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EXTRACTING RELEVANT INFORMATION ABOUT PREFERENCES OF THE CUSTOMERS, FROM THE TRANSACTION RECORDS OF INTEGRATED LIBRARY MANAGEMENT SYSTEMS

András Simon was born in 1969 in Budapest. He finished his studies in 1993 in History and Librarianship at the Faculty of Arts and graduated from ELTE. He has been working in Hungarian libraries since 1992, for the scope of library automatization. Between 1999 and 2002 he was the system librarian of the Hungarian Shared Cataloguing System. Since 2002 he worked as subcontractor and later as employee for the MTA SZTAKI, then for Monguz Ltd. from Szeged in the field of design, development, customer support and distribution of the Huntéka integrated library management system. Since 2019, he is the PhD student of ELTE Institute of Library and Information Science.

KEYWORDS: Integrated Library System. Library Automation. Library Databases. Data Analysis.

ABSTRACT: **Thesis/Objective** – The world outside the libraries is changing rapidly, and these changes are extremely speeded up by the effects of the restrictions ordered because of Covid 19. It is worth to give new aspects for creating and using library statistics, in the way extracting information from the transaction records of integrated library management systems, hence the analysis of these

records seems one of the most appropriate way to follow the changes of the customer's attitude. **Method** – The databases of the Integrated Library Management Systems contain these data units beside other records, like loan, bibliographic, item or authority records. The transaction records are created by the application, preserving the information, logged by the program. These records are preserved for long time in the database even if the logged transaction itself is terminated, or the original record is deleted. Analysing large number of loan records we can follow the changes and can ascertain trends for the past two years too. As the employee of Qulto Companies (Qulto Companies – https://qulto.eu), a firm developing integrated collection management systems for libraries and museums in East-Central Europe I have the permission, and the necessary knowledge to examine the catalogues of our customers. The MARC based data structure of these software is widely used by library and museum automatization systems in Europe, so the Middle-European experiences for data extraction could be seen, as generally valid in the future. **Results** – There is a significant decrease according to the count of active library users or to the number of loan transactions. There is some difference between the loan and user counts according to library type. In the high school libraries, the decrease doesn't seem to have any connection with the Covid 19 restrictions, in the case of the other library types it can be the result of them. Hence there was no difference between the tendencies of the decrease according to geographical position or size of the library. **Conclusion** – The transaction records of Integrated Library Management Systems are very useful we can gain very important information about our libraries. so, we should take care for preserving them, or at least we have to get the most important units of information from them before they are erased.

INTRODUCTION

Our society, both the public and the decision-makers regards library as one of the main services of welfare state, a basic element of modern democracy and also a key of free access to information even in the age of internet. Nevertheless, the librarians are pressured to give reason for they are worth to be financed not in the past but in the future too (Tóth, Könyvtárhasználat, 2019, p. 205). The fundamental role of libraries: being the holder of human knowledge is beyond dispute, but their essential significance as disseminator of information is questioned in the modern world. To verify this significance the librarians should prepare statistics, more and more every year. They have to give relevant information to the community to show the usefulness of their services. To give information, it seems a right way to extract information from the databases of the Integrated Library Management Systems (ILMS) (Simon, Integrált, 2019).

Some of the data elements are present in the databases, though neither librarians nor decision-makers know them. All the ILMS create log tables to record the events take place in the application. In this tables exist the database transaction records.

The librarians themselves are motivated to get information about their daily work, and particularly the management also wants to use the extracted system information to help decision by disposal, desiderating and acquisition. The benefit of having relevant statistics both for local use and to send information for the central institutions is clear for the library management, for the financing authorities, and it seems to be useful for sociologists to research the attitude of library customers and the consumption of cultural products too (Péterfi, Életünket, 2019, pp. 192-229). To acquire information needs time, hence the transaction data are really look like "raw material" for information business. The system librarian or system manager should examine data tables directly with the tools of the RDBMS (Relational Database Management System). After that, it is needed to prepare data for further examinations. It is needed to add some further information to the yielded data rows getting the original table relations of the system. The research of the database sometimes is needed to be completed with the results of inquiries of users, using surveys or direct interviews (Sohanchyk , 2020).

