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Standards for Choosing and Assessing Integrated Automatic Systems in Libraries and Information Centers: Applied Study on Egyptian Universities Libraries

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Abstract: Information explosion with severe need for recent and accurate information with minimal time and effort – an objective for libraries and information centers – in addition to massive advances in computer systems, increased electronic expertise and skills (personally and professionally) and notable improvements in local and international communication networks are all reasons for the use of integrated automatic systems in libraries and information centers during the past few years. Since the late 1990s, these systems are heavily used in Egyptian libraries and information centers with the objective of developing information technology and validating files when limitations of information systems – imported with high cost – in the Kidney Hospital of Mansoura University appeared in automatic storing of information, data and registries. This led to the suggestion of establishing a technical center to fulfill the needs of scientific and information centers and associations for information systems instead of wasting money on buying only one system. This is followed by establishing the Center for Telecommunication Technology – Mansoura University. Eng. Mohamed Al-Refai designed the future system or "Egyptian Universities Libraries Consortium" (EULC) and he is responsible for it technically and an applicably (http://srv3.eulc.edu.eg/eulc/libraries). The system proved effective since its use in Mansoura University Libraries in 2005. The Egyptian Universities Libraries Consortium via the Supreme Council of Egyptian Universities, chose it to be applied in all Egyptian libraries and credited it as an efficient system for satisfying the needs of University Digital Libraries in addition to its relatively low cost. The consortium chose that system after evaluating all other local and international systems previously used in Egyptian University. It was proved that the system avoided all clear limitations of previous systems like "Advanced Library Information System" (A-LIS), "Library Information System" (LIS – LIS-2), "Horizon"… etc. The current research aims to assess the automated system used in the Library of Faculty of Physical Education for Women – Alexandria University, as the library uses Egyptian Universities Libraries Consortium (EULC) as all other Egyptian Universities Libraries since 2006 till now. Assessment is done according to standards for assessing integrated automated systems for libraries and information centers established by Dr. Osama Al-Sayed Mohamed Ali, assistant professor of libraries and information – Faculty of Arts – Cairo University. standards were concluded according to review of literature in addition to standards used in the "American Library Association" (ALA) and "Library of Congress" (LC) with modification to be fit for use according to the needs of Arab Libraries. Research tools included field visit to the library under investigation, application of the standards, review of related literature concerning assessment of integrated automated systems and interviewing system users including: Dr. Mohamed Al-Refai (system designer) – librarians – library administrators – specialists of digital libraries. Assessment depended on the availability of required standards in the system or the system's satisfaction for standards required by the library under investigation. Assessment included (17) standards each one of them included several items formed as questions with total number of (301) items. Through analyzing these items, the system was assessed and positive aspects and compliance with standards were discussed in addition to discussing the system's limitations and non-compliance with standards. Suggestion to avoid limitations were introduced.

[Manal El-Sayed Ahmed Ali. **Standards for Choosing and Assessing Integrated Automatic Systems in Libraries and Information Centers: Applied Study on Egyptian Universities Libraries.** *Life Sci J* 2019;16(11):65-78]. ISSN: 1097-8135 (Print) / ISSN: 2372-613X (Online). http://www.lifesciencesite.com. 7. doi:10.7537/marslsj161119.07.

Keywords: Standard; Integrated Automatic System; Library Information; Egyptian Universities

1. Introduction:

Information explosion with severe need for recent and accurate information with minimal time and effort – an objective for libraries and information centers – in addition to massive advances in computer systems, increased electronic expertise and skills (personally and professionally) and notable improvements in local and international communication networks are all reasons for the use of

integrated automatic systems in libraries and information centers during the past few years.

Networks evolution:

Computer networks were major factors in introducing digital libraries. Networks evolved through time. Originally, it was created to link and cover one floor in one building with terminals. Although there was a great need and desire that computers may connect over longer distances, telephone networks remained for a relatively long time with its limited capabilities to create long-distance connections. Then modems emerged and linked computers over longer distances. Slowly, networks improved and communication technology introduced specialized network lines with faster network options.

Today, with the widespread use of the internet all over the world, communication became amazingly fast with massive widespread of using it. Robert Metcalfe suggested that network value equals the square number on nodes on it (Metcalfe Law). This indicates the increased number of internet users (Matthews 2016).

Since then, libraries seek to know new innovative methods to use the power of the internet to communicate with beneficiaries all over the world to add a real value for those persons through satisfying their informational and daily life needs with maximum speed and minimum time, cost and effort.

As a result, several integrated automated systems appeared and libraries gained plenty of options among them through service providers. But such choices require good knowledge of these systems and what they do to improve the library tasks and services. This also requires good knowledge of amazing complexity of automated libraries systems – that each one of them may include over a million software codes – in addition to how to maintain them.

As libraries satisfied their needs for performing several important and over increasing tasks, other systems appeared to integrate the automated libraries systems. These include authentication system, library loan system, electronic resource management system (ERMS) and digital asset management system, in addition to the need for communicating with other campuses' systems (in case of universities libraries like students' registry and HR systems) (Matthews 2017).

