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## **Implementability and supportability of library management systems: Case study of X-lib library automation system**

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### **ABSTRACT**

*The implementability and supportability of X-Lib Library Automation System drawing from the experience of a Nigerian University library was examined in this article. The  $R^2$ ISC (risk squared) criteria are used in the analysis. The relevant components identified and analysed to determine the implementability of X-lib include: implementation assistance, vendor's responsiveness, training, vendor's background, modifications, quality of the package, documentation, software and technology maturity, while the components that were analysed in supportability include: vendor's responsiveness, quality of vendor's service, support functions, modifications, user group and warranty. The result showed 54.4 and 39.3 percentage fits respectively to the implementability and supportability requirements of the University library. The issues responsible for this state of affairs were discussed.*

**Keywords:** *X lib, implementability, University, Nigeria*

### **INTRODUCTION**

Implementability of software package has to do with the ability to implement a software package easily, while supportability is the ability of the vendor to support the package both now and in the future through modifications, upgrades, maintenance and related functions. The goal of every library undertaking automation project is to have a package that not only meet its current and future requirements but also a package that is cheap, easy to implement, modify and is fully supported by the vendor. But, all these expectations may not come to reality in project. The interaction of certain all libraries that undertake automation intervening variables in the software package may upset expectations and bring about new realities. Let us imagine a library that is using a relatively new software package, built on current technology, and perhaps the package has not been successfully implemented or widely proven in other libraries; chances are good that there will be bumps in the way of implementation of such software as a result of bugs or other problems. A library using such package must be prepared to put in additional effort, expect implementation delay, be willing to tolerate and work with the vendor to detect and resolve

unanticipated problems .Libraries in developing countries like Nigeria are applying information technology to improve and expand services on an increasing basis. Successful achievements in library automation are defined not only by completion of the installation of the software but also the longer term deployment and sustainability of the technology and the resulting services. Implementation is very different from basic installation. Typically, installation of technology focuses on the limited, specific technical install, training, and debugging process. Implementation begins with installation, but includes longer term broader actions, such as customizing or modifying the technology for a local site, training of staff and professionals and transitional technical support. According to Karetzky (1998), implementing an automated library system is a complex task. Tasks that will need attention during the implementation project usually include:

- Installation of hardware and software and becoming familiar with and testing the software and hardware
- Modifications, if required

- Training for both library staff and users
- Conversion – bringing the library records (bibliographic, user, circulation) up to par for use in the system
- Roll-out – when you are ready to turn the package over to the users.

#### **Literature Review**

The software product evaluation standard, ISO-9126 decomposes maintainability / supportability of software into four attributes which provide some indication of what maintainability is about: analyzability, stability, testability and modifiability (Dromey, 1994). The quality of software is most often discussed in terms of high level attributes such as functionality, reliability and maintainability. There is a widely held belief that software which is very easy to maintain is software of high quality (Coleman, 1996). In this current climate of fast paced technological development, one of the major criteria which should be considered in the choice of a new automated system is vendor instability. Garcia (2004) is of the view that the viability and the performance track record of the vendor are probably the most important to the success of a new system. A related issue is that of long time viability of the vendor, and this applies to both local and overseas vendors. It appears that many institutions have some experience of past projects that have not been sustainable in the long term because the vendor has either gone out of business or pulled out of the market. Sonker (2001) writing on the background of suppliers suggested that it may be necessary to look into the history or business background and stability of vendors or suppliers. Purchase of software from firms with unsound business worthiness may cause a library to spend huge amounts of money toward purchase of new software, and the library will be under pressure of work as it has to repeat the same steps all over again. Five of the eight factors that Denison and Robinson (2004) listed as essential factors for the success and effective management of a library software system are connected with the vendor and support functions, including: the availability of local and regional support, the cost of ongoing support, the ongoing viability of the system vendor, the availability of professional support and technical support. According to them, problems in any of these can erode confidence in the ability of the system to serve its purpose and cause serious problems in service provision. But the local market for library management systems in most developing countries like Nigeria can be characterized as immature unlike

