Digital services adapted by libraries in Mexico to COVID-19 pandemic: a critical review

Eugenia de los Ángeles Ortega-Martínez

Universidad de San Ignacio de Loyola (USIL), Lima, Perú and University of Minnesota, Duluth, Minnesota, USA

Josmel Pacheco-Mendoza

Vicerectorado de Investigación, Unidad de Investigación en Bibliometría, Universidad San Ignacio de Loyola, Lima, Peru

Héctor Eduardo García Meléndez

Dirección General de Bibliotecas y Servicios Digitales de Información, Universidad Nacional Autonoma de México, Ciudad de Mexico, Mexico

Erik Miguel Ortiz-Díaz

Monterrey Institute of Technology and Higher Education – Hidalgo Campus, Pachuca, Mexico, and

César Saavedra-Alamillas

Coordinación de Servicios de Información (COSEI), Universidad Autónoma Metropolitana – Unidad Azcapotzalco, Azcapotzalco, Mexico and Dirección General de Bibliotecas y Servicios Digitales de Información, Universidad Nacional Autónoma de México, Ciudad de Mexico, Mexico

Abstract

Purpose – The purpose of this study is to analyze to what extent the strategic actions implemented by the libraries contribute to the containment of the pandemic caused by COVID-19, without compromising the quality of library services for their learning communities.

Design/methodology/approach – The research has a mixed methodology: qualitative and quantitative with a technique of documentary review and statistical analysis of data through FanPage Karma software. The documents are public and are part of the teaching programs of the universities, webinars and courses given through accounts and official sites of the Mexican Federal Government, social networks, as well as groups of experts in national and international librarianship.

Findings – The research documents and describes the library services that have emerged in libraries since the quarantine and isolation period established by the Ministry of Public Education. It also shows the strategic actions adopted by universities (their advantages and disadvantages) and the digital competencies

of the library professionals to meet the information demands of their communities. Additionally, actions implemented to provide a rapid response are discussed so that they can later be improved to have a comprehensive framework for improving quality in the remote library service.

Originality/value – This research contributes value to the field by critically analyzing libraries' distance services, their innovations and the necessary professional competences required to achieve the institutional academic goals. Additionally, relevant services in the digital context are described.

Keywords Librarian, Academic libraries, University libraries, Digital libraries, COVID-19, Pandemic

Paper type Viewpoint

Introduction

Throughout its history, Mexico has had severe public health challenges that have negatively impacted its general population by affecting various sectors such as health services, the industry and, in consequence, the economy, while also modifying the daily routines of its population. For example, in the 1920s, the country was hit by the Spanish flu (1918–1919), and in 2009, San Luis Potosi became the epicenter of influenza A subtype H1N1 epidemic. However, unlike past events, the new disease known as COVID-19 caused by the SARS-CoV-2 virus, which has a high rate of infection and lacks treatment, has had severe consequences to the degree of being declared a global pandemic. These implications have affected every kind of library as never before in history (Chisita, 2020).

The above has led to collaborative efforts to meet the global challenge of stopping contagion, for which the most effective strategy has been the restriction and monitoring of academic activities through a period of quarantine with social distancing. From then on, librarians face new challenges, among which the most important is to be a manager who provides valuable, accurate and truthful information to the population about this disease. This, while also having to become aware, and in consequence try to mitigate the spread of false or manipulated information, a process known as *infodemic*, which has negative effects on society (Sanchez *et al.*, 2020). Thus, information is consolidated as a vital element for society in these times of crisis.

Given this, libraries have implemented plans and programs as part of the transition process from analog to digital format with the main goal of improving user safety and containment of the SARS-CoV-2 virus. Because of this, the following questions arise:

- To what extent have the actions implemented by libraries in Mexico contributed to improving the crisis caused by the COVID-19?

- How have issues related to the digital gap been solved to provide the services at a distance during this period?

- How do librarians' services make any difference regarding other communities involved?

To answer these questions, the authors started analyzing the positions of the guilds and associations of librarians, official committees and other national and international organizations specialized in the area of library and information science. Likewise, events, courses and other free activities transmitted by various educational institutions with public profiles were monitored to observe the impact that they had on their communities. Finally, based on this information, the digital competencies and actions to be considered to improve the transition of the libraries toward the new normality were stated.

From the traditional library to the digital library before the COVID-19 pandemic

Since the early 20th century up until today, Mexican libraries have been in constant transition in their collections and services toward virtual spaces. For this, libraries have had to make use of infrastructures with greater capacity to allow the establishment of services of greater impact for their communities. However, not all library systems have the same economic resources, and in addition to this, there is a lack of professionals in librarianship and the projects that have been envisioned in Mexican libraries have been stopped.

During the 1970s, Mexico and other Latin American countries implemented automated systems for the management of bibliographic data. However, in subsequent decades, other types of services were generated based on the arrival of the internet, e-mail and synchronous messaging services to provide document retrieval services, answers to questions, guidance and access to information resources such as databases (Voutssas, 2020). This represented one of the first significant changes toward the digital era, but as a result of persistent economic constraints, only a few libraries were able to adopt these new technologies, setting a trend that would later be replicated in other information units.

Added to this, the constant technological advances represented by more sophisticated hardware development through equipment with greater computing capacity, in conjunction with the development of software that can be oriented to any task, resulted in streamlining the management of libraries, their services, collections and information they generate; however, this implementation has not been extended to all sectors of the country, especially in the education ambit, which represents an increase in the digital gap at the nationwide level, a challenge that must be met by the professional librarians.