MY WAY TO THE RESEARCH

I am the employee of Monguz Ltd, a Hungarian firm developing integrated collection management systems for libraries and museums in Eastern--Central Europe. As working for a software vendor, I had to enter the databases of my company's customers to do some metadata corrections with the tools of SQL RDBMS, according to the demands of our clients. Together with my colleagues, my duty is to repair the damaged metadata, to manipulate data and to prepare various outputs needed by our clients.

Otherwise, I am a librarian doing my PhD studies in the Institute of Library and Information Science, (Faculty of Humanities, Eötvös Loránd University, Budapest, Hungary). Being a librarian, I think I should give relevant information extracting and analysing the data I see "being in the backstage" for my colleagues, living in Hungary or in abroad. Having the possibility, permission and the technical skill, to examine the catalogues of our customers, I think, it is worth to publish some of the results of my results. The Qulto – Huntéka and Qulto – Corvina ILMS are up to current international standards. The data records in the catalogues are in MARC format. The various records of the catalogues are linked together in a semantic network. The network itself is based on an RDBMS. All the repeated data elements of the catalogue are in list of values. The applications with their advanced data structure are widely used in libraries in Europe, so Eastern-Central European experiences can be generally valid elsewhere.

The technical information of the Qulto ICMS is not public. The readers can only see the data on the Web OPAC. The librarians can see the user

interface of the ILMS, and they can get information from there about their own data. The technical data maybe visible for the system librarians and system managers, but they can see it only in their local databases. Nevertheless, the transaction records and the data structure themselves are hidden from them too. If only they know the tools of their Operating Systems and Database Management Systems, they can search in them, but they have to have enough information about their application's data structure to be able to extract useful information from them (Kiszl, 2021).

AUTOMATION SYSTEMS IN THE HUNGARIAN LIBRARIES

An Integrated Library Management System (ILMS) is essential for the modern libraries for thirty years. Applications for library automation were used separately for the different modules like Cataloguing, Circulation, Acquisition, Periodical and Customer's Catalogue. These basic modules were integrated into one system. These systems could use one common – mostly SQL (Structured Query Language) based and relational – database, and the user's authentication was uses one single register too. In our recent days the libraries attach digitized full contents to their catalogue records, so the Media module is going to be the indispensable part of the ILMS too.

The integrated systems are widely used in the memory institutions in Hungary. Nowadays there is no library without an ILMS, and most of the museums and archives use some automation system to support the staff's work too. We can ascertain than there is a free market for ILMS in Hungary. There are circa ten products of the concurrent vendors on the market, and the experts of the library management has the possibility to select the application of their own choice. Most of the institutions use systems supported by commercial distributors. The automation of the workflows of memory institutions is complicated enough to make it impossible to be solved by software applications without configuration and customization. The prices of the, by vendors prepared, distributed and supported systems are advantageous. According to the IFLA document: "Designing and Building Integrated Digital Library Systems", an institution has to be careful by ordering new, non-series developments, either standalone applications or applications attached larger systems, because these developments can be expensive. In a case of individual developments, according to the IFLA guideline the costs can be two times higher than using a standard software (Rathje, 2005, p. 67).

Talking about Hungarian libraries I mean libraries, in which members of staff, customers and documents are mainly Hungarian. After the first World War the Austrian Hungarian Monarchy was divided into new states, and two third part of the former Hungarian kingdom was taken

away, giving for millions of ethnic Hungarians a new citizenship. These people are mostly living is these countries even today, where not only the humans, but even the libraries can be "ethnic minority". Other main experience is, that it is easy to cross the borders for a vendor to sell its products abroad, but it is very hard to step over the borders of the languages. That is why the Hungarian libraries use integration systems distributed by Hungarian vendors, doesn't matter what citizenship the customers and staff of the library have. So, among the customers of my workplace, the Monguz Ltd there are institutions of six countries outside of Hungary, but in most of them the libraries are "Hungarian". It is true for almost all our other concurrent vendors. They have customers outside of Hungary too, doesn't matter if their application has only Hungarian user interface. It is no wonder, because to step over the language border is not easy. To translate the complete user interface of an application (not only the screen texts, but the system messages and the dictionary data too) can significantly increase the development costs. The "Designing and Building Integrated Digital Library Systems" IFLA guideline establishes even 30 %, but in my point of view, in the case of an application prepared already in the development period to be translated to foreign languages, these costs can be reduced (Rathje, 2005, p. 67).