the situation in places like UK as reported by Chad (2008). The vendors and their offerings, their market penetration, knowledge and experience are comparatively low. The vendors are typically local companies, who have identified library needs and targeting it. It therefore becomes difficult to start probing into important vendor viability issues such as number of employees, size of the research and development division, the number of installations, number of recent sales, financial data as suggested by Garcia (2004). International vendors have major advantages over local companies, but the problem that libraries have with international vendors are largely due to factors related to cost and support issues. It is almost essential that support be provided from within the country, and very few international vendors have any local arrangement in place.

#### **Background of the Project at Babcock University**

Babcock University is an institution that was established and funded by the Seventh-day Adventist Church in West Africa. It was established as a sub-regional institution designed to cater to the educational needs of young people in the West Africa sub-region. The mission of Babcock University is to offer high quality professional, pre-professional, general and vocational education to prepare men and women for responsible, dedicated and committed service to God and humanity (Babcock University, 1999). The institution that began in September 1999 with about a thousand students now has over five thousand students in its ninth year of existence. Babcock University presently has four schools: School of Education and Humanities (EAH); School of Law and Security Studies (LSS); School of Management and Social Sciences (MSS); and School of Science and Technology (SAT). These four schools offer degree programme in over twenty areas of specializations. In support of the mission of the university, the university library stepped up its services and initiated actions on the development and modernization of the library it inherited from the erstwhile Adventist Seminary of West Africa. The library collection as at September 2008 consists of over 45, 000 volumes of books; 150 current journal titles and collection of multimedia resources. The library aims to offer excellent and efficient library services using the modern and unlimited capability of information and communication technology. The goal of library automation for the library is to improve services to users. In pursuant of this goal, the university administrative committee constituted a library automation technical committee in July 2002. The mandate of the committee was to search, select

and implements appropriate library software that would be suitable for the library service desired for the university. The library automation technical committee has among its members the deputy vice chancellor (academics) and the university librarian to provide a lead on the project.

The initial steps taken by the committee was to develop a want list of criteria and features of the software that would meet its requirements. This is in conformity with the suggestion of McIntyre (1999). The committee determined the relative importance of each of the requirement by grouping them as priority and useful requirements.

Priority Requirements:

- An integrated system capable of managing all the basic library operations including: acquisitions, cataloguing, circulation and serials control
- Ability to accommodate a large collection envisaged for the future of the university or high capacity
- Ease of use
- Reliable technical support
- Ability to search and retrieve library records efficiently by various fields and at a fast speed
- Ability to modify the package to meet the library's need
- Reasonably low package and maintenance costs

Useful Requirements:

- Residence on a network of microcomputer and able to manage a network of school libraries.
- Multi-user package
- Menu driven
- Display of users picture during transactions

The library received various literature and information from several prospecting vendors of library software. The information gathered from vendor's literature together with searches from the professional literature assisted the library automation technical committee in the compilation of the essential features of library software. The committee also visited selected automated academic and research libraries in neighboring states for on-the-spot information on the software in use in those libraries. The X-lib Library Automation System (*X-LIB*) was eventually selected in June 2003.

The X-LIB Library Automation System (*or simply X-LIB*) was developed in Nigeria by a team of experts working in association with the Raw Materials Research Development Council (RMRDC) - an agency of the Federal Ministry of Science and Technology in Nigeria. The first version of X-LIB Library Automation System was introduced in 1996. The millennium version was released in 2000 by BERAM Ltd (a privately incorporated company to coordinate the development and marketing of *X-LIB*) and RMRDC. The latest version of *X-LIB* which we implemented in Babcock University was released in 2003 by BERAM Ltd. According to BERAM (2003), *X-LIB* as a library management software is complete with provision for all aspects of library operations.

