

# How the Digital Library of the Università degli studi di Milano faced the COVID-19 crisis: a case study

Carla Savarè

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## Abstract

**Purpose:** This study discusses the case of the Università degli studi di Milano in the context of the COVID-19 pandemic as a point of departure for a new concept of digital libraries that is closer to users and publishers.

**Approach:** In this case study, processes and statistical data related to the library system and its usage and digitization at the Università degli studi di Milano during and immediately after the COVID-19 pandemic were analyzed with focus on users’ behavior regarding access to and usage of digital libraries. The outcome of the innovative measures implemented by the university was analyzed, including the procedures for purchasing bibliographic material, the organization of work in libraries, the management system of bibliographic resources and their monitoring, teaching, communication, and the organization of knowledge in general.

**Findings:** The library system of the Università degli studi di Milano has responded effectively and efficiently to the pandemic crisis by creating a collaborative network with publishers, teachers, and students. The awareness of the central role of the Digital Library as the primary place for accessing content, an environment of carefully curated resources, and a place for individual and collaborative studies to support learning has increased.

**Originality:** This analysis charts the effects of the lockdown, which has accelerated digital transformation and created an innovative model of academic libraries more connected to community goals. This study points toward the good practices resulting from the COVID-19 experience: closer relationship between users and publishers, change in organizational flow, and the relevance of communication in creating a closer connection with users.

**Keywords:** Digital libraries, University of Milan, Covid-19, Electronic Resources, Pandemic period

**Paper type:** Case study

## Introduction

In the first few months of 2020, the teaching and library systems of Italian universities were affected by an unexpected crisis that placed the academic community under immense stress. With the COVID-19 pandemic, the traditional model of libraries and use of educational materials fell into a crisis, and the dematerialization process that had begun two decades earlier was accelerated. Face-to-face teaching was interrupted, and libraries and their services to the public were closed. Thus, it was necessary to provide answers to users immediately to ensure continuity in supporting teaching and research through library services.

This article discusses how the library service of the Università degli studi di Milano has introduced measures aimed at improving access to information in the form of ad hoc activities and projects and accelerated the transition process to blended teaching, which had been previously started. The change

was demanded by “external factors” such as the pandemic crisis and the evolution of the publishing market, including the one in Italy, and “internal factors,” such as the directions of the “2020–2022 Strategic Plan” and the goals of the “2021–2023 Performance Plan,” which promoted the enlargement of the Digital Library and the dematerialization of the bibliographic resources. Other internal factors included the need to overcome the division of the library staff’s skills between the management of print material and electronic material, to update the procedures for the treatment of bibliographic resources, to improve the management and use of the electronic resources of the Digital Library through the implementation of the new library software system, Alma by Ex Libris, and the new discovery tool Primo VE, named Minerva in the Università degli studi di Milano, and to support blended teaching. These transformations are currently underway.

The Università degli studi di Milano is one of the most important public universities in Italy. It covers all subject areas except engineering. To understand the evolution of the Library System of the Università degli studi di Milano (SBA) prompted by the COVID-19 pandemic, its organization must be described. The Directorate of the Library Service of the Università degli studi di Milano comprises some staff units (one office and two sectors, the Digital Library and Technological Platforms Sector and the Services for Libraries and Users Sector), seventeen libraries in different locations of the city and hospitals aggregated into four disciplinary sectors: biomedicine, economics, social science and law, and science and humanities. In total, 146 library staff units have been employed. The libraries are involved in the decentralized provision of library services at various locations in consideration of the specific needs of their reference users and managing their subject collections.

The staff sectors oversee the management and provisions of the centralized services, including the development of the Digital Library and the coordination of the procedures and services of the SBA (the Digital Library, the Minerva online discovery tool, the Alma automation system); the harmonization of the procedures and services based on regulations, quality standards, and good practices; the monitoring of activities and services; the communication and promotion of library services; IT support specialized in library activities and services; and economic and SBA human resource planning.

The Directorate is a single center of responsibility divided into 17 cost centers to allow greater administrative efficiency and to encourage the growth of the collections of the individual libraries. The SBA Directorate provides for the purchase of bibliographic materials and necessary services: libraries acquire single titles of print and electronic materials, whereas the Digital Library office manages national contracts for electronic resources and negotiates directly with publishers and providers of single licences for subscribing or purchasing access to databases, ebooks, and media.

The skills involved are of various levels—from basic to professional—which often constitute the organizational points of offices and libraries, including the coordination roles of several complex structures and sectors, and a manager at the top of the management.

