# Library Software Selection Practices: Methods And Processes Adopted by two Selected Federal University Libraries of South East Nigeria

**Onah, Marcus C. Ejike[1] & Professor V.N. Nwachukwu[2]**

*System Librarian at Federal University Ndufu-Alike Ikwo, Abakaliki, Ebonyi State, Nigeria[1],*
*University of Nigeria, Nsukka, Enugu State, Nigeria.[2]*
Email: marcus.onah@funai.edu.ng, marcus.casmieronah@gmai.com[1] , victor.nwachukwu@unn.edu.ng[2]

**ABSTRACT**

*Purpose: The study investigated the methods and processes of library software selection practices of two federal university libraries in south east Nigeria.*

*Methodology/approach/design: It was a descriptive survey. Specifically, three specific objectives and a corresponding number of research questions guided the study. The study had a population of 247 library staff and used disproportionate stratified random sampling technique to select (80) samples. The study used structured questionnaire and observation checklist as the instrument for data collection. Eighty (80) copies of questionnaire were distributed; out of which 72 of them were returned representing a 90% return rate. The data collected were analyzed using descriptive statistics of frequency tables, simple percentages and mean scores. The decision rule was based on 50% benchmark for research question one item and a criterion mean benchmark of 2.5 for research question two and three items.*

*Findings: The findings revealed that: eight library software such as: Tin-lib, X-lib, GLAS, Koha (open source), among others are available in the libraries; selection practice methods such as quantitative, intuitive, decision analysis, among others were employed in the selection practices of the libraries; and the effectiveness of the selection practices processes such as criterion dependent, library requirement dependent, technological advancement dependent, among others were effective in the software selection practices of their libraries.*

*Implications:* University libraries should acquire software that will address their needs and aspirations; their methods of selection practices should be such that are feasible and in direct need of the libraries; management should communicate, and plan their selection processes and as well seek the opinions of the previous users of such library software.

*Originality/value: Lies in the recommendation of the selection of software package(s) that will sustain the operations and services of the libraries and the adoption of methods and processes most appropriate for the libraries.*

**Key Words:** Libraries, Software, Selection Practices, Methods, Processes, and Package(s).

## Introduction

Computer software application in libraries provides for easy integration of various library operations and services as acquisition, cataloguing, circulation, serial management, Online Public Access Catalogues (OPACs), Selective Dissemination of Information (SDI), Current Awareness Services (CAS), online bibliographic researching. This software according to Oyinloye (2004) is packages that are library services and operations oriented which can be categorized into two namely: the integrated packages otherwise called software suit or the modularized packages and the stand-alone programs. The stand-alone programs are those designed for a single specific task and the integrated or modularized packages are those designed for a number of tasks (Pressman, 2010). They are technically called integrated library software. Consequently, the term library software, its method of selection and effective selection processes are as discussed below.

Library software is known as integrated library management system or integrated library system. According to Adesanya; Onilude; and Sodipe (2004), library software explicitly connotes library oriented packages as database management systems (computerized) that have the capability of storing information in a data banks and retrieving same with the aid of electronic devices. They defined databanks as electronically operated store-house of state-of-art information on different fields of endeavours. They concluded by allaying that such databases are to: enable the information unit (libraries) to render specific services to users (e.g. abstracting and indexing services); make information readily available and accessible to user; and to save time, energy and money by conducting searches both locally and internationally.

The methods and processes involved in library software selection are summarized in three ways as: to define the critical requirement that are unique to your library and match to the vendor with your short lists; visit a library using the software and ascertain the efficiency of the software; ask the vendor to bring in the trainer whom you will work with at the implementation stage. In addition, Leung (2002) stated that some methods are usually used in software selection practices by libraries (intuition approach, quantitative methods, decision analysis approach, political approach, imposition approach, e.t.c.) whereas, a number of steps have been integrated into processes to form software selection processes (seven, six, five, or four).

Specifically, when selecting either OTS or COTS packages or components; the use of a team of technical experts as: system analyst/system engineers and several developers is a prime recommendation. Intrinsically, the inclusion of a library domain expects

and potential end-users are recommended when selecting COTS and OTS based library systems. This is because, the use of such team virtually eliminates a single person perspective or bias and takes into accounting the view points and experience of the evaluators in the selection activities. In another development, when performing a buy analysis and selection of a product as part of software acquisition strategy; most university libraries will consider primarily the requirements (ability of the product to meet the needs) and the costs (Bandor, 2006).In his opinion, the method used for the analysis and selection activities ranges from the use of basic instruction to counting the requirement fulfilled or something in-between. Thus, the selection and evaluation must be done in a consistent quantifiable manner to be effective; thereby using a formal method, capable of mixing very different criteria into a cohesive decision. With these decision justifying the selection; based on the intuitive, technical and political factors.