Although the digital gap is still present, a study presented by the Instituto Federal de Comunicaciones (IFT) (2018) based on information published by Instituto Nacional de Estadística y Geografía and the CONEVAL, showed there is a greater penetration in the use of the internet by the Mexican population, reaching 65.8% of the total population, of which 48.8% is concentrated in 49 cities.

On the other hand, the results of the National Survey on Availability and Use of Information Technology in Homes published by Instituto Nacional de Estadística y Geografía (INEGI) (2019) noted that the smartphone is the most used device by Mexicans to connect to the internet (95.3%), followed by the laptop or netbook (33.2%). Both are used for activities such as entertainment, communication, consulting information and educational activities, following the use of laptops and desktops used for such activities.

The foregoing shows that for Mexican society, access to the internet is essential in multiple tasks, which is a reference that should be considered in libraries as a way of understanding their communities and in this way, the informational needs that should be covered and how they should be taken into account, highlighting three essential areas: implementation of hardware that can respond to the demands that are attributed to it, software that can support the tasks related to the management of the services and concerning the librarian, it should make use of the existing advantages to develop in the communities the essential digital and informative abilities during the process of information search, that is, the first step to make a definitive transition to completely virtual spaces in any type of library, and that can be considered as the elementary requirements for it (Debowski, 2003).

However, as shown by Consejo Nacional para Asuntos Bibliotecarios de las Instituciones de Educación Superior (CONPAB-IES) (2013) and the diagnosis made of its 1,079 affiliated libraries and the official website of the Dirección General de Bibliotecas (2020) of the Ministry of Culture in Mexico, made up of 7,463 public libraries, the work of professionals

with formal studies in librarianship is surpassed by the national demand for library services in digital media, of which there is no updated information for 2020.

For this reason, it is interesting to analyze the extent to which the strategies proposed by librarians in various educational sectors solve the technological, logistical and personnel problems caused by the COVID-19 pandemic. This is under a perspective where it can be highlighted how library services and communication technologies have been developed or adapted to provide new possibilities for cooperation between libraries and to advance toward the digital realm.

Review of library initiatives in the face of COVID-19

Despite the existence of international prevention protocols, disasters caused by natural phenomena or by human error are not easily predictable and cannot be controlled. In this sense, the process of documentation and analysis of cases as shown by the work of Charney and Hauke (2020) in academic libraries and climate change shows that the dissemination of the subject among the scientific community is one of the key factors for the solution of unexpected problems.

In this regard, libraries have protocols for acting and planning preventive measures in the face of fires, floods and earthquakes in areas where their geo-climatic conditions are more susceptible to a phenomenon of this nature (Featherstone *et al.*, 2008). However, a large-scale situation such as the pandemic caused by COVID-19 disease has rethought the way of working and the safety measures established in any type of library in the world.

Although the pandemic that has followed the spread of the SARS-Cov-2 virus is an extraordinary event, the librarian must rethink and analyze the risks in the strategic planning process for any type of activity within the library, as he or she would do with any other emergency or disaster, whether local or global and share it with his or her community to improve conditions (Featherstone *et al.*, 2008).

Another aspect of the COVID-19 pandemic to be analyzed is its socio-economic impact and how this has marked a new dynamic of social interaction between libraries and their communities. Now more than ever, libraries are responsible for supporting society in dealing with the infodemic and ensuring access to reliable information while maintaining communication with their population to continue their distance learning.

As an example of this, the US National Library of Medicine (2020) has implemented a Web portal where it has compiled reliable information and research sources on COVID-19. Another action that has been implemented is open access to multiple platforms and publishers as a way of supporting the visualization and dissemination of scientific studies to counteract the coronavirus, as shown in Table 1.

Specifically, the library communities have published proposals that analyze the impact of this phenomenon on society, its educational institutions and the work environment, so that several perspectives seek to create safer living environments, as is the case of the International Federation of Library Associations and its guidelines that seek to guide libraries to continue performing their functions in compliance with safety protocols (International Federation of Library Associations [IFLA], 2020).

Another system that seeks to communicate good practices in the implementation and development of biosecurity protocols is the *Reopening Archives, Libraries and Museums (REALM): Information Hub a COVID Research Project* (Online Computer Library Center [OCLC], 2020), organized by the Institute of Museums and Library Services, Online Computer Library Center and Battelle, in which it seeks to bring together in a single virtual space, the collaboration of archives, museums and libraries in the USA through different digital resources.