Reasons for using automated systems in Egyptian libraries and information systems:

During the past few years, automated integrated systems used in libraries and information systems became numerous. This increase in using such systems in Egyptian libraries may be due to:

- The widespread use of computers and what this requires of integrated automated systems.
- Free Egyptian or Arab integrated automated systems.
- Micro- and personal computers technology became cheaper, wider in use and more improved.
- Increased rates of electronic expertise and skills (personal or professional) among librarians and information specialists due to the relative improvement of their preparation programs in addition to the availability of training opportunities for information technology compared to the past.
- Notable improvements on the Egyptian national telecommunication network that facilitated establishing internal information networks (inside the library) or even wider networks (as in integrating the indices of all Egyptian libraries and uploading it to the internet).
- Egyptian high-rank organizations and personnel became more interested in using information technology in all organizations including libraries and information centers.

Since the late 1990s, theses systems are heavily used in Egyptian libraries and information centers with the objective of developing information technology and validating files when limitations of information systems – imported with high cost – in the Kidney Hospital of Mansoura University appeared in automatic storing of information, data and registries. This led to the suggestion of establishing a technical center to fulfill the needs of scientific and information centers and associations for information systems instead of wasting money on buying only one system. This is followed by establishing the Center for Telecommunication Technology – Mansoura University. Eng. Mohamed Al-Refai designed the future system or "Egyptian Universities Libraries Consortium" (EULC) and he is responsible for it technically and an applicably. http://srv3.eulc.edu.eg/eulc/libraries

The system proved effective since its use in Mansoura University Libraries in 2005. The Egyptian Universities Libraries Consortium via the Supreme Council of Egyptian Universities, chose it to be applied in all Egyptian libraries and credited it as an efficient system for satisfying the needs of University Digital Libraries in addition to its relatively low cost. The consortium chose that system after evaluating all other local and international systems previously used in Egyptian University. It was proved that the system avoided all clear limitations of previous systems including:

- "Virginia Tech Library System" (VTLS): Faculties of Engineering Libraries Consortium created it in 1996 – 1998. Its greatest limitation was that it required specific devices with high-cost specifications in addition to technical support and maintenance that costed lots of money and time.

- "Advanced Library Information System" (A-LIS): This system was created by Center for Information and Decision Making in 1998 as part of a series of systems known as "Library Information System".
- "Library Information System" (LIS – LIS-2): This system aims to expand information technology use in Egyptian libraries but it proved to be non-standardized.
- "Horizon": Zagazig University used it in 2003. At the beginning the university used version 5 of the system that faced several practical problems. The university asked provider to avoid these limitations but the solution was to buy the recent version 7 although it was highly expensive. But when Arabic Recording files were transferred from version 5 to version 7 it became all corrupt. This proved that buying external systems from advanced countries that don't use Arabic and don't need our linguistic needs is a great failure in satisfying the needs for validating Arabic library records. The Supreme Council of Egyptian Libraries adopted the use of EULC in all Egyptian Universities Libraries as it avoided all previous limitations and is committed with international standards.

Aim:

The current research aims to assess the automated system used in the Library of Faculty of Physical Education for Women – Alexandria University, as the library uses Egyptian Universities Libraries Consortium (EULC) as all other Egyptian Universities Libraries since 2006 till now. Assessment is done according to standards for assessing integrated automated systems for libraries and information centers established by Dr. Osama Al-Sayed Mohamed Ali, assistant professor of libraries and information – Faculty of Arts – Cairo University. standards were concluded according to review of literature in addition to standards used in the "American Library Association" (ALA) and "Library of Congress" (LC) with modification to be fit for use according to the needs of Arab Libraries.

Approach:

Assessment depended on the availability of required standards in the system or the system's satisfaction for standards required by the library under investigation (Ibrahim 2009).

To asses the system, a table was prepared where respondents use (O) or (X) to indicate the availability or unavailability of the standard in the system.

Assessment included (17) standards each one of them included several items formed as questions with total number of (301) items. Standards used for assessment are as follows:

1. General standards (15 items)
2. Economic standards (9 items)
3. System security standards (8 items)
4. Arabicaization standards (10 items)
5. Environment and operating systems standards (10 items)
6. International protocols standards (9 items)
7. Required equipment (14 items)
8. Accompanying software (8 items)
9. User/system interaction (24 items)
10. Providence sub-system (30 items)
11. Bibliographic preparation sub-system (35 items)
12. Indices search sub-system (32 items)
13. Periodicals sub-system (32 items)
14. Borrow/reserve sub-system (34 items)
15. Current issues sub-system (9 items)
16. Inventory sub-system (9 items)
17. Financial and administrative affairs sub-system (13 items)

Research tools:

- Field visit to the library of Faculty of Physical Education for Women – Alexandria University (the library under investigation)
- Application of the standards concluded from Ali, O. (2000) and Ali % Al-Kattan (2002)
- Review of related literature concerning assessment of integrated automated systems.
- Librarians were asked about: system/user interaction – providence sub-system – bibliographic preparation sub-system – indices search sub-system – periodicals sub-system – current issues sub-system – borrow and reserve sub-system – inventory sub-system.
- Library administrators were asked about: system security standards – Arabicaization standards – required devices – required software – financial and administrative affairs sub-system.
- Digital library specialists of the digital library – Faculty of Science – Alexandria University were interviewed.
- Dr. Mohamed Al-Refai (system designer – Faulty of Engineering – Mansoura University) was asked about general standards – economic standards – environment and operating systems standards – international protocols standards via a telephone interview.

The following table shows the availability of standards in the system under investigation:

Standards for Selecting and Assessing the Egyptian Universities Libraries Consortium (EULC)

S	Standard	Availability
First: General Standards		
1-	Nature and previous experience of preparation body	O
2-	Post-selling services	O
3-	Training on system	O
4-	System documentation	X
5-	Continuous development	O
6-	Does the company install, operate and try the system	O
7-	Experiences of other libraries and information centers with the system	Tries in Faculties of Mansoura University
8-	Does it treat Arabic and Latin letters	O
9-	Does it deal with various sources of information	O
10-	Does it perform all tasks, services and services (document journey)	O
11-	Does it face the so-called 2000 problem with computers	O
12-	Is it compatible with internet search engines	O
13-	Limit of registry	No limit a 2 million registry with 4 million books entered
14-	Does it present images and drawings as part of the title	X
15-	Does it respond to voice	X
Second: economic Standards:		
1-	Price compared with other systems	Cheap
2-	Free post-selling service	O
3-	Free training	O
4-	Acquisition in parts or for existing operations only	O
5-	Operation requirements (devices – operating system) are expensive	X
6--	Free installation and operation	O
7-	Can it be bought in parts or only as a whole	O
8-	Total cost is expensive compared with previous system	X
9-	Total cost is expensive compared with manual registry	X
Third: System Security		
1-	Pass word for the whole system	O
2-	Pass word for each sub-system	O
3-	Authorization among employees and users	O
4-	Authorization among users and each other	O
5-	Authorization for add, delete and modify	X
6-	System backup	O
7-	Modify parts of the system without authorization from developers	X
8-	Modify parts of the system according to library needs	O
Fourth: Arabicaization		
1-	ASMO Standards	O
2-	Arabicaization of Windows Characters Set	O
3-	Entering Arabic and Latin letters in the same registry and in the same field	O
4-	Search with Arabic and Latin in the same data base	O
5-	Add, modify, delete and print in ant Arabic or Latin registry without exiting one data base with one language and entering another data base with another language	O
6-	Arabicaizations for entering, edit, retrieve, message, sort and print functions	O
7-	Ignoring specific letters or words (like (Abu, Om, Al- and Ibn in Arabic) while alphabetical sorting in Arabic	O
8-	Arabicaization for help panels	O
9-	Arabicaiz operating systems available locally ation for the whole program of panels only	O
10-	Arabic and Latin are presented with the same vividness	O

S	Standard	Availability
Fifth: Environment and Operating System		
1-	Does work in network environment	O
2-	Does it accept, in the first place, to work with networks	O
3-	Does it treat Arabic	O
4-	Max number of users at the same time	Open – no limit
5-	Search, enter, update, delete and add from any terminal	O
6-	Is it compatible with networks systems	O
7-	Does it work under Arabicized system (NT – UNIX – DOS – Windows – Oracle – Saybase)	O
8-	Do Arabicized operating system available locally	O
9-	Does it work with word processing software	O
10-	Is the cost of operating system high	No
Sixth: International Protocols		
1-	Is it compatible with telecommunication networks standards	O
2-	Is it compatible with TCP/IP standards for internet	O
3-	Is it compatible with Z39.50 standards	O
4-	Is it compatible with Mark Registry Format	O
5-	Does it support unified international registry for all information sources	O
6-	Is it compatible with more than one categorization system	O
7-	Is it compatible with bibliographic preparation standards	O
8-	Is it compatible with Non-Roman letters representation	O
9-	Does it allow receiving any registry from any other program or system if only it is in Mark format	O
Seventh: Required Equipment		
1-	Does it require specific computer sets	No
2-	Does it require specific processors	No
3-	Does it require specific capacity of the hard drive	No
4-	Does it require certain specifications like cards, scanners, colored screens, audio cards, visual cards	No
5-	Does require specific printers with specific refill	No
6-	Do devices work under networks	Yes
7-	Do devices include fax modems	No
8-	Do devices include CD readers	Yes
9-	Do devices include various vertical encoding devices	Yes
10-	Do computers require specific processing speed	No
11-	Is total cost of equipment cheap	No
12-	Are these devices available in local market	Yes
13-	Is local training available	Yes
14-	Is maintenance service available	Yes
Eighth: Attached Software		
1-	Ability to work under several operating systems	O
2-	Available in local market	O
3-	Available in Arabic	O
4-	Works under Windows environment	O
5-	Can be linked to word processing during print	X
6-	Requires specific internet programs	X
7-	Requires specific programs for sorting Arabic / Latin letters	X
8-	Total cost is high	No
Ninth: System/User Interaction		
1-	Requires solid background from librarians	X
2-	Requires solid background from users	X
3-	Help panels	O
4-	Help panels synchronized with processes	O