Moreover, Technology Group International (2011) revealed that there are five basic phases/stages in the effective selection of software for use in an institution and/or libraries. The stages according to the group are: project preparation and planning (that is the preliminary study, negotiation, politicking, lobbying and setting of project committees), introductory demonstration (embodying preliminary analysis of needs, objectives and goals), requirement and request for proposal (consisting statement of objectives and pledge for management support), scripted software demonstration (using prototype and detailed design architecture), and reference calls, site visits and supplier selection (i.e. performing due diligence and finalizing the selection). Hence, from the groups perspective, there are five basic phase as against the seven steps earlier discussed.

Functionally, as variety of library software abounds; the effective selections processes for those software are accomplished in steps, stages and/or processes. This is because of their varying scopes and specifications. In view of this, Komoski (1995) and Tim (2004) outlined seven basic steps to responsible software selection. Those steps or processes are: analysis of needs, specification of requirement, identification of promising software, reading of relevant reviews on software, preview of software, making of recommendation and getting of post-user feedback. In summary, Komosky (1995) and Tim (2004) outlined seven steps, SEI (2005) and Minadihar (2010) depicted five steps, Software Resources (2011) had six steps that overlaps; consisting of preliminary planning (objective /requirement definition), feasibility study, system analysis (cost, hardware, humanware and support), system design ( prototype design, detailed design, and coding [if in-house]), implementation, evaluation, demonstration/training, and documentation stages.

Consequently, despite the huge financial, material and human resources utilized in the acquisition, adoption, installation and implementation of this library software the researcher observed that they are not meeting its expected potentials in information management across university libraries. This is because they either crash or breakdown or mal-function regularly. Significantly, these as was observed could be attributed to some inherent problems associated with the library software selection practices as: faulty library software selection methods and processes relating to non-adherence to standardized software selection policies. Therefore, upon the above background, this study seeks to investigate the methods and processes of library software selection practices of two federal university libraries in southeast Nigeria.

**Objectives of the study**
1. To identify the library software (s) that is available in the libraries.
2. To examine the methods used for selecting the package(s) in the libraries.
3. To examine the effectiveness of the adopted library software selection processes in the libraries.

**Research Questions**
1. What are the library software(s) that is available in the libraries?

2. What are the methods used in the software selection practices of the libraries?

3. How effective are the adopted processes of library software selection practices in the libraries?

**Literature Review**
Library oriented software package comes in different types (integrated or modules) from different vendors or software designers. Across the globe, lots of such packages are available. According to Osborne (2007) the prominent ones among a variety of library oriented software packages are: Am-lib, Blis-lib/Annie/softlink/Alice, MAElisa, Vubis Resource-mate, libertas, Libero, Data-Trek, Ex-libris, Aleph, Elias, Concourse, Auto-lib, X-lib, Micro-CDS/ISIS, Klas Ad-lib, koha, papyrus library software, Amicus, librivission, Tapir, Fedora, Evergreen, penlib, GLAS, Tin-lib, Lib-plus, e.t.c. He further emphasized that these packages were manufactured by a number of vendors and/or software developers. Such vendors according to him are: Keystone system inc; Winibago software company, free university of Brussels based M.Tech, Info-version Technology limited, Sage brush technology, EOS international, ALS, Altarma, parity software Inc., library associates Inc. (Korea), UNESCO, Raw Material Research and Development Council (RMRDC), penny balley solution, Adlib information system ltd, Payne automation united

kingdom, Edinburgh university library, Katipo communication, mandarin library automation Inc., e.t.c.

Many organization/institution attempts to save cost by integrating third party COTS packages in their selection methods. For instance, component/sectional/departmental libraries or extensions and/or complete COTS based solution using Enterprise Resource Planning (ERP) packages/application. Hence, the method used for identifying a set of possible candidate solution are for

the most, rather subjective. Simply because, individual(s) performing the evaluation have various distinct experiences that will factor into decision making processes either consciously or subconsciously. As a result, to have a successful selection, a formal process is needed to formally evaluate the product and the vendors supplying them. This involves having an established documented process to perform the selection in a consistent and repeatable manner he reported.