ID	Profile	Social network	Engagement (%)	Total growth	#Total comments	#Total posts	Post/day	Total reactions, comments, shared	Likes	Followers
1	Biblio Tv	YouTube	No data	8	0	0	No data	No data	0	580
2	Biblioteca daniel cosio villegas	YouTube	No data	1	0	0	No data	No data	0	56
3	Biblioteca Daniel Cosio Villegas	Facebook	0.07	55	2	19	0.6785714	272	147	14,597
4	Biblioteca del Cinvestav-Querétaro	Facebook	0.0	No data	0	0	0	0	0	783
5	Biblioteca Digital UAM	Facebook	0.4	No data	24	31	1.1071429	692	397	6,215
6	Biblioteca Dr. Miguel León-Portilla	Facebook	0.17	No data	2	45	1.6071429	135	65	2,915
7	Biblioteca ITESM	YouTube	No data	No data	0	0	No data	No data	0	0
8	Biblioteca ITESM CCV	Facebook	0.0	No data	0	0	0	0	0	365
9	Biblioteca ITESM Sede Metepec	Facebook	0.0	No data	0	0	0	0	0	317
10	Biblioteca Nacional de Ciencia y Tecnología	Facebook	0.19	156	20	75	2.6785714	879	536	16,742
11	Biblioteca Tecnologico de Monterrey	YouTube	No data	No data	0	0	No data	No data	0	2
12	Biblioteca Tecnológico de Monterrey Campus Hidalgo	YouTube	No data	No data	0	0	No data	No data	0	50
13	Biblioteca UAM-A, COSEI	Facebook	0.14	No data	0	40	1.4285714	192	145	5,049
14	Biblioteca UAM-Xochimilco	Facebook	0.09	No data	15	35	1.25	308	147	11,987
15	BIBLIOTECA UASLP CIHByP	Facebook	0.0	−9	5	0	0	0	0	4,926
16	Biblioteca Universidad Anáhuac México	Facebook	1.11	10	5	91	3.25	1,101	805	3,537
17	Biblioteca Universidad Anáhuac México	YouTube	No data	10	0	6	No data	No data	3	180
18	BIBLIOTECAS BUAP	Facebook	0.24	172	146	243	8.6785714	5,127	2,851	75,424
19	Bibliotecas CETYS Universidad	YouTube	No data	No data	0	2	No data	No data	2	112
20	bibliotecasUNAM	YouTube	No data	40	1	2	No data	No data	49	1,440
21	Cinvestav Biblioteca de Química	Facebook	0.0	No data	0	0	No data	0	0	158
22	Dirección General de Bibliotecas y Servicios Digitales de Información UNAM	Facebook	0.79	480	1,911	93	3.3214286	7,989	3,381	36,454
23	Educación Continua y Colaboración Institucional	Facebook	3.39	385	1,811	54	1.9285714	5,245	2,101	5,661
24	IIBI UNAM	YouTube	No data	120	2	17	No data	No data	191	3,780
25	INFOSFERAS	YouTube	No data	9	0	2	No data	No data	5	212
26	Sistema de Bibliotecas UASLP	YouTube	No data	10	0	4	No data	No data	2	81
27	UAM_Biblioteca	YouTube	No data	No data	0	0	No data	No data	0	4
28	UNAM	YouTube	No data	400	1	2	No data	No data	11	43,200

Table 1.
Social networks Web
analytics of the
popular libraries'
profiles in Mexico
(January 1, 2020–
October 28, 2020)

In Spain, recommendations have also been developed for the reopening of libraries (Ministerio de Cultura y Deporte, 2020; Asociación Andaluza de Bibliotecarios [AAB], 2020), which seek to establish what new normality in library services will be like.

Particularly in Mexico, professional associations such as Colegio Nacional de Bibliotecarios (CNB) (2020) and the Asociación Mexicana de Bibliotecarios (AMBAC) (2020) have developed recommendations to guide libraries on how they can operate when they resume their functions. Also, institutions such as the General Directorate of Libraries of the Universidad Nacional Autónoma de México (UNAM) (2020) have published protocols and given online conferences to establish guidelines and share experiences to improve the security of their spaces and the quality of their services.

In summary, although different regulations can be established according to the needs of each community, the analysis of these initiatives show that the measures regulated by most library communities are: attend to a 50% capacity with a distance of at least 1.5 m; not to collect fines on loans; change delivery and reception dates of home loans in the system to have a period of isolation on the books; use of antibacterial gel and frequent hand washing with soap and water; restrict access to poorly ventilated study areas; promote the use of electronic resources, digital libraries and other institutional information sources; promote the consultation of open access resources; the use of masks and latex gloves is mandatory; and use of video conferences and video calls to avoid massive events.

However, this new scenario shows that, beyond a program of recovery or prevention from circumstantial disasters, libraries and their librarians must adapt to risk situations where safety and hygiene do not affect access to their library resources and services. The new normality shows a change of paradigm in which the value of the information professional should be his/her capacity to respond to events that require his/her action, even from home.

Mexican libraries Web analytics in the wake of the COVID-19

The COVID-19 pandemic was officially announced in Mexico on March 18, 2020, determined by the death of the first patient diagnosed with this disease in the country (Secretaría de Educación Pública [SEP], 2020). From that date, the preventive phase 2 began, which required the quarantine and suspension of school activities by the Ministry of Public Education.

As part of the educational system, the libraries closed their doors to prevent the spread of the disease and the first actions implemented consisted of the online transmission of multiple video conferences and instruction webinars. This type of event triggered a significant growth of these practices and the "Online Seminars" (webinars) became the way of approaching and communicating among the academic communities.

To understand how libraries have increased their services on the Web and its impact on social networks, this critical review monitored the webinars presented between January 1, 2020 and October 28, 2020. The methodology was quantitative and it was necessary to use the FanPage Karma software to know the metrics.

In total, more than 28 profiles were found on Facebook and YouTube mainly, but not all the data had permission for public consultation as is presented in Table 1. For the critical analysis of the profiles, a top ten was made to find out their number of followers, the total growth before and after the pandemic and the level of membership.

In general, the conferences in YouTube had an impact of 0.26% on average and this means that it is well below the overall average for most publications in the period. However, it is estimated that for Facebook being above 1% is a very good engagement level, and the results show that only General Direction of Libraries and Digital Information Services of the

National Autonomous University of Mexico (Dirección General de Bibliotecas y Servicios Digitales de Información with 0.79%, the Anahuac Library and Continuing Education with 1.11% and Institutional Collaboration with 3.33%) have an acceptable level (Figure 1).