#### **Objective of the Study:**

The objective of this article is to evaluate how the implementation and vendor support to X-lib Library Automation System meets the requirements of Babcock University library. In an earlier paper, this author determined how the X-lib Library Automation System meets the current and future requirement of Nigerian university libraries (Osaniyi, 2010). But, just as it is important to determine how the package meets the current and future requirements of the libraries, it is equally important to examine how the package meets the libraries' implementability and supportability requirements.

#### **Methodology**

For the purpose of this evaluation an adaptation of the R<sup>2</sup>ISC method (pronounced "risk Squared") as suggested by Hollander (2000) is used, but only the third and fourth criteria apply to this paper. The R<sup>2</sup>ISC criteria incorporate the following:

- Current requirement: Ability of the package to meet the library's current operational requirement
- Future requirement: Ability to modify the package to meet the library's new requirements as they become known
- Implementability: Ability to implement the package easily
- Supportability: Ability of the vendor to support both the package and the company in the future
- Cost: Total cost to purchase and implement the package as well as ongoing maintenance and support costs

To determine how the X-lib Library Automation System meets the R<sup>2</sup>ISC criteria as described above, the components of each requirement are identified in

one or two brief sentences. The identified components are verifiable and observable. Having identified the components of the criteria, the components are ranked based on which criterion is highly or less important according to the judgment of the library technical committee that selected the software. The Numerical Weight and Sum (NWS) method of weighting as discussed by Scriven (1991) also provide a guide to assigning weights to the criteria. He suggested the setting of the weight of each criterion using a scale (1-10). The components are ranked as follow:

- H High (Must have component for the library)
- M Medium (Should have component for the library)
- L Low (Like to have this component for the library)
- X Not needed

**Convert the H, M, L, and X to a numerical value as in Table 1 below:**

**Table 1: Numerical weighting of criteria CODE SHEET**

Code	Need	Rating
H	High (Must Have)	10
M	Medium (Should Have)	7
L	Low (Like to Have)	3
X	Not Needed	0

**Procedure:**

The following steps are taken to fill the worksheets used:

1. List the implementability or supportability components in the column for implementability or supportability requirements. Components that are coded "X - not needed" are not listed
2. Assign a weight to each component in the column marked library needs based on the technical committee's perceived need ratings
3. *X-lib's* score is derived by the author's assessment of *X-lib's* ability to meet each requirement
4. Multiply *X-lib's* score by the library's need rating to determine *Xlib's* weighted score
5. Add *X-lib's* total Weighted Scores for all the components to determines *Xlib's* total score

6. Maximum value equals the sum of the library ratings multiplied by 10 (the highest rating possible)
7. To calculate *X-lib's* Weighted Average, divide the Total Weighted Rating by the Maximum Value for the requirements.

**FINDINGS AND DISCUSSION:**

**Implementability:**

The requirements that affect the implementability of the X-LIB Library Automation System in Babcock University library are listed in the first column on the worksheet in Table 2 below. In the second column the library need for the requirements are rated in their order of importance to the library. The third column reflect the *X-lib* rating in meeting the requirements, while the fourth column show the *X-lib* weighted rating derived by multiplying the library need rating by the *X-lib* rating. Each of the requirements is discussed accordingly.

*Implementation Assistance* Implementation assistance has to do with the type of services the vendor provided; the quality of personnel made available and their experience with the package and the services rendered. As indicated in the terms of reference the services to be provided by the vendor include: supply of hardware; installation of software and the setting up of a local area network. The hardware supplied meets with the library's specifications and was acceptable. The software was installed on the server without any problem. The setting up of the local area network was a different story. This aspect of the implementation work was poorly handled, particularly the link to the branch libraries located in the three schools. Technical considerations such as topology, the use of switches at distances after which ordinary cables become inefficient were not adhered to. This coupled with the unprofessional procedure in which the branch libraries were connected made it impossible for the workstations at the branch libraries to receive signal from the server located in the main library.