Similarly, Adogbeji, Onohwakpor and Ozioma (2004) opined that in Nigeria university libraries and special libraries, the software selection method used differs considerably. However, the prominent methods adopted are:

> The Institution management usually imposes the packages on the libraries; the head librarian consented to conferences, seminars, and workshop reports on the software; and there was preliminary system analysis before the purchase of the software P.15"

In addition, Feyad and Harmu (2000) identified the possible methods used in the selection of Commercial-Off-The-Shelf (COTS) packages as: vendor survey, vendor white papers, product/component technical specifications, representation at key IT conferences, and communication with other customers using the package, as well as conducting of a pre-bid conferences. Closely related to this approaches is the one emphasized by Sai (2004) that one successful method for selecting software products for institution and/or libraries is the use of

selection team. On the contrary, should the software be developed in-house or expert developers employed to execute the project the selection processes according to Software Resources (2011)are accomplished in eight phases that are cyclic in nature. The stages are: planning and budgeting, requirement analysis (feasibility study, vendor research (identification of vendors), demonstration (pilot or conference room), selection decision and contract negotiation. Graphically, it is as shown below:
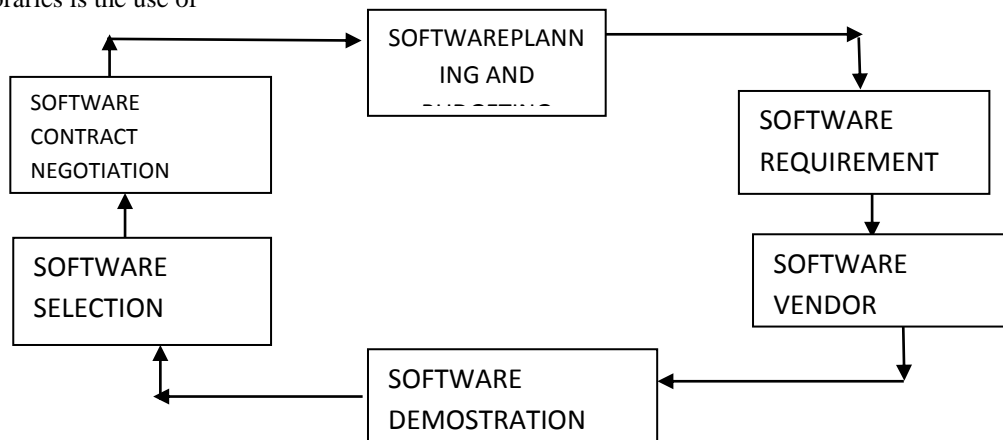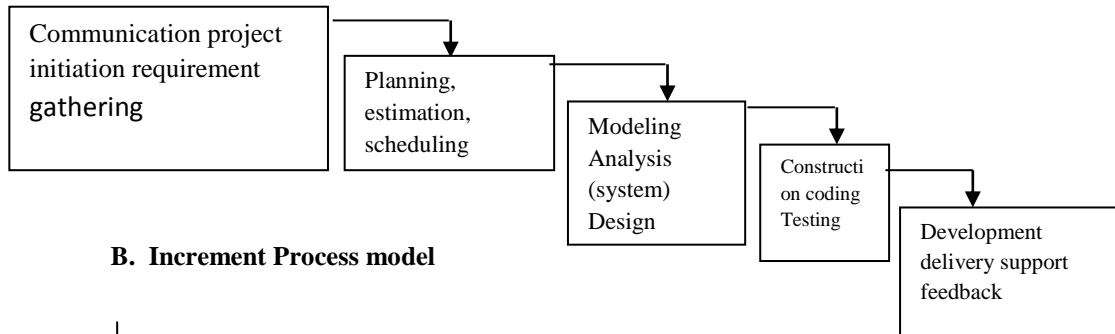


**Source:** Software Resources (2011)

Similarly, Omekwu (2004) stipulated that the process involved in the automation of library/information centres are executed in five basic stages/phases. Such phases according to him are: definition of objectives,