S	Standard	Availability
5-	Help panels for all processes and possibilities	O
6-	Pop-up menus	O
7-	DEMO available	O
8-	Specifying key for one process instead of writing of pop-up menu	O
9-	Help panels in Arabic and English	O
10-	One-key for specific process	O
11-	Ability to search in all available resources (books – periodicals - dissertations… etc.) in various data bases according to user requirements	O
12-	Suggesting corrections for user mistakes during search	X
13-	Word proofing in cases of misspelling	X
14-	Reestablishing search strategy without log off and re-log in	O
15-	Presents full registry or short form according to user desire	O
16-	Using audio-image in DEMO and directing users and search, enter, edit or delete path	X
17-	Number of options cover all possibilities	O
18-	Menus required are few – many – suitable	Suitable
19-	Prints results for users	O
20-	Sends results via e-mail	O
21-	Downloading	O
22-	Copying results to user CDs	O
23-	Directs users to other search entries in case of no results	X
24-	Prints full or short registries in any order	O
Tenth: Providence Sub-System		
1-	Linked to library index	O
2-	Includes recommendation file	O
3-	Includes providers file	O
4-	Includes publishers file	O
5-	Includes exchanging bodies file	O
6-	Includes documents exchange file	O
7-	Includes gifts from library file	O
8-	Includes gifts to library file	O
9-	Includes donors file	O
10-	Includes order file	
11-	Includes budget allocation file	O
12-	Includes demands file	O
13-	Automatically cuts from budget when receiving a document	O
14-	Modifies a registry from recommendation to order then demand	O
15-	Can download option tools from CDs and create tool files	O
16-	Can directly connect to publishers and providers' data bases	O
17-	Can print adds reports daily	O
18-	Can print reports about documents delivered	O
19-	Can print urgency notes	O
20-	Can print financial status reports	O
21-	Can print financial status reports with any publisher at any time	O
22-	Can distinguish document statues (recommended – required – under preparation – missing)	O
23-	Can prepare reports about missing/damaged documents	O
24-	Can send orders and urgency notes via e-mail	O
25-	Distinguishes among methods of delivery (buying – subscription – gift – exchange)	O
26-	Automatically deletes document data from direction, order or urgency files when received	X
27-	Warns against repetition in case or re-ordering	X

S	Standard	Availability
28-	Can distinguish among currencies and exchange prices to dominant currency	X
29-	Linked to periodical sub-system	O
30-	Linked to inventory sub-system	O
Eleventh: Bibliographic Preparation Sub-System		
1-	Bibliographically deals with all form of information resources	O
2-	Full fields according to bibliographic standards	O
3-	Deals with full – short – moderate bibliographic levels	O
4-	Can deal with each copy – volume of document of only in full	Can deal with both
5-	Contains names file	O
6-	Contains topics file	O
7-	Contains publishers file	O
8-	Contains providers file	O
9-	Contains countries file	O
10-	Contains cities file	O
11-	Contains series file	O
12-	Authenticates data directly from these files	O
13-	Warns bibliographer for incomplete data	O
14-	Warns bibliographer for entering some fields with errors	O
15-	Can import registries	O
16-	Can export registries	O
17-	Standard spelling structure bases	O
18-	Changes data in all registries according to changes on any supportive file	X
19-	Contains fixed and flexible fields	O
20-	Can print index – standard card	X
21-	Can print document back cover	O
22-	Can print vertical encoding	O
23-	Can enter data from various terminals – specific terminals	Any terminal
24-	Reports entry volume for a specific period	O
25-	Can construct referrals	X
26-	Can register each document entry date	O
27-	Can correct spelling mistakes	X
28-	Can enter categorization codes of any plan	O
29-	Allows delete, add and modify after registry	O
30-	Eliminates entry numbers after deleting registry or deletes data and keeps number	Deletes entry number
31-	Number of enter panel is suitable	O
32-	Automatically and immediately finds repetitions	O
33-	Distinguishes repetition even if written in non-Arabic letters (upper/lower cases)	O
34-	Distinguishes document location in case of unified indices	O
35-	Allows abstract	O
Twelfth: Indices Sub-System		
1-	Can search collections by any format without log-out and log-in	O
2-	Can search collections by any language without log-out and log-in	O
3-	Can search by author	O
4-	Can search by title	O
5-	Can search by subject	O
6-	Can search by series	O
7-	Can search by publisher	O
8-	Can search by I.S.S.N.	O
9-	Can search by order number	O
10-	Can do complex search by more than one entry	O
11-	Can do complex search by more than one topic	O

