strand helped to understand the trends in combining research methods. Many interviewees spoke about the reason for the low use of qualitative and quantitative research methods in one study and the results are presented in Table 4.

Table 4: Results from the semi-structured interviews

Views of the editors of the journals	Views of members of the editorial and review boards of the journals
Personal preferences of the editor	Mixed methods research is not fashionable in Africa.
My journal used to place more emphasis on the findings than the methodological issues. That position is gradually changing as a result of new blood entering the editorial board.	Many authors fail to explain the reasons why they blend qualitative and quantitative research methods. One is left wondering whether or not the researcher would be integrating methods for the sake of it rather than for the capacity to answer a research question. The implication is that research that blends methods is underdeveloped. Very few researchers use those research strategies in a single study. If they do they generally get rejected because of the inadequacy of the reasons for combining the strategies.
The journal focuses on the findings and what appeals to the readers. The research story is not a big issue.	The general superiority of combining research methods when conducting research or investigating a problem “with two eyes” is not recognised by many researchers on our sub-continent.
It is difficult to judge the quality of mixed research methods research. We are struggling with the issues of quality criteria for qualitative research and dealing with mixed research methods becomes a big challenge. We tend to reject articles that claim to use mixed methods research in order to play it safe. However we do accept articles that clearly show that they are integrating methods for the purpose of triangulating data sources.	Some researchers do not blend methods at all because they perceive themselves as either falling into the qualitative or quantitative camp.
My journal does not place emphasis on blending research methods.	Multidisciplinary and interdisciplinary research is limited in LIS studies. Studies that blend the two epistemological positions are rare.
This a matter of preference and the nature of the research questions they will be attempting to answer. Mind you, not all research questions benefit from blending research methods.	There are very few workshops that are available for editorial board members to receive training on evaluating research. Consequently they find it difficult to evaluate studies that emphasise one methodology. Such studies are sometimes rejected because the reviews would be focusing on safe areas such as reporting the findings.
	The lack of resolution to the qualitative-quantitative philosophical debate hinders the novice researcher from blending two seemingly divergent philosophical positions.

We see in these comments a common theme: members of the editorial and review boards did not receive some form of research evaluation training. Some of these reasons were uncovered by Bryman (2005, 2007).

Recommendations and conclusions

The findings show that the blending of research methods by LIS scholars in Africa was limited. The change in the trends of blending research methods will partly depend on the 'political will of editorial boards and journal editors. They should encourage scholars to experiment with integrating qualitative and quantitative approaches. That may offer a possibility of changing the focus regarding the research methods used by researchers in SSA. That will need skill and a change of mindset. Scholars in SSA should be aware that blending research methods offers a better opportunity to understand the complex information science issues than the using monomethods.

The results show that the incidence of the qualitative approaches is not at much variance with the use of quantitative ones (see Figure 1). It is seldom that one finds researchers who are really good with both the qualitative and quantitative approaches. In this regard, there is a strong case for researchers with a qualitative orientation to team up with quantitative specialists to research the same phenomenon in order to enhance the richness of data obtained.

The results of this research are instructive. However, they do not give a complete picture as to how the blending of the philosophical, epistemological, ontological, axiological and methodological underpinnings of the two research paradigms was done throughout the research process as the voice of the authors is missing. It may be useful to use informetric techniques to find out the most prolific scholars in a certain domain and engage with them in order to understand why they opted to use the research paradigms that are prevalent in LIS research in SSA when either or both of them may have been able to address the research problem.