The specific problems identified include: poor topological assessment which resulted in wrong decision on the appropriate cable to use (the use of ordinary cable where fiber optics cable is required); substandard work in the laying of cables across the campus and the vendor personnel's drive to make personal profit. As a result of the apparent incompetence of the vendor's personnel, this aspect

of the work had to be contracted out to a sub-contractor before an acceptable local area network was accomplished. The issue here is that the implementation assistance required from the vendor was hampered and delayed by the quality of personnel made available by the vendor.

#### *Vendor's Responsiveness*

A vendor can put up a road block to the successful implementation of a software package by not responding fast enough when a client is in need of assistance. During the period of implementing *X-lib* in Babcock, the vendor was always responsive to the library's call for assistance. This attitude was to some extent due to the personal trust placed on the third party vendor which the vendor did not want to betray, and in part due to the outstanding contract fee to be settled at the end of the project. Beside these, the project in Babcock University is a landmark project to the vendor since it is the largest site among the vendor's user base. If the project is successful, it would become an important reference point to attract other prospective users. The successful implementation of the project at Babcock may provide further boost to the vendor's profile.

#### *Training*

Training of users, training of trainers and systems personnel are important and imperative steps for a successful implementation of a software package. In order to get the best out of a package the users need

to know how to use it. Consequently, a 3-days training programme was organised in-house by the vendor for the entire library staff of the Babcock University library to introduce the features and acquaint the library staff with the use of *X-lib*. Prior to the training, only a handful number of the library staff already had experience in the use of computer, while the others were made to learn on the job. The training method adopted by the vendor included instruction, demonstration and hands-on experience.

For about one month after the training, the vendor's personnel were on hand to answer questions and provide assistance to the data entry staff among other assignments. The system administrator assumed duty in the library after the training and so did not participate in the 3-days training programme organised for the library staff. Therefore he had to depend on the user's manual that was provided with the software, learned through hands-on experience and also relied on past experience with other software packages. But after a while, the vendor arranged a demonstration of the software with the system administrator.

Training of library users was carried out by the library staff on a continuous basis. Individual and group training were organised simultaneously. To facilitate the training of users, the library prepared an OPAC guide as a source document on the software for all users.

**Table 2: Implementability requirement worksheet**

<b>Implementability Requirement</b>	<b>Library Need</b>	<b>X-lib Rating</b>	<b>X-lib Weighted Rating</b>
<b>Implementation Assistance</b>	<b>10</b>	<b>6</b>	<b>60</b>
<b>Vendor's Responsiveness</b>	<b>10</b>	<b>8</b>	<b>80</b>
<b>Training</b>	<b>10</b>	<b>7</b>	<b>70</b>
<b>Vendor's Background</b>	<b>7</b>	<b>5</b>	<b>35</b>
<b>Modifications</b>	<b>7</b>	<b>4</b>	<b>28</b>
<b>Software Reliability</b>	<b>7</b>	<b>5</b>	<b>35</b>
<b>Documentation</b>	<b>7</b>	<b>4</b>	<b>28</b>
<b>Software Maturity</b>	<b>3</b>	<b>1</b>	<b>3</b>
<b>Technology Maturity</b>	<b>3</b>	<b>3</b>	<b>9</b>
<b>Total</b>	<b>64</b>		<b>348</b>
<b>Maximum Value</b>	<b>10</b>		<b>640</b>
<b>Percentage Fit</b>			<b>54.4%</b>

#### *Vendor's Background*

The vendor's background plays a significant role in the implementation of a package. Important questions to ask when considering the vendor's background include: the vendor's experience and number of years in business, type of customers; capacity to meet and support your site, etc. Some of these factors were considered in respect of the vendor that implemented the *X-lib* at the Babcock University library. Due to the prevailing state of the library management systems development in Nigeria, important issues that can help to determine the viability of a vendor were ignored. The vendor chosen was a third party vendor with relevant experience in software implementation in addition to sound background in library practice. The library staff viewed the vendor's relevant background as an added advantage since he would understand and be familiar with library requirements and appreciate the library's problem better. The choice of a third party vendor later proved to be a disadvantage because the real company charged with the responsibility of marketing, implementation and support of the package showed very little commitment to Babcock's project after it was handed over to them. Babcock project was not their direct project. Also, the absence of a sound business structure, inadequate number of employees and viability of the company later posed serious threat to the vendor's ability to render excellent and long-term services.