global view, feasibility study, system analysis, and system design. This applies to where the package is designed in-house
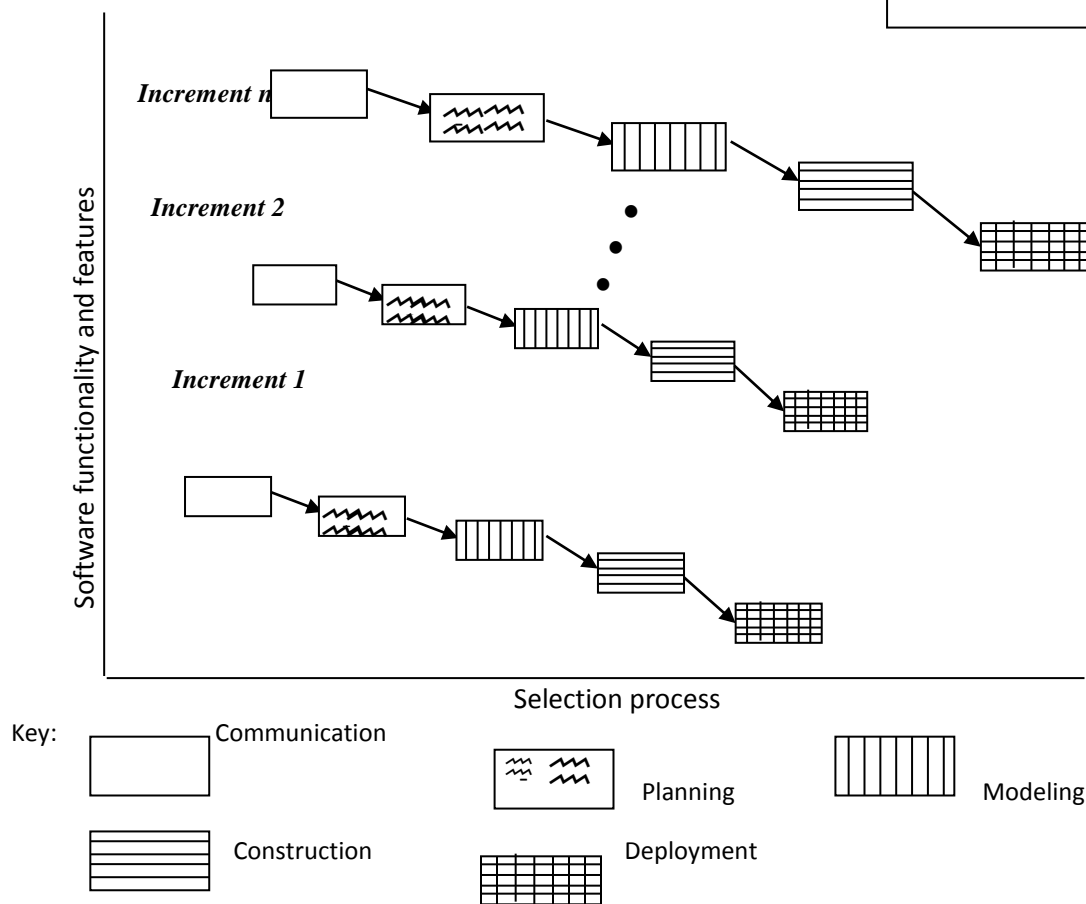
In addition, Pressman (2010) asserted that there are process frameworks encompassing the sets of umbrella activities that are applicable across the entire software selection processes; with each framework activity populated by set of software engineering actions. Functionally, he identified five generic process frameworks that are applicable to the vast majority of