The impact of the webinars as part of the online library services showed that the providers of scientific databases had significant participation as instructors in the use of digital resources, which were replicated by the librarians, after the pandemic. Otherwise, there was more demand for conferences online, courses and other activities as now, which is presented with the total growth in the followers of the libraries social networks (Figure 2).

The digital libraries have had significant changes that have made them improve the monitoring of their digital services, including constant publications on their social networks (Figure 3). Definitely this constant interaction between content and consumption is
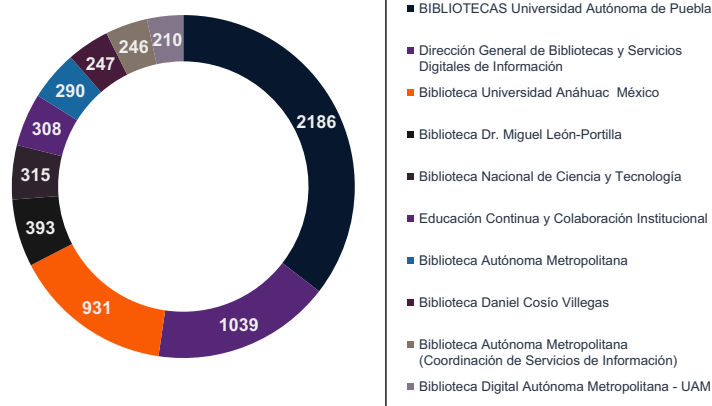
Posts (01/01/2020 – 28/10/20)

BIBLIOTECAS Universidad Autónoma de Puebla

Dirección General de Bibliotecas y Servicios Digitales de Información

Biblioteca Universidad Anáhuac México

Biblioteca Dr. Miguel León-Portilla

Biblioteca Nacional de Ciencia y Tecnología

Educación Continua y Colaboración Institucional

Biblioteca Autónoma Metropolitana

Biblioteca Daniel Cosío Villegas

Biblioteca Autónoma Metropolitana (Coordinación de Servicios de Información)

Biblioteca Digital Autónoma Metropolitana - UAM

Figure 1.
Number of
publications in social
networks

Followers (01/01/2020 – 28/10/2020)

BIBLIOTECAS BUAP (FACEBOOK)

UNAM (YOUTUBE)

Dirección General de Bibliotecas y Servicios Digitales de Información UNAM (FACEBOOK)

Biblioteca Nacional de Ciencia y Tecnología (FACEBOOK)

Biblioteca Daniel Cosío Villegas (FACEBOOK)

Biblioteca UAM-Xochimilco (FACEBOOK)

Biblioteca Digital UAM (FACEBOOK)

Educación Continua y Colaboración Institucional (FACEBOOK)

Biblioteca UAM-A, COSEI (FACEBOOK)

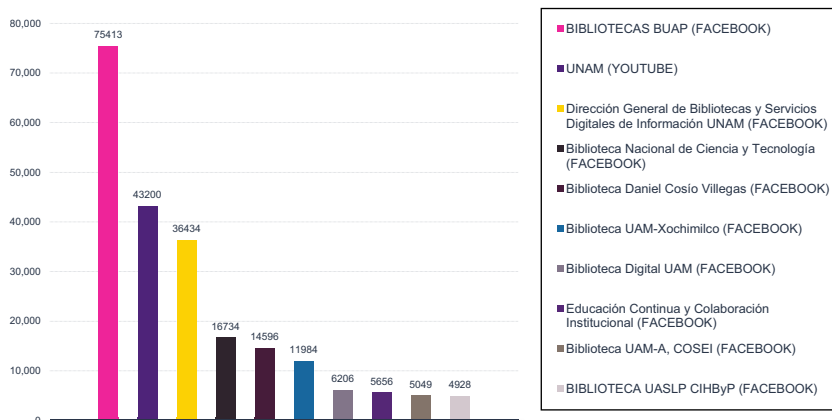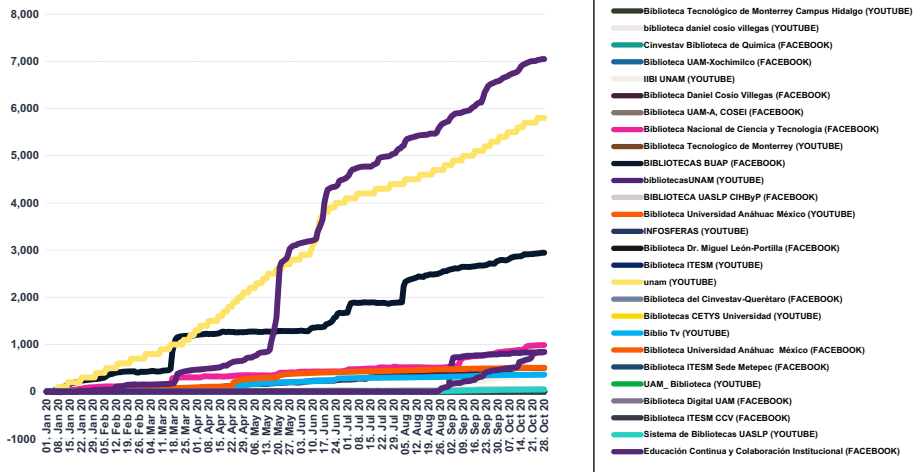BIBLIOTECA UASLP CIHByP (FACEBOOK)

Figure 2.
Number of followers
in social networks

Figure 3.
Total growth of the profiles in social networks

**Total growth (01/01/20 - 28/10/20)**

something unexpected before the pandemic, because it has increased the visibility of digital libraries, as shown by the overall growth of profiles (Figure 4).