#### *Modifications*

There are different types of modifications that a package needs to have to meet a client's requirement. Modifications that can be accomplished with additional program before or after implementation of the package are regarded as front-end or back-end modifications. The other type of modification that requires changes to the package program or to the codes are regarded to be more complicated. Both types of modification are required on *X-lib*. Aspects where modifications are required include:

- **Web Interface:** Babcock library believes that in the current information environment, library management software must be robust, integrated, and interoperable with other library technologies, capable of delivering traditional as well as new functionalities to handle heterogeneous information.
  - **Additional Functionality at the Enquiries / Reports Module:** The library desire additional parameter by which searches can be conducted in the database. An example is that the "Editor(s)" of edited works be added as a search parameter
  - **Adjustment to some database fields:** Fields such as "Spine Label" and "Price" which are of fixed length are required to be made flexible
- Problem with some terminologies used: An example is "Publication Class"-a concept used in *X-lib* to describe the loan options that are allowed including:

Long Term Loan; Short Term Loan, etc. The use of “Type of Loan” is preferred to “Publication Class”

While these modifications on their own do not necessarily prevent implementation, they are desirable for satisfactory use of the package. These modifications could not be achieved only in a particular site but are expected to be added features in the new upgrade.

#### *Software Reliability*

Reliability refers to the fault tolerance of the software or the ability of the software to withstand (and recover) from component or environmental failure. The reliability of software is an important component of its quality. The quality of a package that the vendor delivers has a large influence on the implementability of the package. If the package contains bugs, it becomes more difficult to implement and the risk of negative result increases. For example, bugs in a software package may get the users so discouraged that it becomes hard to convince the users that the package is working after the bugs have been fixed. The extent of bugs encountered at implementation is one of the important quality factors in a software package. Showale and Longe (2006) argued that quality is more than the absence of bugs. Software quality criteria include correctness, reliability, modifiability, maintainability, usability and documentation.

*X-LIB Library Automation System* is a relatively new, unproven package and expectedly the library encountered many bugs that needed to be worked out. Initially, the library received prompt assistance in resolving some of the bugs from the vendor, but there are a few problems that remained unresolved to date. An important issue that remained unresolved and which demonstrates the unreliability of *X-lib* is the issue of false drop in response to search queries or its inability to recall documents accurately in response to exact search specification. This weakness was not observed until data entered reached about 10, 000 items. If for example a search is conducted using “Keyword = Software”, the output may include unrelated subject such as “Economics”. As a result, the integrity of the database created with *X-lib* seems to be a major cause of anxiety and this has prevented the library from giving massive promotion to its database. It is also observed that the package lack the capacity to cope with the serious limitations in the

national power supplies experienced in Nigeria. The files get corrupted easily with frequent power failure.

#### *Documentation*

Documentations that come with software packages are invaluable even though they are used infrequently. Packages come with different types of documentation for installation, for users and for the system administrator. Having the manual is not the only important thing; the manuals must be well written with well organised content.

The *X-LIB Library Automation System* comes with only a user guide and help topics online. The quality of the user guide is below expected standard. The guide is not indexed. The table of content has no pages for easy access. It is frustrating to have a problem and having to spend hours trying to find where it is explained in the guide.