As of 2022, the Università degli studi di Milano has 114,855 electronic or digitalized journals, 269 databases, and 704,569 ebooks; the expenditure for electronic resources is over 6,900,000 euro. The number of downloads of articles in subscribed ejournals are 2,345,511, and the searches in subscribed databases were 2,200,079.

### **An immediate response to stakeholders’ needs**

The COVID-19 pandemic has resulted in a new approach to content, teaching, and bibliographic resources, and has also required “emotional” support for users. Organizational change involved not only the central structures of the library service, but also its branches, that is, the libraries, and

teaching support structures. The main challenge was the short-term organization of information channels and tools that could guide users toward useful content to prepare for exams or write dissertations. It was immediately understood that interdependencies had to be leveraged by activating collaborative processes among the various parts of the system, both between public and public entities (the structures within the system) and public and private entities (publishers/suppliers). What immediately emerged as a critical issue was the interruption of the in-present reference services and book-lending services, especially for students preparing to write their theses. Though offering a wide range of electronic resources, the Digital Library of the Università degli studi di Milano could not yet cover all types of bibliographic resources in the various disciplinary fields.

Thus, it was necessary to provide online tutorials to guide students and researchers' bibliographic searches; to activate and make available electronic resources (databases, book catalogs, and e-journals) that publishers and vendors made available free of charge upon request to individual universities during the emergency period; to create and update a special page on the Library Service portal to publish news on the new services provided; to activate a specialist remote reference service for students; and to strengthen communication through mailing lists and social channels to move portions of the budget intended for the purchase of print to digital material.

To achieve these goals, timeliness was fundamental. A valid alternative had to be provided for the users, which would allow them to reach useful content through more efficient channels.

It was necessary to ensure immediate results (e.g., providing a student with a text that could not be found in the library) within the bounds of administrative constraints in an efficient and effective way. This required a review of the organization processes and the renewal of the internal life of the organizational dialogue with the dynamics of the new external needs, as well as with the changes in the institutional context of reference (governmental, regional, and rectory provisions). In this context, it was useful to develop a collaborative network with library managers to define new workflows, activate new online services, and start new forms of collaboration with publishers aiming for a win-win situation (the publisher temporarily offers free resources, the library promotes them and satisfies needs, stakeholders use them with satisfaction, and the library subscribes to them if they fulfil the information needs related to teaching and research at the university).

It was important to develop emotional involvement not only among the librarians, but also between librarians and main stakeholders, and faculty and students through information tools (communications via mailing lists, helpdesks, dedicated web pages, FAQs), consulting activities (identification of the most urgent resources), engagement (requests are listened to and evaluated), collaboration (acknowledging needs wherever possible), and empowerment (implementing the useful).

During the lockdown, a significant initiative was the subscription of the Amboss medical e-learning platform, which allowed students to explore complex topics, create personalized dynamic tests, and consult videos. It provided three-dimensional images to support the preparation for university exams. The students submitted their requests through their representatives to appropriate forums and obtained a trial. The Digital Library Office played the role of an intermediary between the stakeholders who held the power (Faculty Council) and the stakeholders who were in a state of urgency (students who needed teaching assistance during the health emergency). Negotiations with the publisher clarified the characteristics and quality of the product; a two-month trial was started and the consent to subscribe with the provision of a questionnaire was obtained. The outcome of the co-decision-making process was the approval by the Board of Directors. Università degli studi di Milano was the first academic institution in Italy that subscribed to this service. After two and a half years of subscription, the cost per article remains below 0.50 euros.

The acquisition of new electronic resources has increased expenditures on this type of material and reduced the budget for printing; the expenditure for print bibliographic resources helved from 1,749,000.00 euros in 2019 to 964,885.00 euros in 2022, while the expenditure for electronic resources increased from 5,317,000.00 euros in 2019 to 6,938,793.00 euros in 2022. The transition to digital format has enormously expanded the possibility of accessing content without limiting space and time. A process has also been developed for the acquisition of e-learning platforms that offer collaborative and customizable study methods, considerably expanding the range of stakeholders, including those who cannot attend face to face such as students living abroad.

### **The increase of electronic materials and the implementation of new business models**

In the last two decades, though the Digital Library has been enriched with essential materials for research (databases, academic ejournals, monographs, and reference works), manuals, handbooks, and textbooks for students are still lacking. This was one of the user categories most affected in the first phase of the lockdown as libraries were closed, travel was limited, and lessons were initially suspended. It resulted in physical and emotional isolation, which in some cases slowed down the course of studying and affected the success in exams.

A solution to these needs has been to offer rapid visibility to accredited open-access resources and ones that academic publishers made available for free on a temporary basis. However, a broader strategy was required.