A NEW CONCEPT, THE INTEGRATED COLLECTION MANAGEMENT SYSTEM

The Integrated Collection Management System (ICMS) is an application developed for memory institutions combines the functionality of the Integrated Library Management System, the Integrated Content Management System and the Museum System.

An integrated system unifies the databases of the online web catalogue, the digital inventory book, the institution management system, and the Knowledge Organisation System. Theoretically an ICMS can be used in each kind of memory institutions, so in a library, in a museum or in an archive too. To tell the truth, there isn't any application which can fulfil all the demands of the whole GLAM (Galleries, Libraries, Archives, Museums) sector. An ICMS can be regarded both as service and as a product. Digitization strengthens the convergence of the institutions of GLAM sector, hence the demands, the solutions, the applications and the necessary knowledge of the staff are similar. Otherwise, these institutions often collect similar documents, old books, manuscripts, smallprints, visual documents, maps, photos, postcards. The similar contents are interesting to similar users, who want to use the same user interface (Simon, Rendszerváltás, 2021).

A NEW ROLE: THE DIGITAL LIBRARY

The role of the integrated systems is changing because of the increasing number of digital documents:

- The photos created in the institutions are born digital.
- Most of the unique contents of the collections is digitized or under digitization.
- A large amount of the new documents is born digital.
- Most of the documents of the collection is useable directly from the online user interface, in the way that the display application is embedded in the web browser.
- There is full text search opportunity for the documents of text format.
- It is solved that a web catalogue gives at least bibliographic information about records of other catalogues.

There are impacts slowing these changes down. Though the proportion of digital material increases year by year, the traditional analogue documents are still more popular. According to a research prepared in Deutsche Bibliothek, most of the users prefer analogue material if they have free choice. Otherwise, the readers should know and have to use more intensively the digital material (Niggermann, 2017).

In some other country the users still seem to be reluctant to use digital resources too, though the advantages of the digitized texts (easy access and perceived ease of further use, searchability) are well known. Maybe education can change the reader's attitude (Okyere-Kwakye , 2020).

The impact of digitization projects is not so determinant, as it was thought by the beginning, especially when it was not done by the libraries themselves. The profit of digitization projects is lower than it was expected. It was summarized by a manager of a tech firm, which has been take part in the LSDI ((Large Scale Digitizing Initiatives) project in the United States: " … book digitization is not the area where there's big business" (Jones, 2014, p. 217).

Sometimes the development of the project is blocked, the budget can run out, the result seems to be interesting no more, the potential customers don't get enough information about the digitized contents and the digitization project has not the planned effect (The Fund's 2006).

The readers attitude to the digital documents changes slowly. The persons who have used to their own way to get information are not change it easily. However, the data source itself is the same, but if the digitized copy of a document has the same quality, and it is faster and cheaper to get it, it can be popular among the users (Meyer, 2016).

The proportion of the digital documents in the libraries and in other public collections is increasing. Both because a plenty of recent documents

is born digital, and because the institutions digitizing their analogue documents with always larger capacity too. However, the main thing which blocks the usage of the digitized documents of the cultural heritage, the handling of the possession rights of the authors. The national governments and the authorities of the European Union agree that the main aim is, to let as much digitized documents to be legally used as it is possible (Tóth, A digitalizálás, 2015).

The technical problems of the remote access of e-books and other material are solved, so if copyright questions are answered, satisfying both authors and public collections, the main stumble of document service via the internet will be the reluctance of memory institutions. They can afraid, to loose the control over their valuable collections. Having this control either because of copyright reasons or because the library's own needs, it should be solved to mark all the documents: who, how, in what quality and from where they are useable. The developers of the systems can prepare some restricted views, (using watermark or timestamp, creating a snippet-view, blocking the download, using some special format like "E-pub") or can restrict the usage for authorized users or for special workstations of local networks. If the usability of the digital material is made more complicated, the option to go to the library and get the physical document can be preferred by the customers. Furthermore, all these solutions are temporary, because the developments should be constantly adapted to the continuously changing technical and legal environment. Because of this, these applications are mostly peripheric and can be replaced easily.