software selection process. Such generic selection process frameworks are: communication, planning, modeling, construction and development. Hence, he developed four models for software selection as: the water fall process model, the incremental process model, the unified process model and the rapid application development (RAD) process model. Diagrammatically, the afore-listed models are illustrated thus:
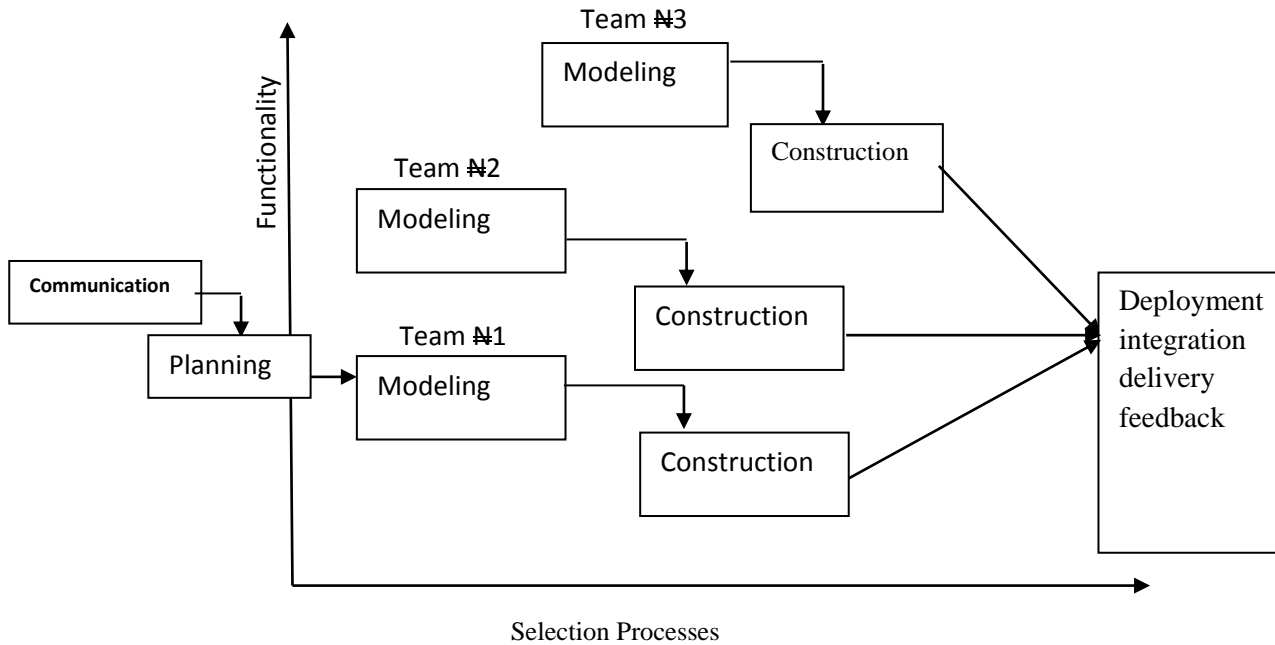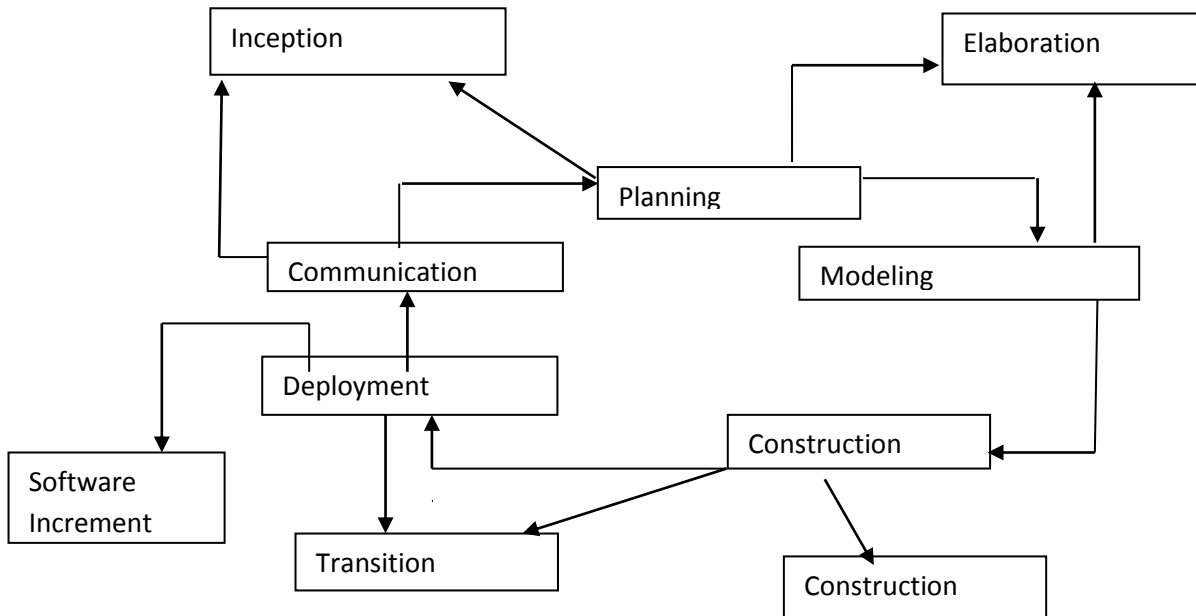
**A. Water fall Process Model**



**B. Increment Process model**

*Onah, Marcus C. Ejike[1] & Professor V.N. Nwachukwu[2]*

## C. Rapid Application Development (RAD) Process Model

Team ₦3

Modeling

Construction

Functionality

Team ₦2

Modeling

Construction

Communication

Deployment
integration
delivery
feedback

Planning

Team ₦1

Modeling

Construction

Construction

Selection Processes

## D. Unified process model using Unified multiple Language (UML)

Inception

Elaboration

Planning

Communication

Modeling

Deployment

Construction

Software
Increment

Transition

Construction

**Sources: for A, B, C and D: Pressman (2010)**

Closely related to the above selection process model are other models propounded by the Library Organizer (2010). The library organizer model for software selection processes in libraries are: the evolutionary process model and the specialized process model which centresprimarily on the library's evolutionary trends in relation to technological advancement and library's types and scopes respectively.