S	Standard	Availability
12-	Can save search strategies	X
13-	Can modify search strategies during search	O
14-	Can direct researcher to correct entries during search	X
15-	Can prepare reports about number of matches	O
16-	Can present registries chronologically	O
17-	Can present registries alphabetically	X
18-	Can present registries by degree of match	O
19-	Can tell the registry found, missing or borrowed	O
20-	Can present data as cards	O
21-	Can show data in a list	O
22-	Can download registries on user CDs	O
23-	Can print according to desired order	X
24-	Can search by menus	O
25-	Can search by direct order	O
26-	Can search by reference lists	O
27-	Can instruct user to correct his path	X
28-	Can explore / print specific registries from retrieved ones	X
29-	Can show a list with stop words	X
30-	Can retrieve images, diagrams and maps and then reenter them	X
31-	Can explore registries according to categorization levels	O
32-	Include demonstration for search process	O
Thirteenth: Periodical Sub-System		
1-	Includes recommendation file for required periodicals	O
2-	Includes file for ordering new periodicals	O
3-	Alarms for dates of subscription renewal	O
4-	Can cancel subscriptions	O
5-	Orders buying, subscription and cancelling	O
6-	Includes publishers file	O
7-	Includes providers file	O
8-	Includes volume file	O
9-	Alarms for periodicals due date and issues orders	O
10-	Includes file for periodicals budget	O
11-	Automatically subtracts when subscription is paid	O
12-	Reports for financial status at any time	O
13-	Reports for financial status with any publisher, provider or volume maker	O
14-	Authorization for deleting, adding and budgeting among users	O
15-	Deals with all forms of periodicals	O
16-	Shows periodicals index according to categorization standards	O
17-	Modifies volume status from ordered to received when received	O
18-	Reports for missing volumes	O
19-	Letters for volume making	O
20-	Letters depend on word processing programs	X
21-	Reports for late volumes	O
22-	Reports for volumes under making	O
23-	Unified index and location for each periodical	O
24-	Shows source of providing (subscription – gift – exchange – deposit)	O
25-	Identifies subscription start date and annual renewal	O
26-	Identifies payment method	O
27-	Financial file with any currency and money exchange with official currency	O
28-	Links periodical support service with periodicals data base	O
29-	Prepares index with current titles, volumes and issues at any time	O
30-	Direct connection with publishers via e-mail	O

S	Standard	Availability
31-	Deals with articles inside periodicals	X
32-	Various entries for articles in each issue	X
Fourteenth: Borrowing and Reserve Sub-System		
1-	Borrowing is linked to bibliographic sub-system and index data base	O
2-	Includes user data file	O
3-	Includes borrowing policy file	O
4-	Includes library evaluation file	O
5-	Includes not-to-be-borrowed books file	O
6-	Includes fines file	O
7-	Fines file is linked to budget file	O
8-	Includes file for unauthorized to borrow users	O
9-	Includes book reserve file	O
10-	Deals with columns	O
11-	Shows borrower data	O
12-	Prints borrower data	O
13-	Shows borrowed document data	O
14-	Prints borrowed document data on each recipe	O
15-	Includes borrowed documents file	O
16-	Identifies document return date automatically	O
17-	Identifies borrowing orders	O
18-	Issues delay letters	O
19-	Calculates fines	O
20-	Prints fines	O
21-	Automatically adds fines to user file	O
22-	Notifies borrowing department or reserve maker with receiving the reserved book	O
23-	Marks borrowed documents in index data base	O
24-	Prepares reports and statistics for number of borrowings for each book	O
25-	Prepares reports and statistics for number of borrowings for each user	O
26-	Prepares periodical reports about borrowing activity	O
27-	Can modify, delete, add and register borrowings and reserves from any terminal	O
28-	Automatically cancels reserve after a specific period	X
29-	Prepares reports for documents that never been borrowed	O
30-	Automatically deletes missing books from index	X
31-	Reminds for repeated borrowings and reserves	O
32-	Can deal with collaborative borrowing activities	O
33-	Can retrieve user data by more than one entry (name – number)	O
34-	Can prepare reports for reserved documents	O
Fifteenth: Current Issues Sub-System		
1-	Includes current issues sub-system	O
2-	Can design periodical research strategies for users	X
3-	Linked to library index	O
4-	Linked to borrower's data file	O
5-	Includes borrower characteristics file	X
6-	Shows results of comparing index with borrower characteristics	X
7-	Prints results of comparing index with borrower characteristics	X
8-	Prepares periodical activity reports	O
9-	Deals with all sources of information	O
Sixteenth: Inventory Sub-System		
1-	Includes inventory sub-system	O
2-	Linked to library index	O
3-	Linked to borrowing sub-system	O