The full content and the metadata records of the catalogue are better to be not in the same database. On the one hand because of security reasons, while it is easier to restrict the illegal usage from the web interface having this kind of architecture in the system, on the other hand, for the purpose of saving space for backups. Hence the catalogue should be saved incrementally day by day, but it is not necessary in the case of the media files.

If the media files are copied into another database, in another filesystem or even on a different virtual or physical server, full text indexes should be built to help the queries launched from the user interface. These indexes should be considered as integral part of the catalogue (Siegmüller, 2007).

The digital contents can be collected by the memory institution as born digital documents, can be created by digitizing (scanning or making photos), and even can be created by the staff of the library, the museum or the archive itself. "… librarians are well positioned to become professional digital content creation, as they already possess the basic skills needed to create effective content for high user engagement" (Okuonghae, 2021).

DATABASE CONTENT AS INFORMATION RESOURCE

The databases of ILMS were important resources of library statistics from the beginning. Most of the data can be gained from the database without the help of the developers, and the important statistics can be prepared by the librarians, or at least by the system manager. Otherwise, there are special, interesting and valuable data hidden from the users.

The most important statistics of a common ILMS are:

- Count of loans, user registrations, created – bibliographic, media, authority and item – records.
- Most popular books and authors.
- Most active customers.
- Spent money.

The authorities and the institutes for librarianship collect these data from the libraries and summarize them for further research. These current usage statistics have to be created year by year. Some information of these statistics is become hidden during the yearly work, but they are not erased. So, that data tables can be examined though they are already out of the daily use. These are the "archival" data, either created by directly the users and managers of the system or prepared by the application.

The research of ILMS database records is made easier by the fact, that their data structure is planned in consideration to international standards. Above all, it is true to the catalogue data. The ISBD was interpretated by data formats usable by computers, first of all by the MARC (Machine Readable Cataloguing Format). The FRBR (Functional Requirements for Bibliographic Records) concept, modelling the conceptualisation of the documents themselves, spectates from the customer's point of view the catalogue data as bulk of linked information. Going further there are more formats of FRBR family like the FRAD (Functional Requirements for Authority Data) and the FRSAD (Functional Requirements for Subject Authority Data). To solve the problems of the inconsistencies between them, the aim of the IFLA was, to develop, the LRM (Library Reference Model) a harmonized data model (Riva, 2017). Creating the new generation of integrated systems, the developers fitted and fitting the data structure of the catalogues and the circulation, periodical and acquisition modules to the already standardized data structure of electronic catalogues, so all the data elements of an ILMS are more or less standardized (Kiszl, 2021). To understand the possibilities of ILMS database research it is needed to look over the record types existing in them:

Records in an Integrated Library Management System:

- Catalogue – bibliographic, item, authority, media.
- Acquisition – order packages, items, financial transactions.

- Loan – customers and loan events.
- OPAC – search and hits.
- Database transaction records.

In this paper I show the results of a research considering to database transaction records:

- The attributes of database transaction records are:
- They created by the application automatically.
- Preserved in the system for decades.
- Never wilfully erased, only simply don't migrated in the case of changing the ILMS.
- Contain information about the events taking place in the database: searching, inserting, deletion, modifying.
- Are different kinds of records.
- Can be researched by experts of "digital archelogy".

In my research introduced in this paper I examined the loan transaction records.

Information contained in the loan transaction record:

- Identification of the document.
- Identification the customer and the librarian.
- Date and time of the transaction.
- Loan expiring date.
- Date of bringing back.
- Date of renewal.
- Place of transaction.

Metadata analysis is recently a growing need in libraries by data migration, transformation and remediation too. High quality metadata is necessary for cataloguing acquisitions, repository and collection management, such as library systems management. Main areas of metadata analysis are data cleaning, exploration, transformation, and statistical analysis. The analyst needs to find out, what data and from which source are available, how and with which tools they can be accessed easily. The analyst should know, what kinds of data change, merge, or enhancement is needed for the proper work (Trail, 2021).