**Methodology**

The study adopted descriptive survey design and had a target population of 247 library staff comprising of: 142 library staff from NAL (46professional, 38 para-professional and 58 non-professionals and 105 library staff from FUTO library (29 professional, 27 para-professional and 49 non-professionals. Also, the study used observation checklist and

structured questionnaire as the instruments for data collection. The study sampled 80 library staff out of 247 which consisted of: 24 professional, 19 para-professionals and 37 non-professional library staff; using disproportionate stratified random sampling technique. 80 copies of the questionnaire were distributed to the respondents and 72 were returned. This represented a return rate of 90%. The data collected were analysed using descriptive statistics of frequency tables, percentages and mean scores.

**Research Question One:** What are the library software(s) available in the libraries?

**Table 1A:** Availability of library software packages in the libraries (Observation checklist).

| SN | ITEMS | Available | Not Available |
|----|-------|-----------|---------------|
| 01 | Open D-lib/ D-space | | ✓ |
| 02 | x-lib | ✓ | |
| 03 | Tin-lib | ✓ | |
| 04 | Micro-CDS/ISIS | | ✓ |
| 05 | Lib-plus | ✓ | |
| 06 | AD-Lib | | ✓ |
| 07 | Auto-Lib | | ✓ |
| 08 | Pen-Lib | | ✓ |
| 09 | Evergreen | | ✓ |
| 10 | Ex-Libris | | ✓ |
| 11 | Fedora | | ✓ |
| 12 | Minisis | | ✓ |
| 13 | Follet | | ✓ |
| 14 | Greenstone | ✓ | |
| 15 | Klas | | ✓ |
| 16 | GLAS | ✓ | |
| 17 | Koha(open source) | ✓ | |
| 18 | Libero | | ✓ |
| 19 | Resource-Mate | ✓ | |
| 20 | Alice for windows | ✓ | |
| 21 | Slam | | ✓ |
| **Total** | | **08 (38%)** | **13 (62%)** |

Table 1A above shows that in Nnamdi Azikiwe library, University of Nigeria Nsukka (UNN) and Federal University of Technology, Owerri library, eight (8) library software packages are available out of the twenty one itemized packages. This means that the libraries have thirty eight (38) percent of library software availability and sixty two (62) percent of library software non-availability respectively.

**Research Question Two:** What are the methods used in the software selection practices of the libraries?

**Table 2:** Methods used in the software selection practices of the libraries.

| S/N | ITEMS | VME | ME | LE | NE | $\overline{X}$ | Dec. |
|-----|-------|-----|-----|-----|-----|-----|------|
| 22 | The software is developed in-house locally within the libraries. | 08 | 19 | 18 | 27 | 2.11 | Rej. |
| 23 | The packages are selected because of its variability of functions (quantitative approach). | 28 | 21 | 15 | 06 | 3.01 | Acc. |
| 24 | The selection is purely on the managers personal feelings (Intuitive approach). | 20 | 35 | 10 | 07 | 2.94 | Acc. |
| 25 | Selection is done after the feasibility study of the library needs (Decision analysis approach). | 25 | 30 | 05 | 10 | 3.00 | Acc. |
| 26 | Selection is based on the values assigned to selection criteria (Criterion counting value approach). | 05 | 18 | 32 | 12 | 2.28 | Rej. |
| 27 | The software is selected based on the political will-power of the managers (Political approach). | 30 | 16 | 12 | 10 | 2.97 | Acc. |
| 28 | The selection is based on the software technology and support (Technological approach). | 28 | 20 | 14 | 10 | 2.92 | Acc. |
| 29 | The managers and/or parent institutions imposes the package on the libraries (imposition approach). | 10 | 11 | 31 | 20 | 2.15 | Rej. |
| 30 | The selection is based on experiences from seminar/ conferences & symposia. | 33 | 21 | 12 | 04 | 3.19 | Acc. |
| 31 | The selection is accidentally done (accidental approach). | 09 | 11 | 20 | 29 | 2.00 | Rej. |
| | **Grand Total** | **196** | **202** | **169** | **135** | **2.65** | **Acc.** |

Table 2 generally depicts that with grand mean score of 2.65 the libraries adopt some methods in their software selection practices. Specifically, six methods out of ten methods are accepted and employed in the selection practices of library software in NAL and FUTO libraries. This is because these six methods namely: Quantitative approach, Intuitive approach, decision analysis approach, political approach, technological approach, and experience from seminar approach; with their respective mean scores of : 3.01, 2.94, 3.00, 2.97, 2.92, and 3.19 have a mean score greater than 2.50 which is the criterion mean. Conversely, the other four methods namely: In-house development approach, criterion counting value approach, imposition approach, and accidental approach; with their respective mean scores of: 2.11, 2.28, 2.15, and 2.00 are rejected and not employed.

**Research Question Three:** How effective are the adopted processes in the software selection practices of the libraries?