S	Standard	Availability
4-	Prepares reports for account volume	O
5-	Prepares periodical reports for missing documents	O
6-	Linked to budget file to estimate prices of missing documents and date of acquisition	O
7-	Prepares shelf menu	O
8-	Prepares reports for current documents according to type	O
9-	Prepares reports for missing documents according to type	O
Seventeenth: Financial and Administrative Affairs Sub-System		
1-	Includes general budget file	O
2-	Includes employees' data file	X
3-	Prepares status reports for each item of budget	X
4-	Prepares employee performance report	X
5-	Issues payment orders	X
6-	Budget file is linked to providence sub-system	X
7-	Budget file is linked to fines	X
8-	Prepares reports for financial issues with publishers and providers	X
9-	Deals with any currency	X
10-	Prepares final settlement	X
11-	Prepares files for salaries, wages and incentives	X
12-	Includes employees' training file	X
13-	Can identify directorates, departments and employees	X

Discussion:

The researcher applied standards for EULC and concluded the previously mentioned results that will be discussed as follows:

First: General Standards

The system is supported, produced, developed and distributed by the Supreme Council of Egyptian Universities in addition to providing technical support in a few hours of order and free training services. A full file for the system is still under development. The system was created by Dr. Hasan Al-Refai of Faculty of Engineering - Mansoura University and was approved by the Supreme Council of Egyptian Universities as an integrated system for Universities libraries in Egypt. The system deals with Arabic and Latin registries. It deals with paper formats (books – reports – periodicals – statistics) and non-paper formats (CDs – video tapes – micro-films and microfiche) it includes providence, bibliographic preparation, index search, periodicals, borrowing, reserve, inventory and preparing reports and statistics for all activities.

The system depends on an advanced operating system connected to the internet but doesn't deal with images, diagrams nor maps. We can't identify the range of development the system can reach in saving and processing registries.

Second: Economic Standards

- The system is cheap for acquisition and training as it is locally developed.
- Operating requirements are inexpensive. System price is identified according to number of computers in the library. It requires computer sets that are not exceeding 1000 ponds in Egyptian market for each unit. The network can operate an infinite number of computers connected to the internet. Total operation cost is inexpensive and suitable for all university libraries in Egypt. It is the cheapest system till now.
- Technical support and training services are free for all university libraries.

Third: System Security

System security for files is relatively firm with log-in pass words for the system and each sub-system in addition to authorization procedures for employees and users as well. Entering, modifying and deleting data are secured. Modification standards for the system itself are secured as it can be modified only by authorized party.

Fourth: Arabicaization

Arabicaization of non-Arabic integrated systems is the major challenge that faces Arab libraries. It is an expensive and exhausting process and outcome may be unsatisfying. It also decreases efficiency of the original system. This is a good feature in this system as it is committed to ASMOA rabicaization standards and can deal with Arabic and Latin letters effectively with the same degree of clarity and accuracy. Arabicaization is for the whole system and not limited to panels only. Arabic, English and French data can be entered the same panel without logging-out the Arabic or foreign data base.

Fifth: Required Environment and Operating System

The system works under network operating systems and effectively deals with networks according to international communication protocols. Delete, add, modify, retrieve and print functions can be done from any terminal inside the internet with text transfer service for users via proxy. Number of computers that can work inside the network is not identified. But at least, an effective network is available for university libraries of Alexandria University.

Sixth: International Protocols

The system is compatible with TCP/IP standards for internet and uses proxy to transfer texts to data bases available via digital library of the Supreme Council of Egyptian Universities when user orders it through his PC. It is also compatible with Z39.50 standards and Mark 21 Registry format. It supports I.S.S.N. for all data sources and can deal with several categorization systems. It is compatible with bibliographic preparation standards, Latin letters and can receive registry in the form of a program if it is prepared according to Mark 21 format.

Seventh: Required Equipment

Operation requirements are at minimal and this is a major advantage as the system doesn't require specific sets if they can connect to the internet with moderate power of CPU, computer speed and CD capacity. The system runs all types of printers and regular devices available in local market with maintenance service.

Ninth: Attached Software

The system requires one of several operating systems that are all economic and available like UNIX, NT, DOS, Windows, Oracle and Sybase. Therefore, it is flexible. These operating systems are all available in Arabic versions in the local market. It can be linked to word processing programs for preparing reports, statistics and correspondences. It can be connected to the internet and can interact with other integrated systems if they depend on Mark 21 format in saving bibliographic data.

Ninth: System/User Interaction

Usability and easy understanding of how to run the system for users and information specialists are major features of programs prepared by Eng. Hasan Al-Refai and supported by the Supreme Council of Egyptian Universities. The system is easy-to-use but require a good computer background for users and librarians. There are help panels at the start, for each sub-system and for each step of retrieval for users. It is synchronized with specific panels in English and in Arabic according to entry. The system also presents options and alternatives as menus to cover all possibilities. The system provides users with opportunities to use e-indices. It can print research results or transfer it to specific modules for users and even via e-mail. It includes DEMO with images. System/user interaction and user interface are good features of the system.