In the case of change a library application its database is changed too. In the early period of library automation, only the bibliographic, authority and item records were converted in the case of a system change. Later the current customer, acquisition and periodical issue records were migrated too. After the development of library automation services, the vendors became able to migrate also the current loan, weeding, holding, renewal and

invoicing records. Otherwise, there are data even nowadays which are rarely migrated from one system to another:

- Reader information put into archival tables, (sometimes these are even directly erased according to GDPR – General Data Protection Regulation).
- From the catalogue deleted, but in the database preserved bibliographic, item and authority records.
- Completed loan, interlibrary loan, renewal and reservation records.
- Records of invoicing, acquisition, inventarizing and weeding events,
- Database transaction records.

These data are not always preserved, especially not often for a long time. The structure of these records is not the same in the different systems, so the data recorded in a former system (maybe even in an elder system which is not built on an RDBMS), are mostly dropped with the old database (Lengyel, 2003, pp. 313-317).

The difference is clear between erasing information and between the lack of preservation. The hidden transaction data which are fortunately preserved, can be moved from system to system, and are later researchable. These statistical information units are very useful to understand how the library works. It would be better if these units won't be deleted, especially if there is no lack of disk space. Otherwise, the problem of disk space can be solved by data compression, creating external backups or with the use of special data tables, in which only the primary (not from other data derived) information is preserved. Sometimes system managers or system librarians have to erase data. It is the case for example, when the institution is not allowed to keep personal data in the system after the personal record became obsolete according to GDPR. The aim of the anonymisation of personal records in a system is to make it impossible to identify the person with the help of the data in its database record. The much information is erased because the necessity of anonymisation, the less useful information can be gained from the database during later research (Blätte, 2022, pp. 48-58).

The old catalogue cards and bibliographies which have high quality and are validated, should be considered as authentic primary research data (Fabian, 2021, pp. 72-75) hence the electronic catalogue records of ILMS are considered as archival documents too. The only difference is that latter ones are born digital units.

DESCRIBING OF THE RESEARCH

THE CRITERIA OF THE SELECTION OF DATABASES

According to the customer contracts, of Monguz Ltd. the employees of the firm are allowed to get anonymized statistical information from their systems. Having this possibility during the research the loan transactions of 360 libraries were examined.

All of them were the Customers of Monguz Ltd. as Qulto – Huntéka and Qulto – Corvina ILMS users. I had remote access directly – using the tools of the SQL RDBMS to the selected databases (among them the special libraries relatively underrepresented). They use loan functionality at least for seven years.

Figure 1 shows the count of all the examined databases grouped by institution type. The "county libraries" are the public libraries of county towns. The municipal libraries are the public libraries of larger and smaller cities. In Hungary and in the other parts of the Carpathian basin (where all the examined institutions of this research are) the population density is almost the same in every county, what means that the cities in the country are relatively small. In Hungary most of municipalities maintain their own library. Only the small settlements are upheld by the institution of the county town. The church (both Catholic, Protestant and Jewish) have big libraries which remained mostly untouched in the "people's republic" era. These libraries are mainly museal collections. The educational institutions upheld by Church were considered among the school and high school libraries.

Figure 1. Customers of Monguz Ltd. Having a Qulto – Libraries remote accessible database

Library type	**Qulto – Huntéka**	**Qulto – Corvina**	**Kistéka**	**Sum**
High school	25	17		42
Municipal	63	22	1	83
County	7	8		15
Special	38	9	8	55
Church	10	3		13
State	4	1	1	6
School	89	3	7	99
Sum:				295
	Hungarian	Abroad	Sum	
High school	37	5	42	
Municipal	80	3	82	
County	14	3	17	
Special	58	1	59	
Church	11	2	13	

In the neighbouring countries of Hungary, the conditions are almost the similar. Most of the institutions being our customers in Romania, Serbia and Slovakia, are Hungarian libraries, what means, that most of the readers and the librarians are ethnic Hungarians and the books of them are Hungarian too. Otherwise, I can ascertain, that I couldn't point out any difference between the libraries according to the country, the state, the ethnicity of the users, the locality or to the size of the library and its database (Kiszl, 2021).

Among the examined libraries not all of them use loan module. There are libraries especially museal collections and special libraries, which are open to the public only for local use, and they don't allow their customers to borrow books. Figure 2 shows the examined libraries using the loan module of the ILMS for their daily work.