#### *Software and Technology Maturity*

The newness of *X-LIB Library Automation System* notwithstanding, it possess a number of attractive features to Babcock library including: its ease of use; it is menu driven; it is an integrated system that is capable of managing all the basic library operations; and it is based on Windows technology which allows the use of different hardware. Other than its inherent qualities, the package was also given positive recommendation by a sister university library which claimed to have implemented the same package by the time the library automation technical committee visited the library. It was later realized at the time the technical committee visited that library the package was not in full operation, it was only demonstrated on a workstation. Babcock library’s experience with *X-lib* at full implementation did not in many respects conform to the observations and conclusions of the technical committee from the visit to that library. However, Babcock library is optimistic that the benefit of going ahead with *X-lib* would outweigh the problems encountered in its implementation. Accordingly, the library resolved to work together with the vendor / developer to tackle the problems that have militated against its implementation. The library also believes that as more and more libraries start to use *X-lib*, through collaborative efforts, it is possible to upgrade *X-lib* to the desired standard.

#### **Supportability:**

A package may be implemented successfully and you are happy with it, but if there is a problem you will want the vendor around to fix it. Supportability is the ability of a vendor to support a package. The vendor’s ability to support X-LIB Library

Automation System in Babcock University depends on the following requirements listed in the first column on the worksheet in Table 3 below. In the second column the Babcock library's need for the requirements are rated in their order of importance to the library. The third column reflects the *X-lib* rating in meeting the requirements, while the fourth column show the *X-Lib* weighted rating. Each of the requirements is discussed accordingly.

#### *Vendor's Responsiveness*

The responsiveness of a vendor is important in the support of a package just as it is in the implementation. Hence it is one of the most important needs in this evaluation. The result of this evaluation show low weighted rating (40 percentage fit) for the vendor's responsiveness. This result can be explained by several unfulfilled promises made by the vendor. For example the vendor promised in August 2004 during the maiden user's forum to supply the new enhanced upgrade of *X-lib* with Web interface to Babcock's library in September 2004, but this has not been done at the time of writing this paper, four years after the promise was made.

It can be more problematic indeed to find problems with a vendor's credibility than to find that the package is missing a specific functionality. While a

function can usually be added, there is no fixing a vendor who makes promises and doesn't keep them. What good is it if a vendor makes wonderful promises and never fulfils them? The library has experienced series of downtime period for up to three months at a stretch as a result of the vendor's inability to provide prompt response to problems encountered. A situation like this obviously will create anxiety and frustration in the mind of any client as well as suspicion about the future of the software. After implementation is over and all contractual obligations have been fulfilled, the library is no longer in any vantage position to enforce vendor's compliance.

Due to lack of commitment to the development of *X-lib*, the issue of support for the package is not handled in a professional and businesslike fashion.

#### *Quality of Services*

The quality of a vendor's services is also an important component of the vendor's support. A vendor's quality consideration include a combination of factors such as staff strength, competence, depth of support, access to support, response to suggestion for enhancement, etc. In these respects, the vendor also scored low weighted rating (40 percent). It is regrettable to observe the undue difficulty and delay in getting the required support for *X-lib* when needed. But occasionally when support is rendered, it is usually satisfactory.

**Table 3: Supportability requirement worksheet**

<b>Supportability Needs Worksheet</b>			
<b>Supportability Requirement</b>	<b>Library Need</b>	<b>X-lib Rating</b>	<b>X-lib Weighted Rating</b>
<b>Vendor's Responsiveness</b>	<b>10</b>	<b>4</b>	<b>40</b>
<b>Quality of Services</b>	<b>10</b>	<b>4</b>	<b>40</b>
<b>Support Functions</b>	<b>7</b>	<b>5</b>	<b>35</b>
<b>Modifications</b>	<b>7</b>	<b>4</b>	<b>28</b>
<b>Users' Group</b>	<b>7</b>	<b>3</b>	<b>21</b>
<b>Warranty</b>	<b>3</b>	<b>3</b>	<b>9</b>
<b>Total</b>	<b>44</b>		<b>173</b>
<b>Maximum Value</b>	<b>10</b>		<b>440</b>
<b>Percentage Fit</b>			<b>39.3%</b>

#### *Support Functions*

The support functions required for *X-lib* include: the provision of upgrades; modifications and working out bugs and other related functions. The weighted score for the *X-lib* support functions based on Babcock library's experience is 35 (71 percentage fit). This is partly due to the fact that *X-lib* was implemented in Babcock University by a third party vendor. Meanwhile, the third party vendor does not possess the required competence to provide the support functions but only serves as link to the supporting company (Beram Ltd), which provides support services. This indirect approach has posed a hindrance to effective support at the moment. The problem of support has been compounded by the limited technical staff available to the supporting company to provide on-the-spot assistance to users.