Tenth: Providence Sub-System

Providence sub-system doesn't cover all selection and acquisition processes as it doesn't select automatically in case providence policy is saved as a system file. The researcher suggests that selection policy should be integrated into the system and linked to providence sub-system.

Providence sub-system doesn't cover exchange and donation activities and doesn't link document data with recommendation, order and registry files, as stages of providence. Each order should be issued to change document status and transfer it from one file to another. The researcher thinks that it is better to improve the system to change the document status automatically according to these stages. The document should be followed at any stage and avoid repetition or wasting time for fetching it. In addition, it is not linked with basic data base of library index sufficiently. This means that order may exist in the index. The sub-system doesn't delete missing or damaged documents from the data base. This means that providence sub-system should be linked to basic data base.

The sub-system includes basic files required including budget, recommendations, publishers and order. Option tools can be downloaded and added. It can contact foreign publishers and providers via e-mail. It can prepare reports about library account according to information type and format. It can prepare reports about financial status, budget. Regular subtraction of budget items by any currency but not exchanging currencies. The budget file can include financial account but it is not linked to periodicals to calculate subscription fees.

Eleventh: Bibliographic Preparation Sub-System

This sub-system is compatible with international standards with full categorization fields according to Mark 21 Format. It can deal with all forms of resources and all bibliographic levels, short or medium, in addition to including reference files with names of individuals and associations, titles, publishers, providers, periodicals, countries and cities. But it doesn't authenticate names directly. Instead, it presents a menu with the reference file to choose index. If index producer chooses other data than included in the reference file, the system will accept it. It warns index producer against incomplete basic fields and repetition of document data if entered with same letters and spacing. But if original data is entered with Latin lower cases and then by Upper cases, the system will consider it a new registry and this is major limitation. On the other hand, the system if flexible to accept data regardless its length. The system can import registries of other indices or export registries to them if depends on Mark 21 format and it is connected

to the internet. Alphabetical order is not common, as in Arabic indices. Therefore, the system uses letter-by-letter method even in cases of deleting some letter like articles, Om, Abu and Ibn.

Concerning outputs, the system can print indices and reports directly from screen concerning volume of bibliographic data and volume of entry in a specific period or for a particular person. There are no field for abstracts and the system only registers periodicals' articles and retrieving it only by issue as the system doesn't allow retrieval by topic or author. Therefore, dealing with articles is limited to exploring pages of periodicals.

By applying it in all universities libraries in Egypt, the system is the core for a unified index through which a researcher can run search from any computer to locate a book or a data source in any library.

Twelfth: Indices Sub-System

This sub system is a user interface. It is the result of forming a bibliographic data base and the bibliographic preparation sub-system. It is easy-to-use and includes two parts: simple search and complex search. The later can link 4 different topics through and/or use. The system includes two databases, one in Arabic and the other in English with the ability to retrieve data from both regardless the language used. Documents are arranged in Arabic first then in English.

The system can search by author, topic, series, publisher, order number, publishing date or any three of them together. But it can not save search strategies to save user time later or direct search to required entries. It presents retrieved registries only by entry order in short or complete bibliographic registries and can mark the document (missing – existing – borrowed). It doesn't include a list with stop words and can't retrieve nor enter images, maps and diagrams.

Thirteenth: Periodicals Sub-System

This sub system includes files for recommendations, orders and subscriptions (renewal / canceling / payment) in addition to budget file linked to general budget in the providence sub-system. The sub-system registers new periodicals and issues, warns for delayed issues and reports periodical volumes and issues (existing and delayed). It includes a file for issues sent to volume making. It registers articles in the issue but can only retrieve them by issue number as a content page. The system prepares reports about periodicals and sends orders by e-mail in case the system is connected to the internet.

Fourteenth: Borrow and Reserve Sub-System

It is one of the most used systems in University libraries. It can borrowers from borrowing in addition to registering fines for delay in return. It registers users' data and links it to the index data base. It shows the document status as allowed or not allowed to be borrowed. It can generate reports about volume of borrowers and number of documents in their possession, volume of borrowed documents in a specific period, fines and relations between users file, fines file, prevention file, borrowed file and index file. It includes a reserve system that can register and cancel document reservations and warns borrowing department when a borrowed document is returned. It can deal with collaborative borrowing and links fines file with general budget file.

Fifteenth: Current Issues Sub-System

It is linked to the library index and can prepare periodical reports about this activity in addition to dealing with all sources of information but it can't build regular search strategies for users and it is not linked to borrowing file. This is a severe limitation as borrowing a data source can not be monitored and this may be important for a specific user. Users profile can not be generated by this sub-system and this deactivates current issues function.

Sixteenth: Inventory Sub-System

This sub-system can prepare reports about registered acquisitions in the bibliographic data base by type and volume. It can be arranged by order number and it can be printed to function as an inventory toll. Linking this sub-system to borrowing sub-system can prepare reports about missing documents by type.