With no possibility of returning to the library, students have been forced to quit one of the greatest supports in their academic life: the library as a study space. Consequently, the online reference service has become an indispensable part of digital libraries to meet the requests in the access and use of academic information resources that are required by their community of users (Herrando, 2020; Chesley *et al.*, 2020).

In sum, there is no scientific evidence that defines whether digital programs or platforms are the best options in the new library normality or data that explains precisely if the

Figure 4.
Total growth of the engagement in social networks

% Total Engagement(01/01/20 – 28/10/20)
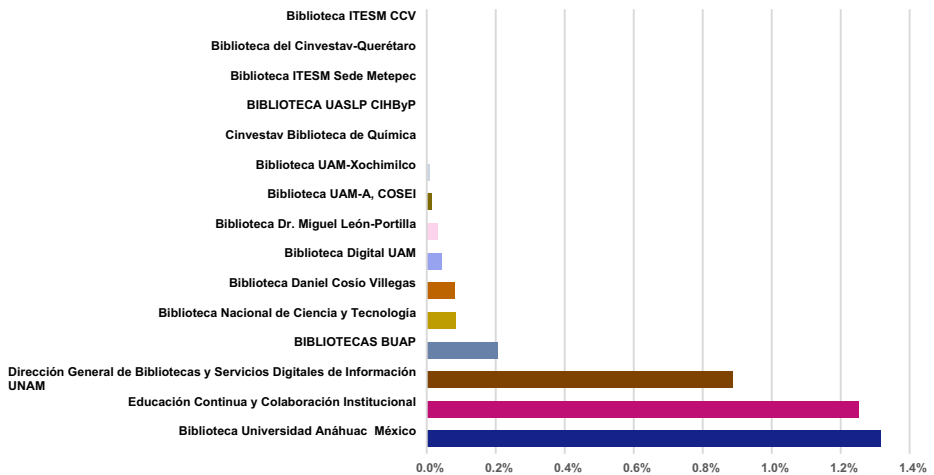
strategies implemented by the community are the most effective. However, the impact that this pandemic had on the technological transition is revealing because it shows that this transformation process involves relearning the information needs of remote users, something that for many institutions depends significantly on their budgets and above all on library collaboration.

New normality: redefining the role of the librarian and the professional competences in the face of the COVID-19 pandemic

According to Islam *et al.* (2015), academic libraries face several challenges, including unsustainable costs, declining usage, a transition to digital services and increasing demand for new services (Johnson and Lilly, 2012). For the library to evolve, it must redefine its role in the digital environment, analyze its strengths and innovate to create responsive and convenient services (Li, 2006).

Unlike other educational sectors, universities are in the mid of an unprecedented transition in the face-to-face teaching model. Everything suggests that this situation will not be transitory, but permanent, and in many cases, with classes of reduced capacity and facilitating follow-up for those who cannot attend the classroom (Peters, 2018; Arroyo and Gómez, 2020).

In this scenario, the librarian has a primary role whose responsibility requires good practices and essential skills for the success of the institutional objectives. Within the analysis made of the participating institutions (Universidad Nacional Autónoma de México, Benemérita Universidad Autónoma de Puebla, Universidad Autónoma Metropolitana and Instituto Tecnológico y de Estudios Superiores de Monterrey Campus Hidalgo), we can define the following competencies as basic: knowledge of the virtual campus; connection between administrators, providers, faculty and students; knowledge of curricula; forming future instructors; creator and curator of content; and mastering information ecosystems and knowledge production.

Even though higher education is generally evaluated through quantitative academic results, Naeem and Bhatti (2020) show that the personal interaction of a librarian allows a stronger relationship to be built between students, professors, institutions and libraries, even in a Web environment, and this, in turn, gives added value and allows students to improve their academic performance.

Besides, ensuring continuity in research training, including communication and feedback channels to students and faculty as mentioned by York and Vance (2009) and Hoffman and Ramin (2010), requires a strategic plan in the short, medium and long term to ensure innovation and development of communication channels that use library services as a factor of change.

According to a survey conducted in the USA by the Public Library Association (PLA) (2020), it was revealed that during the COVID-19 pandemic, 95% of libraries used social networks to communicate changes in services and 89% to promote their resources. At the time, Schmidt (2010) demonstrated the importance of having a strategic user communication plan supported by social networks in response to natural disasters.

The dissemination of information through social networks requires the evaluation of content, so one of the main objectives of information professionals in the short term will be to create strategies to teach the public to distinguish between facts and false information (Naeem and Bhatti, 2020).

To this end, information literacy must be oriented, now more than ever, to the use of spaces for digital construction or creation (marker spaces), immersed in social networks such as Facebook, WhatsApp, Telegram, Twitter, Instagram or TikTok. These learning

spaces can have a scientific profile, from individual training to collective training of citizenship (United Nations, 2020).

If it has been proven that the most popular media have a significant reach in the scientific community, why not think about other possibilities? Why not dare to use, with the necessary security measures, the most popular media in our communities? It is more likely to capture the interest of the university community through mobile devices (smartphone, tablet, among others) and adequate conditions to create spaces with assets that allow this, including multimedia tools to offer services that will not cost them long time to adapt.