References

- Alise, M. A and Teddlie, C. 2010. A continuation of the paradigm wars? Prevalence rates of methodological approaches across the social/behavioral sciences. *Journal of Mixed Methods Research* 4(2): 103-126.
- Bazeley, P. 2008. Mixed methods in management research. In: Thorpe, R and Holt, R (eds). *The SAGE Dictionary of Qualitative Management Research*. London: Sage, pp. 133-136.
- Bban, A. 2008. Reconceptualization of the division between qualitative and quantitative research methods. *Cognition, Brain, Behavior: An Interdisciplinary Journal* 12(4): 337-343.
- Bergman, M. M. 2011. The politics, fashions, and conventions of research methods. *Journal of Mixed Methods Research* 5(2): 99-102.
- Bryman, A. 2005. Why do we need mixed methods? Should we differentiate integration versus mixed-methods? (Online). <http://www.ccsr.ac.uk/methods/events/Mixed/programme.htm>. Accessed on 30 October 2009.
- Bryman, A. 2007. Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods Research* 1(1): 8-22.
- Cameron, R. 2009. A sequential mixed model research design: design, analytical and display issues. *International Journal of Multiple Research Approaches* 3(2): 140-151.
- Campbell, D. T and Fiske, D. W. 1959. Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin* 56: 81-105.

- Caracelli, V. J and Greene, J. C .1997. Crafting mixed-method evaluation designs. In: Greene, J. C. and Caracelli, V. J. (eds). *Advances in mixed-method evaluation: the challenges and benefits of integrating diverse paradigms*. San Francisco: Jossey-Bass, pp. 19-32.
- Collins, K. M. T., Onwuegbuzie, A. J and Sutton, I. L. 2006. A model incorporating the purpose for conducting mixed methods research in special education and beyond. *Learning Disabilities: A Contemporary Journal* 4: 67-100.
- Creswell, J. W., Fetters, M. D and Ivankova, N. V. 2004. Designing a mixed methods study in primary care. *Annals of Family Medicine* 2(1): 7-12.
- Creswell, J. W and Garrett, A. L. 2008. The movement of mixed methods research and the role of educators. *South African Journal of Education* 28: 321-333.
- Creswell, J. W and Plano Clark, V. L. 2007. *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.
- Creswell, J. W and Tashakkori, A. 2007. Editorial: differing perspectives on mixed methods manuscripts. *Journal of Mixed Methods Research* 1(2): 107-111.
- Denzin, N. K 1989. *The research act: a theoretical introduction to sociological methods*. 3rd ed. Engelwood Cliffs, NJ: Prentice Hall.
- Greene, J. C, Caracelli, V. J and Graham, W. F. 1989. Toward a conceptual framework for mixed-methods evaluation designs. *Educational Evaluation and Policy Analysis* 11(3): 255-274.
- Feilzer, M. Y. 2010. Doing mixed methods research pragmatically: implications for the rediscovery of pragmatism as research paradigm. *Journal of Mixed Methods Research* 4(1): 6-16.
- Fidel, R. 2008. Are we there yet? Mixed methods research in Library and Information Science. *Library and Information Science Research* 30:256-272.
- Hammersley, M. 2008. Troubles with triangulation. In Bergman, M. (ed.) *Advances in mixed methods research: theories and applications*. Thousand Oaks, CA: Sage, pp. 22-36.
- Hart, L. C., Smith, S. Z., Swars, S. L and Smith, M. E. 2009. An examination of research methods in Mathematics Education (1995-2005). *Journal of Mixed Methods Research* 3(1): 26-41.
- Hernon, P and Schwartz, C. 1994. Editorial: the need for more methodological and research design studies in library and information science. *Library and Information Science Research* 16(2): 85-86.
- Hewson, C. 2006. Mixed methods research. In Jupp, V. (ed.) *The SAGE Dictionary of Social Research Methods*. London: Sage, pp. 179-180.
- Johnson, R. B and Onwuegbuzie, A. J. 2004. Mixed methods research: a research paradigm whose time has come. *Educational Researcher* 33(7): 14-26.
- Johnson, R. B., Onwuegbuzie, A. J and Turner, L. A. 2007. Toward a definition of mixed methods research. *Journal of Mixed Methods Research* 1(2): 112-133.
- Ketchen, D. J., Boyd, B. K and Bergh, D. D. 2008. Research methodology in strategic management: past accomplishments and future challenges. *Organizational Research Methods* 11: 643-658.
- Leech, N. L and Onwuegbuzie, A. J. 2009. A typology of mixed methods research design. *Quality and Quantity: International Journal of Methodology* 43: 265-275.
- Manda, P. 2002. Review of the state of research methodology in African librarianship. *University of Dar es Salaam Library Journal* 4(1): 90-103.
- Ngulube, P. 2010. Mapping mixed methods research in library and information science journals in sub-Saharan Africa 2004–2008. *The International Information and Library Review* 42(4): 252-261.
- Ngulube, P., Mokwatlo, K and Ndwandwe, S. 2009. Utilisation and prevalence of mixed methods research in library and information research in South Africa 2002-2008. *South African Journal of Libraries and Information Science* 75(2): 105-116.
- Nwagwu, W. E. 2007. A comparative study of the productivity of HIV/AIDS literature on Nigeria and South Africa in Medline and Science Citation Index. *African Journal of Library, Archives and Information Science* 17(1): 1-13.