#### *Modifications*

The weighted rating for modification as a criterion in this study is 28 (57 percent fit). As is common to all software, library management systems undergo continuing development and are frequently updated both to correct existing problems and to add new features. The ideal situation is to have the vendor incorporate modifications into their standard package whenever the package is upgraded. In respect of the *X-lib*, users agreed at the maiden users' forum in August 2004 that all suggestions for modifications as approved by majority of users shall be incorporated

into future upgrade of the package. But, due to the general lack of commitment on the part of the developer, there was no follow up on the decision made at the users' forum.

#### *Users' Group*

The weighted score for this criterion is 21 (42.9 percentage fit). Users' group provides a forum where users get together and share experiences. It is an association of users of a vendor's product that get together on a regular basis to assist each other to utilizing the package better. Regular consultation with other users of a package may provide information on a package that cannot be ascertained from any other source. A library's success in the use of a package can help others learn how to become successful. Users' group also makes input to the vendor on the enhancement that should be included in future releases of the software. As pointed indicated previously *X-lib*'s vendor has not been able to utilize the opportunities offered in arranging user's group meetings. The maiden and only *X-lib* users' forum took place in Lagos, Nigeria in August 2004. The forum provided an opportunity for representatives of the users of *X-lib* to share experiences, identify problem areas and make suggestions on aspects of the package to be considered for modification. It was also an opportunity to meet with the team concerned with the development and marketing of the package.

*Warranty*

Babcock University library enjoyed this facility with the vendor of *X-lib* for two years. The weighted score for this criterion is 9 (100 percentage fit). The warranty period that Babcock library enjoyed is probably related to the extent of difficulties encountered in the course of implementing the software package and the consequent pressure mounted on the vendor / developer. The importance of warranty is to correct any defect (bugs) that is discovered in the software without charge. It is common for vendors to offer free warranty for a given period and even continue the warranty as long as annual maintenance fee is paid. During the warranty period the vendor assisted Babcock library to work on bugs; separate the image files from the main database files when the database was getting unnecessarily bulky; and also to recover data.

**Conclusion and Recommendations**

The process of taking a library through implementing new software can be overwhelming. Using a new package that has not really been proven in many libraries involve some degree of risk and therefore calls for caution. Librarians must understand that it is harder to implement a software package that is new and it requires commitment and additional effort having to work with the developer to identify and work out bugs. It is rather like marriage in which you make a long time commitment, and, while you may have to make adjustment (modify or upgrade software), divorce is painful. It is frustrating to spend money and time implementing a package and to find out later that the package does not work.

Like most new packages, *X-lib* runs the inherent risk of not being successful upon implementation. As observed in this evaluation, the implementation of *X-lib* at the Babcock University library meets the requirements of the library better than the supportability components of the software. The drawback with the implementability of *X-lib* includes its poor documentation; inability to customize the software to meet peculiar requirement of a particular site and the presence of few unprofessional / unacceptable terminologies used for a number of catalogue and library processes. Concerning supportability, poor business structure of the vendor, inadequate technical personnel; slow response to problems poses serious threat to good quality support

and maintenance services, hence the low score recorded in the supportability components. The software also cannot be said to be reliable because of instances of false drop experienced at the enquiry module. This obviously is a serious drawback. Problems of this nature can erode users' confidence in the ability of the system and also cause problems in library service provision.

The author is of the view that current users of *X-lib* need to constitute a common front to address problems identified with the implementability and supportability of the software and make appropriate recommendation for improvement to the developers. The users must be prepared for this sacrifice to make the software work since software purchase is not so much a matter of trial and error except where there is enough money to throw around anyhow.

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