**Table 3:** Effectiveness of the process adopted in the software selective practices of the libraries

| S/N | ITEMS | VE | E | FE | NE | $\overline{X}$ | Dec. |
|---|---|---|---|---|---|---|---|
| 32. | The stage of the selection practices depends on the libraries criterion for software selection. | 25 | 32 | 04 | 10 | 3.01 | Acc. |
| 33. | The stage of the selection practices depends on the co-operate requirement of the libraries. | 28 | 21 | 15 | 06 | 3.01 | Acc. |
| 34. | Technological advancement determines the stages. | 45 | 15 | 05 | 03 | 3.50 | Acc. |
| 35. | Development and growth in the libraries defines the selection stages. | 30 | 25 | 10 | 07 | 3.08 | Acc. |
| 36. | Technology and library requirement anchor the stages. | 23 | 25 | 18 | 05 | 2.93 | Acc. |
| 37. | Technology and the library stated criterion guide the stages. | 19 | 24 | 12 | 15 | 2.67 | Acc. |
| 38. | Evolutionary trends of software engineering and support defines the stages. | 43 | 18 | 04 | 04 | 3.45 | Acc. |
| 39. | The library size and type depicts the phase of the selection (specialized process). | 09 | 40 | 11 | 10 | 2.66 | Acc. |
| 40. | The phases are implemented top-down independently to reduce cost and labour (water-fall process). | 10 | 09 | 39 | 10 | 2.28 | Rej. |
| 41 | Two or more stages are unified to meet demand in a short-run and save time (unified process). | 07 | 09 | 41 | 12 | 2.16 | Rej. |
| 42 | The phase increases as growth and expansion occur in the libraries (incremental process). | 10 | 04 | 06 | 49 | 1.74 | Rej. |
| 43 | The stages of the selection are assigned to different developers for speedy completion (Rapid Application Development (RAD process) | 05 | 11 | 08 | 44 | 1.66 | Rej. |
| | **Grand Total** | **247** | **233** | **184** | **193** | **2.61** | **Acc.** |

Table 3 shows that some software selection practices processes were effective. This is because cumulatively the mean of the items in the table (that is grand mean score of 2.61) exceeded the criterion mean. As a result,

eight items out of the twelve items on the effectiveness of the processes of software selection practices are accepted. The accepted processes and their mean score are: technological advancement dependent process (3.50), library criterion dependent processes (3.01), library requirement dependent process (3.01), library

**Discussions of Findings**

In table 1, data were collected on the availability of library software and their responses analyzed. The finding revealed tha the library software available in NAL (UNN) and FUTO libraries are: x-lib, Tin-lib, Lib-Plus, GLAS, Resource-mate, Koha (Open source), greenstone, and Alice for windows. This is in line with Oyinloye (2004) who stated that all federal university libraries have Tin-lib software and also that in Nigeria, the library packages that are mostly used by libraries are: X – lib, Tin – lib, Koha, Resource-mate, GLAS, etc. The findings from table 2 shows that the methods of the software selection practices employed in the libraries are: quantitative, intuitive, decision analysis, political, technological, and experience from seminar/conference approaches. This is in agreement with Adogbeji, Onohwakpor and Ozioma, 2004; and Leung, 2002 because they stated that these methods are mostly employed by institution, organization and/or company in their method of software selection practices. While the findings from facts and figures in Moreover, as the study revealed that six methods of software selection practices was employed while selecting their software. It implies that the university libraries are informed and will resist any form of hasty selection of the software. More so, they know where to acquire the software, how to maintain it, and above all define their needs, requirements and criterion properly. In addition, with the findings equally showing that twelve processes are effective in the selection practices of their library software; the implication was that library managers and indeed staff are no longer a novice in software selection practices. Consequently, they are aware of the existence of varying processes and their accompanying requirements in terms of personnel, infrastructure and supports.

**Conclusion**

Library software are fundamental to quick and efficient management of library operation and services; especially in the university libraries which are large in terms of size, scope, content and staff strength. Subsequently, the modern trend of information management in university libraries becomes a challenge

**References**

Adesanya, O.O; Onilude, O.O.; &Sodipe, R.O. (2004). Database design and Creation: As a Source of Information for Libraries and Information Centres. In :Madu, E.C (ed.) *Technology for Information*

development and growth dependent process (3.08), among others. However, the table equally revealed that four out of the twelve items on the table were rejected. The rejected processes with their mean scores are: water-fall process (2.28), Unified process (2.16), incremental process (1.74), and RAD process (1.66).

table 3 revealed that twelve effective library selection processes as: library criterion dependent, library requirement dependent, technological advancement dependent, library development and growth dependent, techno-library requirement, techno-library criterion software evolutionary trend, and library size and type dependent process. These processes agree with the processes that these authorities as:Komoski , 1995; TGI, 2011; Software Resources, 2011 and Library Organizer, 2010 ascertained are the most effective processes for software selection practices.