Other actions recommended and little evaluated by Mexican libraries in the face of the new normality of the COVID-19 pandemic
Although the strategic actions implemented by universities to develop high-impact library services that promote positive student outcomes through active engagement, collaborative learning, diverse interactions with peers and teachers and supportive environments were generally reviewed, there are still issues to be evaluated.

One aspect that should be clear is computer security and privacy in services, as well as the ethical aspect, both in the use of information and in the handling of personal data, especially because of the new reforms implemented in the *Official Journal of the Federation* regarding copyright in information resources and its digital libraries.

Also, it should be considered that the pandemic has left great damage in the behavior of human beings and the psychological conditions are not the most appropriate, so the commitment, empathy, patience and especially the accompaniment that the librarian should have with his colleagues and with the user, at this point should be crucial.

For this reason and as part of the results of the literature review, a series of key aspects are presented below that should be taken up by library systems and their communities of experts, as part of the innovation and development of digital, virtual and mixed library services.

Digital identity plan
The library function is not important, so Harnett *et al.* (2018) and Moorefield-Lang and Hall (2015) recommend strengthening the term "teacher-librarian" to emphasize their teaching roles, such as support for undergraduate and graduate programs in research, information literacy and Web-based virtual seminars, in recent years.

Uncertain future
From the perspective that everything can happen, one thing we are forced to think about is what would happen if another pandemic were to occur in the future but a failure in the telecommunication networks was to be added? What would happen if the electricity generating plants were to fail as well? Sustainability is one of the issues that indirectly impacts significantly on remote library services, but within the preventive measures published by the library associations and guilds are not specified actions to reduce the environmental impact of energy dependence that this has generated to the new normality.

Knowledge management in libraries
In a changing environment, the success of organizations depends on their ability to maintain competitive advantage through the adaptation and development of new products and services. Knowledge management (KM) has already been incorporated into the management of many organizations in recent years. It is an organizational process that aims to create

centralized knowledge assets within organizations through the capture, recording, measurement of intellectual assets, creation, dissemination and application of internal and external knowledge, as well as explicit and tacit knowledge to generate innovations in organizations in the form of new products, services and organizational processes.

Innovation occurs when existing knowledge is applied to a specific situation to generate a new idea, product, service or process (Teng and Hawamdeh, 2002; Limwichitr, 2019). The success of the library depends on the ability to use the knowledge of its staff to serve the community of users while managing the processes of knowledge creation, dissemination and possible exploitation (Marouf, 2017).

In 2017, Marouf demonstrated in a study that "participating librarians have significant preparation for the acceptance and adoption of knowledge management in libraries." Especially KM in library service innovation can refer to new or improved technologies or interfaces, enhanced services, methods of dissemination or organization and other ongoing work for customer satisfaction (Islam *et al.*, 2015).

Open access
In this case it is important to teach to the community of the university (teachers, administrators and students) the difference between open access (green, gold, bronze, hybrid and diamond path), closed access, what is a pre-print (very important in times of pandemic) and a post-print. For some, pre-print servers represent an aid to rapid information at a crucial time for society; while for others, they are a murky departure from scientific rigor (King, 2020).

Use of collaborative tools
The libraries have staff trained in the use and teaching of the above-mentioned tools and vital material is provided to support teaching, learning and research (Harris, 2013). For this analysis, the most used collaborative tools are as follows: the software Slacks has been used to create groups of people as a replacement for e-mail, you can solve doubts and coordinate projects more efficiently; use of video call platforms (Zoom, Blackboard, Meets, others); library and bot chat for default answers; Google Drive for storage and collaborative writing; reference managers for organizing information in a personal and group way; Google Classroom (as a quick alternative to demand); and Moodle, virtual classroom system.

Ci-Web knowledge circuit
Web portal aimed at the continuing education of the academic community where courses, workshops and seminars are scheduled with the main objective of increasing the terminal efficiency of undergraduate students and increasing scientific production in graduate students and research.

Three stages are considered, depending on the level of each one of the participants. There is a system that diagnoses the level of the students to channel it to the corresponding stage, taking into consideration that if it does not accredit the start-up test it is programmed for a propaedeutic course. We have information resources, videos, computer graphics, tutorials and personalized assistance through a chat, for doubts or short clarifications, and with the possibility of video-conference appointments for more in-depth interviews.

"Explain me" service
Ask for an explanation of a database by an expert librarian: let an expert in information review, analyze, explore and explain to you any database that you do not master, let him give you his best opinion after analysis through a small webinar where he will show you

what kind of resource it is, what it is structure and what are its characteristics, advantages and disadvantages.

Bibliometric units
As Pacheco-Mendoza *et al.* (2020) said, bibliometric units can provide the following services:

- monitoring of bibliometrics and altmetrics indicators of the university;
- training related to indicators and research management;
- recommendations for choosing a journal to publish;
- collaboration on publications with the university's researchers;
- disambiguation of authors' and institutions' names in indexed databases;
- creation and correction of different academic entity profiles in Scopus; and
- recommendation of strategies for better positioning in the rankings.

Guidance and support service in the search for employment
Although it may seem out of context, these services can also be a good option for the community. Libraries offer internet service and in some cases it is free, their librarians have the experience to recognize false notifications from reliable sources of employment and finally, the institutional prestige of an educational center.

Conclusions
After analyzing the different scenarios, it is evident that the librarian's work has marked differences in the resolution of problems related to infrastructure, accessibility of information and communication with the user in chaotic situations. All of this, because of his or her great familiarity with digital media and above all the great need that has been generated by confinement, the librarian is at a crucial character where he or she plays a fundamental role.

