

Geographical Distribution of Library Software & Systems

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ABSTRACT

Objective: The study aimed to determine the geographical distribution of the library software and systems in different regions of the world.

Methodology: The descriptive-analytical method used. The statistical population included all the libraries whose information is entered to International Guide Website of Lib-Web-Cats (library websites and catalogs), 60986 libraries. A researcher-made checklist used as a data collection tool.

Findings: On the average, the maximum number of the public libraries (956), the private libraries (31), the collegiate libraries (190), the medical libraries (14) and the law libraries (10) were located in the Pacific Region. On the average, Canada and the USA had the maximum number of school libraries, about 1100 libraries. The average number of research and art libraries in the 6 regions of the country was very low and approximately, zero. These regions were not similar in terms of the type of the libraries and the tools being used in each one. In other words, there was a relation between the region and the type of the library and the tools being used in each library of that specific region. Also, these regions were similar in terms of the total number of the libraries; i.e. there was no relation between the type of the region and the total number of the libraries.

Discussion and Conclusion: It could be concluded that the type and number of the libraries in different regions of the world varied according to different privileging conditions of the societies existing in these regions. The type of the tools being applied in each library was different according to the specific geographical region. It would be interesting to mention that the geographical region had no influence on the total number of the libraries, which shows that the focus in all regions was on meeting the customers' needs rather than making a quantified set and complex of libraries.

Innovation: According to the reviews and researches conducted, it seems that no comprehensive Research has been done on comparing library systems throughout the world. This Research provides a perspective on the application of library systems in different regions of the world and presents interesting results.

Keywords: Library System, Information Systems, Library Software, Lib-Web-Cats, Geographical distribution.

INTRODUCTION

Information and communication technology (ICT) as the change driving factor in today world, has deep and considerable impacts on the organizations and entities and provided them with new opportunities and exposed them to new threats.

Libraries are among those organizations which try to benefit from various advantages of technologies, so that exploiting ICT is becoming an inseparable part of different types of libraries, including national, public, collegiate, and expertise libraries. Now, it is impossible to manage libraries and other sources of information

without access to and use of integrated software systems.

Different organizations and entities try internationally to make the resources of the libraries accessible for all users throughout the world. Library Technology Guides is one of these entities.

There are 60,986 libraries from 172 countries in Lib-Web-Cats. Marshall breeding is the creator and the editor of Library Technology Guides and the international guide of Lib-Web-Cats. The guide of Lib-Web-Cats makes it possible to have access to the libraries of the world and shows how to use library systems. There are

different lists in this guide, each including links to the website and online shops. The information includes geographical location, address, and type of the library, as well as previous and recent automated systems and the tools applied in the libraries and collection size and number of the library. The advanced search page in Lib-Web-Cats provides the users with a collection of tools for identifying the libraries. The search option on the advanced search page includes a property (choice) for search and is eligible by collection size and number of the library and the old or new automated system.

Pars Azarakhsh, Payam Mashregh, Noosa, Simorgh, and Kavosh are common library systems. Alef, Voyager, Koha, and Symphony are national and international library systems.

Designing appropriate library information systems increases the speed of providing services and helps managers make decisions within limited time. It also increases the speed and accuracy of providing services to the users. Generally, information systems have advantages and benefits such as improving productivity, effectiveness, efficiency and competitive advantages. Therefore, professional, who are being propelled towards system analysis through education, need special trainings and expertise, and are responsible for designing systems and supervising on their implementation as system analyzers (Asemi & Zalzadeh, 2010).

The main issue of this research is that librarians and information dissemination specialists should know that they have an important mission on identifying international most used and applied software and systems. They also should be familiar with these systems and their capabilities so that they can improve internal software. Therefore, before taking any actions, the situation of these systems, in terms of how much they are being applied, should be investigated.