- Ocholla, D. N and Ocholla, L. 2007. Research in library and information science in South Africa: an analysis of research outputs from 1993-2006. *South African Journal of Libraries and Information Science* 73(2): 109-118.
- Onyancha, O. B. 2009. A citation analysis of sub-Saharan African library and information science journals using Google Scholar. *African Journal of Library, Archives and Information Science* 19(2): 101-116.
- Onwuegbuzie, A. J and Leech, N. L. 2006. Linking research questions to mixed methods data analysis procedures. *The Qualitative Report* 11(3): 474-498.
- Patton, M. Q. 2002. *Qualitative research and evaluation methods*. 3rd ed. Thousand Oaks, CA: Sage.
- Proud, L. 2010. New AJOL Progress. *AJOL Newsletter* 1, 2010. [Online]. <http://ajol.info>. Accessed 24 May 2010.
- Rocco, T. S., Bliss, L. A., Gallagher, S and Pérez-Prado, A. 2003. Taking the next step: mixed methods research in organizational systems. *Information Technology, Learning and Performance Journal* 21(1): 19-29.
- Short, J. C., Ketchen, D Jr., Combs, J. G and Ireland, R. D. 2010. Research methods in entrepreneurship: opportunities and challenges. *Organizational Research Methods* 13(1): 6-15.
- Tashakkori, A and Creswell, J. W. 2007. Editorial: the new era of mixed methods. *Journal of Mixed Methods Research* 1(1): 3-7.
- Teddle C and Tashakkori, A. 2003. Major issues and controversies in the use of mixed methods in social and behavioral sciences. In Tashakkori, A and Teddlie, C. (eds). *Handbook of mixed methods in social and behavioral research*. Thousand Oaks, CA: Sage, pp. 3-5.
- Teddle, C and Tashakkori, A. 2006. A general typology of research designs featuring mixed methods. *Research in the Schools* 13(1): 12-28.
- Teddle, C and Tashakkori, A. 2009. *Foundations of mixed methods research: integrating quantitative and qualitative approaches in social and behavioral research*. Thousand Oaks, CA: Sage.
- Thomas, R. M. 2003. *Blending qualitative and quantitative research methods in theses and dissertations*. Thousand Oaks, California: Corwin Press.
- Williams, M. E and Buboltz, W. C. 1999. Content analysis of the *Journal of Counseling and Development*: Volumes 67 to 74. *Journal of Counseling and Development* 77: 344-349.
- Woolley, C. M. 2009. Meeting the mixed methods challenge of integration in a sociological study of structure and agency. *Journal of Mixed Methods Research* 3(1): 7-25.
- Yin, R. K. 2006. Mixed methods research: are methods genuinely integrated or merely parallel? *Research in the Schools* 13(1): 41-47.