The change of paradigm has been faced with the existing means and resources, leaving us learned experiences and practices that help us to think about short-term plans but that pose new scenarios in the use of information and communications technology. Meanwhile, it was observed that the actions applied in Mexico, in the context of the pandemic, were systematically focused mainly on the topic of preventive measures for the return to activities, management and use of collections, security measures, healthy distance and implementation of digital services.

It is necessary to think about libraries with integrated systems that guarantee the continuity of services despite any event. It will be necessary to work with interdisciplinary groups to create groups such as those of Future Ready Librarians and Sustainable Libraries Initiative, which allow us to think about new scenarios, new technologies, new services, new storage media and new data readers. Despite what was documented, for the existing digital gap in students who do not have sufficient resources to access existing resources, alternative channels such as e-mail, chat and use of WhatsApp has been sought.

One thing that has become quite clear during and after the confinement by COVID-19 is that digital natives do not exist and that we fall into the trap of assuming that students can take advantage of and exploit digital resources in a completely instinctive way. We, librarians, are committed to universal access to knowledge without discrimination, but now with this "new normality," the mission will be to seek a balance that benefits the vast majority of users and to seek to make them literate in the use of information.

References

Arroyo, N. and Gómez, J.A. (2020), "La biblioteca integrada en la enseñanza universitaria online: situación en españa", *El Profesional de La Información*, e290404.f Naeem, Vol. 29 No. 4, doi: 10.3145/epi.2020.jul.04.

Asociación Andaluza de Bibliotecarios (AAB) (2020), "Protocolo de actuación Para la reapertura de bibliotecas", available at: www.aab.es/app/download/32923082/Protocolo±AAB.pdf (accessed 1 July 2020).

Asociación Mexicana de Bibliotecarios (AMBAC) (2020), "Lineamientos Para la reapertura de bibliotecas ante la emergencia sanitaria por COVID–19", available at: https://ambac.org.mx/blog/lineamientos-para-la-reapertura-de-/bibliotecas-ante-la-emergencia-sanitaria-por-covid-19 (accessed 1 July 2020).

Charney, M. and Hauke, P. (2020), "Global action on the urgency of climate change: Academic and research libraries' contributions", *College and Research Libraries News*, Vol. 81 No. 3, p. 114.

Chesley, C., Lowe, A.M. and Puzier, L. (2020), "Can you see me now?: Engaging distance learners through virtual reference consultations", *The Journal of Academic Librarianship*, Vol. 46 No. 5, p. 102199.

Chisita, C.T. (2020), "Libraries in the midst of the coronavirus (COVID- 19): researchers experiences in dealing with the vexatious infodemic", *Library Hi Tech News*, Vol. 37 No. 6, doi: 10.1108/LHTN-03-2020-0022.

Colegio Nacional de Bibliotecarios (CNB) (2020), "Recomendaciones para la reapertura de bibliotecas en el contexto de la pandemia por COVID-19", available at: www.cnb.org.mx/images/2020/recomendaciones/RECOMENDACIONES_2020.pdf (accessed 3 July 2020).

Consejo Nacional para Asuntos Bibliotecarios de las Instituciones de Educación Superior (CONPAB-IES) (2013), *Diagnóstico de Las Bibliotecas de Instituciones de Educación Superior e Investigación Afiliadas al CONPAB-IES 1993-2013*, CONPAB-IES, México.

Debowski, S. (2003), "Service to remote library users", in Drake, M. (Ed.), *Encyclopedia of Library and Information Science*, New York, NY, pp. 2626-2635.

Dirección General de Bibliotecas (2020), "Estructura de la red", available at: https://dgb.cultura.gob.mx/rnbp/estructuraRed_DGB.php (accessed 21 August 2020).

Featherstone, R.M., Lyon, B.J. and Ruffin, A.B. (2008), "Library roles in disaster response: an oral history project by the national library of medicine", *Journal of the Medical Library Association : Jmla*, Vol. 96 No. 4, pp. 343-350.

Harnett, S., Ansell, M., Stoyan-Rosenzweig, N., Schaefer, N., Pomputius, A.F., Edwards, M.E. and Tennant, M.R. (2018), "The (un)common instructor: a new role for medical librarians beyond information literacy", *Medical Reference Services Quarterly*, Vol. 37 No. 3, pp. 276-291.

Harris, S. (2013), "The role of the University of the West Indies Mona libraries in HIV/AIDS information access and dissemination", *The West Indian Medical Journal*, Vol. 62 No. 4, pp. 346-349.

Herrando, A. (2020), "Las pocas bibliotecas abiertas en castellón no atraen a los estudiantes en la 'nueva normalidad", *Castellón información*, available at: www.castelloninformacion.com/biblioteca-uji-nueva-normalidad/, (accessed 1 July 2020).

Hoffman, S. and Ramin, L. (2010), "Best practices for librarians embedded in online courses", *Public Services Quarterly*, Vol. 6 Nos 2/3, pp. 292-305.

Instituto Federal de Comunicaciones (IFT) (2018), "Uso de las y TIC y actividades por internet en méxico: impacto de las características sociodemográficas de la población (versión 2019)", available at: www.ift.org.mx/sites/default/files/contenidogeneral/estadisticas/usodeinternetenmexico.pdf (accessed 21 August 2020).

Instituto Nacional de Estadística y Geografia (INEGI) (2019), "Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (ENDUTIH) 2019", available at: www.inegi.org.mx/programas/dutih/2019/default.html#Tabulados (accessed 21 August 2020).