Investigating these systems will specify the current status of the internal systems. Unless the librarians and library software specialists are not aware of the current status, they cannot plan for the desired situation appropriately. This Research tries to reach this goal so that it can act as a guide for librarians and information dissemination and library system specialists to implement these systems successfully. In case the librarians and information specialists desire to improve library systems, first of all they should study and investigate popular and successful library systems. Doing so, they access information that will help them improve

and develop internal systems. As a result, this Research intends to address the gaps through examining and exploring distribution of different library systems according to Lib-Web-Cats. So, this Research tries to answer the questions on distribution situation of different library systems based on the type of the library, the collection number, and how different types of tools are used in library systems in all 6 regions of the world. Moreover, it tries to show that the relationship between distribution of different library systems in these regions will be determined according to three components: the type of the library, the collection number, and different types of tools used in library systems.

THEORETICAL AND PERIODICAL BACKGROUND

Generally, the researches on the library systems and information systems, as the base of library systems, can be reviewed through either internal or external researches. But since no research accommodating this project has been conducted yet, some Researches that relate to this project thematically and contextually are introduced as the background of this project.

The Researches conducted on library systems and software has generally four approaches.

The Approach on Using Library Software

In his research on examining the status of using the capabilities of library software in the libraries of Tehran, Davoodzadeh Salestani (2002) concluded that half of the libraries being researches had used the capabilities of such library software. Also, Moradi (2007) conducted a Research on the status of using library software in the subordinate libraries of Tehran University of Medical Sciences. The result and conclusion of his Research shows that more than half of the libraries use library software.

Comparing Library Software Though Evaluation Measures

In his Research, Ghaebi (1997) has compared 10 library systems by 144 library evaluation measures. Kuha has received the highest score. Hooshyar Yazdian (1997) has compared the library software capabilities of AstanQods and Pars Azarakhsh and Nosa. The sum of Pars Azarakhsh and Nosa out scores AstanQods. Norouzi and Nemati (2010) have evaluated Pars Azarakhsh, Nosa and Namayeh in their capabilities on information recovery and retrieval by means of 84 measures. The findings have shown that Pars Azarakhsh, Nosa and

Namayah have taken the first, the second and the third place, respectively.

Satisfaction on Library Software, the Issues Libraries Face in This Regard

Usefi and DavvodzadehSalestani (2000) have studied Pars Azarakhsh, Kavosh and Nosa library software on their capabilities on transferring information form Internet and CD Marc.

The result has proved that the aforementioned software generally have some problem on transferring information from CD Marc database and Congress Library in Internet. Pars Azarakhsh has had the least problem. Kavosh and Nosa have taken the second and third place.

In a Research conducted by Zerehsaz and et al (2001) has inspected how satisfied Psychology students of Firdausi University of Mashhad are with Simorgh Software. The results have shown that students were satisfied with Simorgh Software to some extent.

Mehrad and AssariShahri (2007) have studied the satisfaction of the students of Shiraz University with Ofoq Software, Pars Azarakhsh Software link and some of its important factors. The findings have shown that among the measures related to intermediary user, the students were more satisfied with information pages and less satisfied with software vocabularies and messages. The result has shown that students' satisfaction with this software was average. In addition to reviewing the application status of library software in the libraries of the state universities of Tehran, LotfiNodaei (2008), identified software and hard ware problems, lack of expertise and professional labor source, insufficient training on applying and using the software and financial and official problems as the most important problems faced when using library software. In his Research, Jalilpoor (2011) analyzed the elements and characteristics of the Azarakhsh Software intermediary user and the satisfaction of the students of Shahid Chamran University with this software.

The findings have shown that that students' satisfaction with this software was average. Also, the students were more satisfied with the instructions given and taught on using the software.

Other Researches and studies that inspected software intermediary user environment are Shaiffee and et al (2013): Pars Azarakhsh

software; Hashemzadeh and Yeganehfar (2010): reviewing symbolic pictures in Simorgh software; Tabarsa and Nokarizi (2008): review factors affecting librarians' understanding of the intermediary vocabularies in Simorgh Software.

Feasibility of Using International Software in Iran

In his Research, Arastoopoor (2007) has addressed the feasibility of using Kuha Software in the large and medium libraries of Iran. The findings show that with regard to its shortcomings and insufficiencies, Kuha is not a suitable choice for large collegiate library with large branches. In case verifications and adjustments made, it would be suitable for medium libraries. In his Research on the feasibility of using open source code software for the establishment and development of digital libraries in Iran, Paknezhad (2008) has examined Green Stone Software.