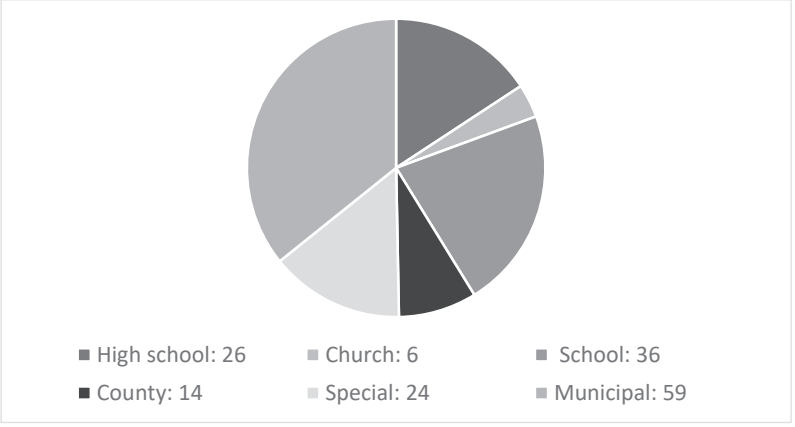

Figure 2. Libraries using loan module

THE METHOD OF THE RESEARCH

According to some former research, I realized, that it is enough to select a group of libraries which can represent the whole library community of our customers. So, from the 360 library, I had chosen 68 to take part of this research. I wrote an SQL script, to count the loan, user creation and membership renewal transactions, to establish the count of loans and the readers having valid library membership in the examined year. The selected group of institutions represents every library types and geographical localities. I selected libraries which use their loan module at least for seven years. Figure 3 shows the examined libraries, grouped by type.

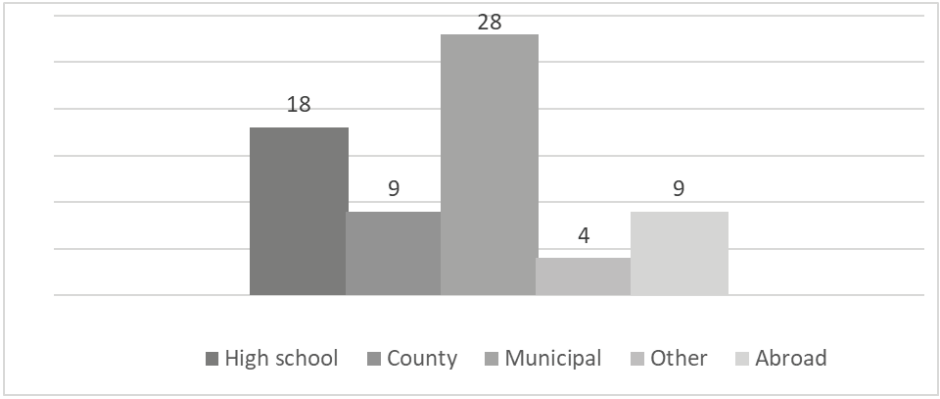

Figure 3. Examined libraries

RESULTS OF THE RESEARCH

In the examined libraries I have counted the loan transactions grouped by year. Neither renewals were not counted nor the length of the borrowing time (so the distinction between borrowing and bringing date) was not taken into consideration. I have chosen three years, a pre and a post Covid year (2019 and 2021) and year 2014, to have a fairly large timespan. Figure 4 shows the average count of loan transactions grouped by library type in these three years.