**Implications of the Study:**

The findings of this study have implications for university libraries, library management and library and information science professionals. With the availability of library software in NAL and FUTO library it implies that the libraries are aware of the existence of these packages and its usefulness the services and operations of their libraries, especially in this age of information explosion and knowledge economy.

in this information age. Thus, the investigation of software selection practices of these libraries becomes imperative. Consequently, as this study primarily focused on software selection practices: methods and processes adopted by Nnamdi Azikiwe library and Federal University of Technology, Owerri Library. The study has three purposes and research questions that guided it. More so, in this study literature were reviewed conceptually based on the research questions.

Based on its research questions, this study revealed that there are: eight library software; six methods used in their library software selection practices; and twelve effective processes that were adopted in their selection practices. Finally, the study recommended that: University libraries should acquire software that will attend to their needs and aspirations; their methods of selection practices should be such that are feasible and in direct need of the libraries; management should communicate, and plan their selection processes and as well seek the opinions of the previous users of such library software.

*management and Services: Modern Libraries and Information Centres in Developing Countries*, Ibadon: Evi-coleman Publication.

Adogbeji, O.B.; Onohwakpor, J.E. & Ozioma, A.S. (2004). Software Selection and Acquisition in Nigerian University and Special Libraries: The Way forward, *Gateway Library Journal*, 5(1&2), P. 6-24. Retrieved From: http://www.cis.uws.ac.uk/research/journal/softwareselection.pdf. On: 10/08/2011.

Andy, P. (2011). Library Software Selection Criteria and Procedures: An Overview,*Library and Information Technology Journal*, 11(3). Retrieved From: http://www.publication.drdo.gov.in/ojs/index:phd/djlit. On: 16/06/2011.

Bandor, M.S. (2006).Quantitative Methods for Software Selection and Evaluation.m Retrieved From: http://www.sei.cmu.edu/abstracts/reports/06tn-026.pdf. On: 15/10/2011.

Komosky, P.K. (1995). Seven Steps to Responsible software Selection, *Eric Digest*, ED:322158. Retrieved From: http://www.ericdigest.org/? On: 20/10/2011.

Leung Karl, R.P.H. & Leung Hareton, K.N. (2002), On the Efficiency of Dormain-Based_COTS Products Selection Methods*, Information and Software Technology*, 40(22), P. 703-715.

Library Organiser (2010). Library Automation: An overview. Retrieved from: http://www.dmoz.org/library_software.html. On: 20/10/2011.

Omekwu, C.O. (2004). Planning for Library and Information Centres Computerisation in Developing Countries. In: Madu, E.C. (ed.) *Technology for Information management and Services: Modern Libraries and Information Centres in Developing Countries*, Ibadon: Evi-coleman Publication.

Osborne, A. (2007). Library automated System and Vendors on the Internet. Retrieved From: http://www.itcompany.com/inforetriever/sys.html On: 25/11/2011.

Oyinloye, A.M. (2004). Software Packages for Libraries in Nigeria. In: Madu, E.C. (ed.) *Technology for Information management and Services: Modern Libraries and Information Centres in Developing Countries*, Ibadon: Evi-coleman Publication.

Pressman, R S. ( 2010) *Software Engineering: A Practitioner's Approach*, California: McGraw-   Hill Education

Sai, V. (2004). Commercial Off The Shelf (COTS) Software Acquisition and Evaluation Processes: Preachers Practice (CMU/SEI-2004-TN001, ADA 421675) In: Pittsburgh, P.A. Software Engineering Institute, Melon: Carngie University, Retrieved From: http://www.sei.com.edu/publication/documents/04reports/04tn001.html, On: 08/12/2017.

Software Engineering Institute (SEI) (2005). Product Evaluation and Selection, Retrieved From: http://www.sei.com.edu/cbs/lessons/evaluation-selection/lesson.html, On: 25/11/2011.

Software Resource (2011).The six phases of Software Selection Processes and Methods, Retrieved From: http://www.softwareresources.com/software-resources-tips, On: 25/08/2017.

Technology Group International (2011). TGI Resource Library: Software selection Process, Retrieved From: http://www.tgiltd.com/contact_us/contact_us.html, On: 16/06/2011.

Tim, L. (2004). Seven Steps to Responsible Software Selection, Eric Digest: *Journal of World of Education*, Retrieved From: http://www.eric.edu/lib_it.com/itresearch/report.html, On: 16/06/2011.