The findings have proved that Green Stone Software has capabilities that make is applicable for development of digital libraries in Iran. The infrastructure of this software has a good framework on interaction and supporting the standards so that it can be used to establish digital libraries in Farsi or any other languages.

THE FOLLOWINGS ARE SOME OF THE RESEARCHES CARRIED OUT ABROAD

Chalon and et al. (2006) in a research called "Release you mind: Selection and Application of Integrated Library Systems", has studied the procedure of selecting and applying this system with regard to chance that open resource code provides. They planned to have an integrated library system for Bulgaria Center of Medical Care. Some software including OpenBiblio, Kuha, Evergreen, PMB and Emilda has been examined. Finally, Kuha and PMB have been selected and after an experimental implementation of both software's Kuha have proved to be the best.

Goh and et al (200) presented in their Research a check list for evaluating digital library open resource code. Then they evaluated 4 digital library software including Green Steven, Fedora, E print and Corn CDS Viewer out of which Green Steven digital library software was elected the best for implementing the medical care project.

Kumar (2007) conducted a Research called "Selecting and Managing Open Resource Code Software in Libraries" in which he discussed

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open resource code software and reviewed the challenges on introducing information technology to the libraries, and finally, introduced Green Steven Software as an appropriate software for collecting and organizing digital information and subjects.

Bisseles (2008) reviewed the procedure of selecting and implementing a library management system in medical library service and medical information dissemination systems in one of the hospitals in London. Due to its specific features and properties, Kuha had the capability of fulfilling special needs of this library; therefore, it was selected.

Numerous researches conducted in this regard, show the importance and high value of such software in the libraries and prove that the selection of software should be done with great care. This Research helps the librarian to make decisions for selecting the best software and implement the most appropriate and suitable systems for libraries with the help of computer specialists and engineers.

RESEARCH METHODOLOGY

The research method was descriptive-analytical, and the statistical population of this Research was composed of all libraries whose information is entered in the International Guide Website of Lib-Web-Cats (library web sites and catalogs),

60986 libraries. No sampling has been done and data gathering tool was a searcher-made check list. Inferential and descriptive statistics were used to analyze the gathered information. Incorporated and consistence tables were used to analyze data at descriptive level while Cramer Coefficient was used to review the relation between to quality variables at inferential level. SPSS 18 Statistical software was used to analyze data gathered and derived from this site.

RESEARCH FINDINGS

Findings of this Research are based on the distribution of different library systems in the 6 regions of the world with regard to the type of the library, collection number of the library, and different tools being used in each one. The relation between the distributions of different library systems in these regions was determined according to three components (type of library, collection number and tools being used) and presented in the following parts.

Distribution of Different Library Systems according to the type of Library and the Relation between the Distribution and the Type of Library

Table 1 is an incorporate table on type of library and 6 regions that shows the number of each type of library in each region.

Table1. Number and Types of Libraries in the 6 regions of the World

6 regions	Type of Library								
	national	Public	Private	Collegiate	School	Medical	Law	Art	Research
Canada and the USA (75 countries)	7	21272	390	3866	82488	359	358	6	18
Latin America and Caribbean(16 countries)	20	11749	50	328	438	10	4	1	0
Europe (35 countries)	72	12979	294	1184	174	83	16	5	5
Asia (11 countries)	11	652	48	679	18	17	1	0	1
Africa and Middle East (6 countries)	6	391	11	109	9	2	4	0	1
Pacific Region (2 countries)	2	1912	62	370	22	27	19	0	0

Table1 shows that Europe has the most national libraries (72) while the Pacific Region has the least number (2). The USA and Canada have the most public libraries in the world (21272) while Africa and Middle East have the least number (391). Also, the USA and Canada have the most private libraries (390) while Africa and Middle East have the least number (11). Cana and the USA, and Africa and Middle East have the most and the least numbers of collegiate libraries, respectively, 3866 and 109. Cana and the USA,

and Africa and Middle East have the most and the least numbers of school libraries, respectively, 82488 and 9. The USA and Canada have the most medical libraries in the world (359) while Africa and Middle East have the least number (2). Cana and the USA, and Asia have the most and the least numb of law libraries, respectively, 358 and 1. The USA and Canada have the most art libraries in the world (6) while Africa and Middle East, Asia and the Pacific region have the least number (0).