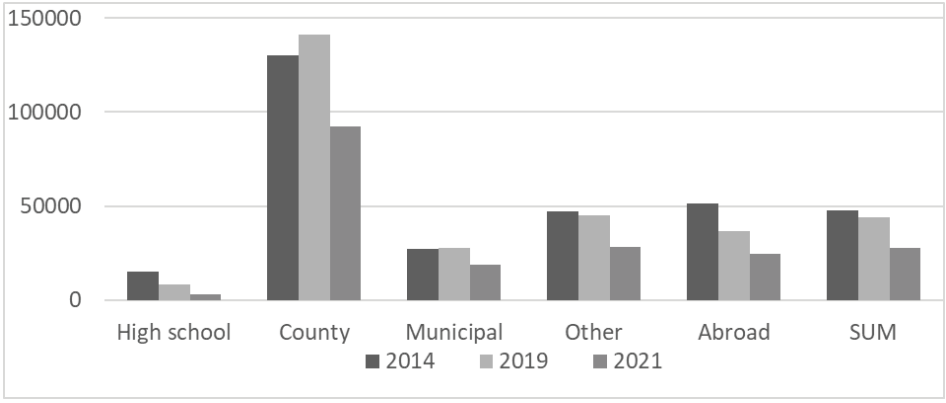

Figure 4. Average count of loan transactions by library type

The second unit of my research was to count together the readers having valid membership in the examined years at least for one day and borrowing at least one book too. Figure 5 shows the average count of the readers for the examined three years grouped by library type.

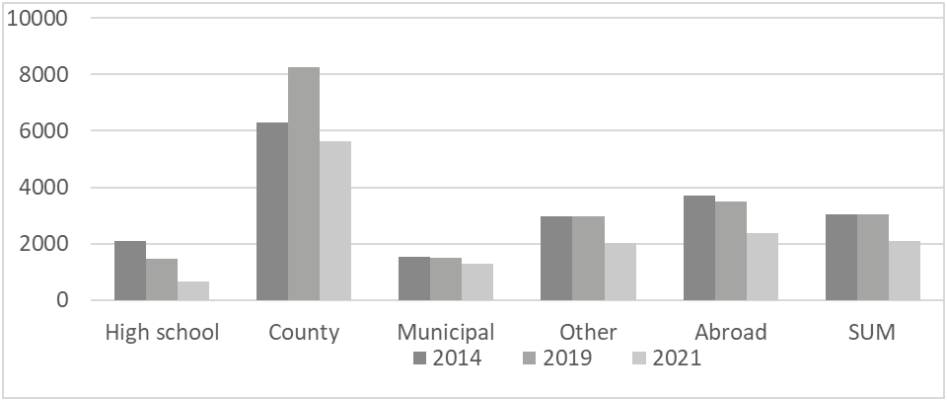

Figure 5. Average count of customers loaning at least one book

We can ascertain that both the number of active users and the number of loan transactions is decreasing in almost all the libraries and by all types of them. Otherwise, there is difference of the downward trends according to the different library types. This declining tendency is constant in the case of high school libraries for ten years. Otherwise, by the other library types we can establish a strict connection between the decrease and the Covid 19 restrictions.

Though examining the results, the tendencies of changes of library use are almost the same according to the libraries grouped by type, but there isn't any difference according to other parameters like:

- Country.
- Ethnicity – mother talk.
- Geographical locality.
- Average age of borrowable books.
- Library size.
- Integrated System (Qulto – Huntéka or Qulto – Corvina).

STATE OF MY RESEARCH

I have prepared my research as the student of Institute of Library and Information Science, Faculty of Humanities, Eötvös Loránd University, Budapest, Hungary. I have researched other units of the databases of integrated systems of libraries and museums, like the size of the databases and media files, the preferences of library customers choosing documents to loan, the way of creating new database records (importing from other databases or creating them locally). I hope I could do it once more in a couple of years, collecting and analysing transaction data from several databases, so I will can establish tendencies based on a longer period. This

way of examining library systems seems unique. I couldn't find any article or paper about a research like this in English, German or Hungarian.

CONCLUSION

There is a big decrease of library use, and this decrease comes not only from the Covid restrictions. Otherwise, this research concerns only to the loan of physical documents. The use of electronic documents either full text data or audio-visual material is increasing. It should have been measured too, and the results of the search of usage of analogue and digital documents is needed to be counted together.

The measuring of usage of electronic documents is not easy. The book as physical and intellectual entity is fixed and clear, but we cannot tell the same about the digital ones. Digital document as a manifestation of a work can be changed in time and it is not easy to be considered as a private intellectual property of the author. Sometimes it is a mesh of private and public resources, based on information created by a community. According to our modern point of view and the recent regulations, it had to be considered as private property and cannot be accessed free even form a library. If it has price, the danger of underutilization can occur, and it may be less reused (Fink, 2020). Hence it is hard to make a comparison between cost free use of physical books and use of media contents for which one should pay even in the library.

Nevertheless, there are other serious problems counting the transactions of electronic use. We have to find a definition for electronic use (for example clicking at least once on a content in an hour). We can count only human use, so we have to filter the robots, crawlers, aggregated requests coming from federal search interfaces.