Seventeenth: Financial and Administrative Affairs Sub-System

This sub-system doesn't exist and the relevant part is in the providence sub-system concerning fines only although there is a data base attached to the e-gate project (MIS) that saves faculty members data. In addition, there is "Al-Farooq" system that saves employees and faculty members' data but they are not linked to this system.

Conclusions of Assessment:

The main aim for assessing EULC is to see how improved and flexible the system is, concerning the following issues:

Commitment with bibliographic and computerized international standards, ability to deal with many data sources, including sub-system for providence, increasing efficiency of retrieval sub-system, improving borrowing and reserve system and avoiding other systems' limitations like expensive technical support and waste of time. Technical support of this system is the responsibility of telecommunication technology center – Mansoura University. but the system doesn't deal with images, diagrams nor maps and doesn't authenticate registry data automatically from reference files. It can't treat analytical categorization and therefore it doesn't

include referrals. The researcher thinks its is important to create an analytical categorization file to guide users through referrals. This data can be gathered from reference files that are accurate and standardized to reach accurate search results. analytical categorization files can be linked to reference file to show the most used entries by user. This will reflex topics, publishers, periodicals… etc. this will be very useful for providence. The researcher also thinks that linking analytical categorization file with providence and reference files will help fulfilling choice and acquisition needs according to users' desires without wasting budgets in addition to canonizing search entries by letters and spacing – a limitation in the bibliographic preparation sub-system – to avoid repetition of ordering.

The system is not standardized in alphabetical order and can't print standard categorization cards or constructing referrals automatically. It can't direct nor correct search path for users and can only deal with articles as registry menus under existing issues and not as part of an inclusive system. It also lacks "back" option during exploring search results and this forces user to repeat the search process from beginning if he/she wants to go back to a previous result. Usually, search results are numerous and include irrelevant information for users. The researcher suggests that search programs should be modified so that search results are limited to key words and this decrease retrieved information and saves user time and effort.

Another limitation is that the registry is cancelled in case of any problem like black out as there is no means to save it and continue later. The researcher suggests that data should be save automatically at entry and to apply more effective ideas to avoid these limitations.

As for borrowing, the system executes all requirements of this activity and automatically detects unauthorized borrowings.

Limitation of the current issues sub-system is that it can't create user-characteristics-based search strategies as it is not linked to user data file. The researcher thinks that creating a user characteristics file linked to current issues file and user data file will identify the activity of each user through his/her borrowing activities registered in the borrow and reserve file. Reports about these activities can help establishing providence strategies and current issues services.

The system doesn't include financial and administrative affairs sub-system. This decreases the system's efficiency. It can be more effective if linked to MIS project and Al-Farooq system as MIS registers faculty members data and Al-Farooq registers employee's data. This will make the system more integrated.

Future Risks:

To imagine the future, we should identify the stages of development of libraries and the effects of information technology on it. In his book about redesigning library service, Michael Buckland (1992) indicated that the library went through three stages:

- Paper stage: where all sources were in paper packs and controlled by paper files.
- Automated stage: where paper packs were controlled by e-files .
- e-stage: where data sources were stored and used in e-forms that can be read automatically .

Buckland indicated that technology is a means, not a goal, to provide more services for users.

Richard West and Peter Lyman (2000), indicated the effects of technology as follows: .

- Modernization: repeating manual processes based on prints more effectively .
- Innovation: using information technology innovatively .
- Transformation: using information technology to completely change the nature of an organization.

Many authors agree that libraries spent much time in modernization and repeating manual processes that were linked later to innovation. For example, establishing an internet-based index is somehow an innovation that developed the manual card index. In most cases, libraries interacted with information technology during its journey from innovation to transformation.

With the e-stage, indicated by Buckland (1992) the library assumed major risk through choosing an automated source of systems as work of most companies depended on limited financial resources. This was clear in case of importing a 16-million ponds system to fulfill the needs of kidney hospital of Mansoura University. Despite the huge cost, the system had several limitations including post-operation technical support.

Along the time, and with market merges, libraries had fewer options with less market competition. this was an opportunity for system providers to increase prices. This means that shifting from one system to the other was a difficulty that may be impossible in sometimes as libraries can not afford spending millions on buying new systems in a very short time.

On the other hand, many system providers didn't care for the risks of decreasing timeframe required for updating automated library systems. They only cared for providing successful fulfillment of tasks required currently and marketing them. they didn't care for future developments that may force them to stop work later.

With the emergence of e-cloud, all these risks were eliminated. But other emerged too. A library can transfer most of its systems to the e-cloud but this means to shift employees allocated to feed automated systems to other tasks.

Information technology had a positive effect on improving employees' productivity and this led to major annual savings. But libraries, and system providers as well, need to be more innovative to use the internet capabilities to make the library more effective in addition to communicating with users anywhere through a global communication network.

Resources:

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10/15/2019