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Regarding the number of Research libraries, the USA and Canada have the maximum number (18) while the Pacific Region has the minimum number (0). Since the number of countries and the size of the areas are not the same in these regions, it is natural that the number of the libraries in the larger areas is more. Therefore, in order to have a better comparison between the regions and instead of Researching total number of all types of the libraries in one region, it would be better to divide the total number of the

libraries in each region with the number of the countries in that specific region. This way, we will have the average number of each type of library without the interference of the size of the region (the average number of each type of library in a country of one region).

Table 1 was corrected and the information, the, was presented in table 2 which shows the average number of each type of library in each country of the regions.

Table2. The average number of each type of library in the 6 regions of the world

Regions	Type of Library									
	National	Public	Private	College	School	Medical	Law	Art	Research	Total
Canada / USA	00.9 ≅0	283.63 ≅284	5.2 ≅5	51.54 ≅52	1099.84 ≅1100	4.78 ≅5	4.77 ≅5	0.08 ≅0	0.24 ≅0	1451
Latin America /Caribbean	1.25 ≅1	734.31 ≅734	3.125 ≅3	2.375 ≅2	27.375 ≅27	0.625 ≅1	0.25 ≅0	0.0625 ≅0	0	768
Europe	2.05 ≅2	370.77 ≅371	8.4 ≅8	33.82 ≅34	4.79 ≅5	2.37 ≅2	0.475 ≅0	0.142 ≅0	0.142 ≅0	422
Asia	1	59.27 ≅59	4.36 ≅4	61.72 ≅62	0.727 ≅1	1.554 ≅2	0.09 ≅0	0	0.09 ≅0	129
Africa / Middle East	1	65.16 ≅65	1.83 ≅2	18.16 ≅18	1.5 ≅2	0.33 ≅0	0.66 ≅1	0	0.166 ≅0	89
Pacific Region	1	956	31	189.5 ≅190	11	13.5 ≅14	0.59 ≅1	0	0	1213

Table 2 shows that Pacific region with the number of 956 public libraries stands on the first place. The most number of private libraries, collegiate libraries, medical libraries and law library in each country belong to this region, 31, 190, 14, and 10, respectively.

But each country in the USA and Canada, on the average, has the most school libraries, 1100.

- H_0 : there is no relation between the type of the library and the type of the region
 H_1 : there is a relation between the type of the library and the type of the region

The average numbers of art and Research libraries in the countries of all regions are microscopic and nearly 0.

Cramer coefficient has been used to see if the regions of the world are the same regarding the type of the library. The result is presented in table 3. This hypothesis as equivalent will be as follows:

Table3. Similarity Test (The relation between type of library and type of the region)

Kramer co efficient	Aptness Amount
0.380	0.000

Table4. Library collection Number for each region (Total number with different collection number)

6 regions	Library Collection Number								
	Less than 4500	5500-11000	12000-24000	25000-50000	51000 - 102000	103000-206000	207000-414000	415000-830000	More than 831000
Canada and the USA	405	1632	2822	2429	1964	1339	768	466	531
Latin America and Caribbean	26	42	39	33*	23	21	6	14	12
Europe	74	121	129	125	143	165	142	119	158
Asia	6	14	18	14	21	33	27	19	71
Africa and Middle East	1	3	4	12	18	2	3	6	7
Pacific Region	23	21	34	44	59	38	24	18	24

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According to table 3, the aptness amount will be 0.000 and less than 0.05. Therefore, the 0.05 will be considered 0; therefore, with the accurateness of 0.96 we can accept that all regions of the world are not the same in terms of the type of the library; i.e. there is a relation between the type of the library and the type of the region but this relation is not that strong according to Cramer coefficient.