International Federation of Library Associations (IFLA) (2020), "COVID-19 and the global library field", available at: www.ifla.org/covid-19-and-libraries (accessed 29 June 2020).

Islam, M.A., Agarwal, N.K. and Ikeda, M. (2015), "Knowledge management for service innovation in academic libraries: a qualitative study", *Library Management*, Vol. 36 Nos 1/2, pp. 40-57.

Johnson, B. and Lilly, R. (2012), "Current challenges facing US academic libraries", Paper presented at the 2012 Elsevier and Digital Resources Acquisition Alliance Event, Shanghai, China", available at: http://libraryconnect.elsevier.com/sites/default/files/Johnson_Current_Challenges_2012.pdf (accessed 29 June 2020).

King, A. (2020), "Fast news or fake news?: The advantages and the pitfalls of rapid publication through pre-print servers during a pandemic", *EMBO Reports*, Vol. 21 No. 6.

Li, X. (2006), "Library as incubating space for innovations: practices, trends and skill sets", *Library Management*, Vol. 27 Nos 6/7, pp. 370-378.

Limwichitr, S. (2019), "From knowledge to innovation: Transformation of Thai academic libraries in times of digital disruption", *Proceedings of the 2019 2nd International Conference on Data Storage and Data Engineering – DSDE 2019, presented at the 2019 2nd International Conference*, ACM Press, Jeju, pp. 15-21.

Marouf, L. (2017), "Are academic libraries ready for knowledge management?", *The Electronic Library*, Vol. 35 No. 1, pp. 137-151.

Ministerio de Cultura y Deporte (2020), "Recomendaciones: condiciones para la reapertura al público de las bibliotecas ubicadas en territorios en fase 1", available at: www.culturaydeporte.gob.es/dam/jcr:81c5fc4f-859f-4d00-8d05-a86d31c3b46f/recomendaciones-mcu-bibliotecas-fase1.pdf (accessed 1 July 2020).

Moorefield-Lang, H. and Hall, T. (2015), "Instruction on the go: Reaching out to students from the academic library", *Journal of Library and Information Services in Distance Learning*, Vol. 9 Nos 1/2, pp. 57-68.

Naeem, S.B. and Bhatti, R. (2020), "The covid-19 'infodemic': a new front for information professionals", *Health Information and Libraries Journal*, p. hir.12311.

National Library of Medicine (2020), "Coronavirus disease 2019 (COVID-19)", available at: www.nlm.nih.gov/ (accessed 23 August 2020).

Online Computer Library Center (OCLC (2020), "Reopening archives, libraries, and museums (REALM) information hub: a COVID-19 research project", *WebJunction*, available at: www.webjunction.org/explore-topics/COVID-19-research-project.html (accessed 1 July 2020).

Pacheco-Mendoza, J., Alhuay-Quispe, J. and Machin-Mastromatteo, J.D. (2020), "Bibliometrics units as dynamic engines for universities scientific production", *Information Development*, Vol. 36 No. 2, pp. 301-305.

Peters, T. (2018), "Online students' use of virtual reference services", *Journal of Electronic Resources Librarianship*, Vol. 30 No. 1, pp. 1-8.

Public Library Association (PLA) (2020), "How public libraries are responding to the pandemic", *American Libraries Magazine*, available at: https://americanlibrariesmagazine.org/blogs/the-scoop/public-libraries-responding-pandemic/ (accessed 1 July 2020).

Sanchez, A., Paredes, J.E. and Vallejos, M.P. (2020), "Infodemia, La otra pandemia durante COVID-19", doi: 10.1590/SciELOPreprints.367.

Schmidt, G. (2010), "Web 2.0 for disaster response and recovery", *Journal of Web Librarianship*, Vol. 4 No. 4, pp. 413-426.

Secretaría de Educación Pública (SEP) (2020), "Comunicado conjunto No. 3 Presentan Salud y SEP medidas de prevención para el sector educativo nacional por COVID-19", *gob.mx*, available at: www.gob.mx/sep/es/articulos/comunicado-conjunto-no-3-presentan-salud-y-sep-medidas-de-prevencion-para-el-sector-educativo-nacional-por-covid-19?idiom=es (accessed 22 August 2020).

Teng, S. and Hawamdeh, S. (2002), "Knowledge management in public libraries", *Aslib Proceedings*, Vol. 54 No. 3, pp. 188-197.

United Nations (2020), "During this coronavirus pandemic, 'fake news' is putting lives at risk: UNESCO", *UN News*, available at: https://news.un.org/en/story/2020/04/1061592 (accessed 28 June 2020).

Universidad Nacional Autónoma de México (UNAM) (2020), "Protocolo de bioseguridad Para la reapertura de las bibliotecas del sistema bibliotecario y de información de la UNAM, posterior al confinamiento precautorio ante la pandemia ocasionada por SARS-CoV-2", available at: http://dgb.unam.mx/extras/pdf/protocolo/protocolo-Bioseguridad-Reapertura-SIBIUNAM.pdf (accessed 1 July 2020).

Voutssas, J. (2020), "Los inicios de la automatizacion de bibliotecas en Mexico", UNAM, Instituto de Invest, CDMX.

York, A.C. and Vance, J.M. (2009), "Taking library instruction into the online classroom: Best practices for embedded librarians", *Journal of Library Administration*, Vol. 49 Nos 1/2, pp. 197-209.

Corresponding author
Josmel Pacheco-Mendoza can be contacted at: josmel@gmail.com