William Denton in his article: "On Two Proposed Metrics of Electronic Resource Use" proposes two new metrics for electronic resource use, to give us some information about how much the digital documents are used: *"users per mille"* and *"interest factor"*.

"Users per mille (UPM) is how many of every thousand potential users actually use a product. (*Per mille* is the thousands equivalent of *per cent*)".

"Interest factor (IF) is a measure of how interested in a product its users are. The more they go back to it, the more interested they are, and the higher the interest factor" (Denton, 2021).

Summarizing the questions of the research of OPAC digital content usage, it is needed to give the most important aspects of metrics:

- Usage of full contents.
- Counting the requests sent to the website.
- Using some feedback code.
- Analysing the logfile of the website.

- Adding a script to the site to count the openings.
- Filtering the robots, crawlers, bulk requests, input coming from federal search interfaces (Counter 2021).

So, the recent problem is that it is very simple to follow the tendencies of loan of physical items, because the ILMS are prepared for this task for fifty years, but measuring the electronic usage is much more complicated and needs the use of new algorithms.

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POZYSKIWANIE ODPOWIEDNICH INFORMACJI DOTYCZĄCYCH PREFERENCJI KLIENTÓW Z REKORDÓW TRANSAKCJI W ZINTEGROWANYCH SYSTEMACH BIBLIOTECZNYCH

SŁOWA KLUCZOWE: Zintegrowany system biblioteczny. Automatyzacja bibliotek. Biblioteczne bazy danych. Analiza danych.

ABSTRAKT: **Cel artykułu** – Otoczenie bibliotek zmienia się gwałtownie, a tempo tych zmian zostało wyjątkowo przyspieszone przez skutki restrykcji wprowadzonych w związku z pandemią COVID-19. W tej sytuacji warto tworzyć i wykorzystywać nowe aspekty statystyki bibliotecznej, np. za pomocą pozyskiwania informacji z rekordów transakcji w zintegrowanych systemach bibliotecznych – analiza takich rekordów wydaje się być jedną z bardziej trafnych metod obserwowania zmian w nastawieniu klientów. **Metoda badań** – Wspomniane rekordy znajdują się w bazach danych zintegrowanych systemów bibliotecznych, wraz z innymi typami rekordów, np. wypożyczeń, bibiograficznymi, egzemplarza czy kartoteki haseł wzorcowych. Rekordy transakcji są tworzone przez aplikację i zachowują informacje rejestrowane przez oprogramowanie. Rekordy te są długo przechowywane w bazie, nawet gdy dana transakcja zostaje zakończona lub oryginalny record zostaje usunięty. Analizując duże liczby rekordów wypożyczeń można śledzić zmiany i szacować trendy do 2 lat wstecz. Jako pracownik Qulto Companies (https://qulto.eu), firmy produkującej zintegrowane oprogramowanie do zarządzania zasobami dla bibliotek i muzeów wschodniej i środkowej Europy, dysponuję zezwoleniem i niezbędną wiedzą, aby móc analizować katalogi naszych klientów. Struktura danych w tym oprogramowaniu, oparta na formacie MARC, jest szeroko wykorzystywana przez biblioteczne i muzealne systemy zautomatyzowane w Europie, tak więc można zakładać, że doświadczenie w pozyskiwaniu takich danych będzie przydatne również w przyszłości. **Wyniki** – Obserwuje się znaczący spadek liczby aktywnych użytkowników bibliotek oraz transakcji wypożyczeń. Liczby te różnią się w zależności od typu biblioteki. W bibliotekach akademickich spadek nie wydaje się być związany z ograniczeniami wynikającymi z pandemii, natomiast w innych bibliotekach może być właśnie rezultatem tych ograniczeń. Nie zaobserwowano różnic w tendencji do spadku w zależności od lokalizacji geograficznej czy wielkości biblioteki. **Wnioski** – Rekordy transakcji w zintegrowanych systemach bibliotecznych są niezwykle przydatne w zdobywaniu ważnych informacji o bibliotekach, tak więc należy zadbać o ich przechowywanie lub wydobywanie z nich najważniejszych elementów, zanim zostaną usunięte.