Distribution of Different Library Systems based on the Collection Number of the Library in the World and the Relation between Distribution and the Collection Number

Table 4 is an incorporated and consistence table on the collection number of the libraries that

Table5. The collection number of libraries (the average number of libraries with different collection number

Regions	Library Collection Number								
	Less than 4500	5500-11000	12000-24000	25000-50000	51000 - 102000	103000-206000	207000 - 414000	415000 - 830000	More than 831000
Canada / USA	4.5 \cong 5	21.76 \cong 2 2	37.62 \cong 3 8	32.38 \cong 32	26.18 \cong 2 6	17.58 \cong 1 8	10.24 \cong 1 0	6.21 \cong 6	7.08 \cong 7
Latin America/ Caribbean	1.562 \cong 2	2.562 \cong 3 *	2.374 \cong 2 *	2.0625 \cong 2 *	1.374 \cong 1	1.531 \cong 1	0.753 \cong 0	0.758 \cong 1	0.75 \cong 1
Europe	2.11 \cong 2	43/5 \cong 3	3.68 \cong 4	3.75 \cong 4	4.08 \cong 4	4.71 \cong 5*	4.05 \cong 4	3.4 \cong 3	1.45 \cong 5 *
Asia	0.545 \cong 1	1.722 \cong 1	1.63 \cong 2	1.722 \cong 1	1.990 \cong 2	3	2.54 \cong 2	1.727 \cong 2	5.46 \cong 6 *
Africa / Middle East	9.16 \cong 0	0.5 \cong 1	0.76 \cong 1	2	3	0.33 \cong 0	0.5 \cong 1	1	1.16 \cong 1
Pacific Region	11.5 \cong 1 2	10.5 \cong 11	17	22	29.5 \cong 30 *	19	12	9	12

Table 5 shows that the countries located in the Pacific Region have the maximum number of libraries when the collection number is Less than4500, 25000-50000, 103000-206000, 207000-414000, 415000-830000 and more than 830000. When the collection number is 5500-11000; 12000-24000; 25000-50000; the

- $\left\{ \begin{array}{l} H_0: \text{there is no relation between the collection number of the library and the type of the region} \\ H_1 : \text{there is a relation between the collection number of the library and the type of the region} \end{array} \right.$

Table6. Similarity Test (The relation between the collection number of library and type of the region)

Kramer co efficient	Aptness Amount
0.161	0.138

Since the aptness amount is 0.138 and more than 0.05, 0.05 will not be considered as 0.

Therefore, with the assurance amount of 0.95, we can accept that all regions of the world are the same in terms of the collection number of the library; i.e. there is no relation between the

shows the total number of the libraries of regions of the world.

Table 4 shows that Canada and the USA have the most number of libraries with different collection amount, like 4500; 5500- 11000, etc.

Africa and Middle East has the least number of libraries with different collection number, such as less than 4500, 5500-11000, etc.

Table 5 is the incorporated and consistence table (corrected) of the regions of the world that shows the average number of libraries with different collection numbers in the world.

countries located in the USA and Canada have the maximum number of libraries.

Cramer coefficient has been used to see if the regions of the world are the same regarding the collection number of the library. The result is presented in table 6. This hypothesis as equivalent will be as follows:

collection number of the library and the type of the region.

Distribution of Different Library Systems According To Tools Being Used in Digital Libraries of the World and the Relation between Distribution and the Applied Tools in Digital Libraries

Table 7 is an incorporated and consistence table that shows the tools being used and applied in all digital libraries regions of the world. According to table 7, Archival Ware is used in 5

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libraries of the USA and Canada, Digi Tool in 49 libraries, CONTENTdm in 165 libraries, Dspace in 15 libraries, ENCompass in 1 library, Hydra in 2 libraries, Hyperion Digital Media in 39 libraries, Insight in 3 libraries, Locally Developed in 3 libraries, Omeka in 3 libraries, Polaris Fusion in 8 libraries, Safety Deposit Box

in 16 libraries in the USA and Canada. These numbers are more than any other region of the world.

Table7. The tools being used and applied in all digital libraries

6 regions	Canada and the USA	Latin America and Caribbean	Europe	Asia	Africa and Middle East	Pacific Region
Archival Ware	5	0	1	0	0	1
CALM	0	0	2	0	0	0
CONTENTdm	165	0	4	0	0	0
DIGIBIB	0	0	2	0	0	0
DigiTool	49	2	10	0	1	23
Dspace	15	2	14	2	0	1
ENCompass	1	0	0	0	0	0
Greenstone	2	4	3	0	0	1
Hydra	2	0	0	0	0	0
Hyperion Digital Media	39	0	3	0	0	33
Insight	3	0	0	0	0	0
IPAC fur Imagecatalogue	0	0	0	0	0	0
Kete	1	0	0	0	0	18
Locally Developed	3	1	0	0	0	0
Omeka	3	0	1	0	0	0
Polaris Fusion	8	0	0	0	0	0
Portfolio	0	1	0	0	0	12
Safety Deposit Box	16	0	1	0	0	0

CALM tool is used in 2 libraries, and DIGIBIB is used in 2 libraries of Europe which are more than any other region of the world. Kete and Portfolio have been used in 18 and 12 libraries of the Pacific region, respectively. Greenstone, being used in 4 libraries, is more used in Latin America and Caribbean than other parts.

Cramer coefficient has been used to see if the regions of the world are the same regarding the tools being used in each library. The result is presented in table 8. This hypothesis as equivalent will be as follows:

$$\begin{cases} H_0: \text{there is no relation between the tool and the type of the region} \\ H_1: \text{there is a relation between the tool and the type of the region} \end{cases}$$

Table8. Similarity Test (The relation between the tool and type of the region)

Kramer co efficient	Aptness Amount
0.001	0.702

Since the aptness amount is 0.001 and less than 0.05, 0.05 will be considered as 0. Therefore, with the assurance amount of 0.95, we can accept that all regions of the world are not the same in terms of the tools being applied; i.e. there is a relation between the tools and the type of the region. This relation is string with regard to Cramer coefficient number.

DISCUSSION AND CONCLUSION

The result of the Research shows that although applying and using library systems are an inseparable part of libraries, the regions of the

world are not the same in terms of the type of the libraries; in other words, there is a relation between the type of the library and the region. Although each country in the USA and Canada has the most number of libraries, the number of school libraries exceeds any other type which shows a growth in this type of library. May be the focus on education from the basic levels is a reason for the growth of such libraries.

The Pacific Region is rich in terms of library with regard to its size and the countries in this region witness the growth and development of different types of libraries, including public, private, collegiate, and medical and law. Countries in this region try to build libraries that will meet the information needs of higher education along with building public libraries.

All 6 regions of the world are not similar in terms of the tools they use in their digital libraries; i.e. there is a relation between the type of the region and the tools being used in their digital libraries. CONTENT dm is the most used tool in Canada and the USA.

The most used tool in Latin America and Caribbean is Greenstone, while in Asia and Europe, it is Dspace. Digi Tool and Hyperion Digital Media are mostly used in Africa and Middle East and the Pacific Region, respectively. Generally, tools like DigiTool, Hyperion Digital Media, and Keteare most accepted in the world.

All 6 regions of the world are similar in terms of the collection number of the libraries; i.e. there is no relation between the collection number of the libraries and the type of the region. In other words, the collection numbers in the libraries of the world are different. The collection number is not specified to a specific country.

As mentioned before, the type of the tools being applied in each library is different according to the specific geographical region they are located in. It would be interesting to mention that the geographical region has no influence on the total collection number of the libraries, which shows that the focus in all regions is on meeting the customers' needs rather than making a quantified set and complex of libraries.

Finally, the followings are recommended:

- The managers of the libraries use and benefit from this Research to purchase software most used in the world.
- Software designers and librarians should consider the result of this Research to improve the existing software according to the most used and applied software in the world.
- Software designers and national librarians collaborate with and benefit from the designers of the most used and applied software in the world.
- Libraries should use open source code software that makes access to and correction of the codes possible for everyone.

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