Most of the current print resources used for teaching have not yet been made available in the electronic format because of the resistance of some stakeholders such as publishers, authors, and libraries. As far as Italian manuals are concerned, the main reasons were the apprehension of Italian publishers of losing the profits derived from the hard copy sales channel by digitally distributing the content, the resistance of the authors to grant the rights to use the contents for publication in the electronic format, and finally, the mistrust on the part of librarians with respect to business models based on credit consumption mechanisms, which appeared to be unsustainable and incompatible with the traditional models of investment-based purchase and perpetual access content.

Regarding learning content in English, the main obstacles were rather expensive business models based on subscription and not on purchasing, on the number of students attending individual courses, fixed annual costs, the loss of content if the subscription is not renewed, and the absence of these manuals in the exam programs. For these reasons, economic investment in this sector was not justifiable.

Under such circumstances, it was necessary to propose a valid alternative to respond to the stakeholders in an effective and timely manner. The health emergency experienced in the last three years has highlighted the importance of the Digital Library and the need for its evolution as the primary place for accessing all content, the environment where resources carefully selected for the needs of students and researchers can be found, and the place for individual and collaborative study in support of learning.

Hence, there is a need for a partnership between the public (university organization) and private (publishers) entities; a new collaborative management model among learning experts, teachers, students, and technicians; an advanced technological structure; and an effective communication system to disseminate the value achieved.

During the last three years, the digital content made available by the Digital Library of the Università degli studi di Milano has increased significantly. E-book titles have increased from 451,364 in 2019

to 704,569 in 2022, which is an increase of 56%. Though loaning of printed material decreased, the number of downloads increased: loans halved from 2019 to 2022, from 203,948 to 71,026, whereas downloads doubled between 2019 and 2020, from 451,365 to 839,783 and reached 569,570 in 2022. The collaboration between the university and the publisher Springer Nature between 2017 and 2020 was very significant. In September 2017, a four-month trial was started to provide the entire academic community access to the scientific, technical, and medical (STM) collections of the publisher whose years of copyright were between 2014 and 2017. The EBM (Evidence Based Model) proposed by the publisher, subsequently called “My Collection,” was based on spending ranges in which as the amount committed to the project increased, the price of individual e-books decreased, with a consequent increase in the number of titles that can be purchased at the end of the trial. The initiative was a great success as demonstrated by usage statistics, which exceeded one million downloads in a few months. The platform offered the advantage of allowing both the download of a single chapter and that of an entire e-book without any limitations. In 2020, following the pandemic emergency, a new arrangement with the publisher led to an eight-month trial of all four-year copyright book collections from 2017 to 2020 (over 40,000 titles). At the expense of 291,594 euros incurred between 2017 and 2020, 1,979,797 downloads were made, with an average download cost of 0.15 euro. This experience was significant because it highlighted the needs of the users. In the following years, the Università degli studi di Milano purchased the full copyrighted yearly collections of 2021 and 2022, and registered 253,715 and 287,515 downloads for each year, respectively.

Through a widespread negotiation campaign with publishers and suppliers and the customization of the business models based on the academic needs of the university, all editorial catalogs of e-books, handbooks, coursebooks, and textbooks were included in the management system and made available. It was understood that access to content must also be organized based on the business models proposed by publishers, and that temporary access can be more sustainable in the long term than perpetual access because it responds to the need for flexibility and updating. Among the various business models adopted (purchase with perpetual access, pick and choose, subscription, etc.), those that proved most successful during the pandemic were EBA and digital lending, which are still in the experimental phase for some publishers.

The EBA model combines the immediate updating of thousands of e-books with the possibility of selecting titles with perpetual access at the end of a year. The flexibility of the model also allows us to determine the amount that must be allocated, which corresponds with the total cost of the books purchased and, at the same time, to the list of e-books accessed during the year. Since 2020, the first EBA has been operational at the Università degli studi di Milano based on the entire collections of each discipline provided by academic publishers (e.g., Oxford Medicine Online, Oxford Scholarship Online, Cambridge University Press) and on selected years of copyright (e.g., Taylor and Francis STM collection). In the following year, the model was extended to the JSTOR and De Gruyter collections. The model responded to various needs: 1) the expansion of the availability of materials until then excluded from purchase in both print and digital formats; 2) accessibility without time limitation and at low costs not only of updated material but also of contents hitherto available in print format only; and 3) the option to select the e-books to purchase until the limit is reached. The most frequently adopted criterion was to select the most-consulted titles based on usage statistics (downloads) provided by publishers at the end of the period.

The “digital lending” model chosen by the Università degli studi di Milano allowed access to numerous titles from Italian publishers that were hitherto inaccessible in the digital format. Launched in an experimental form in 2021 in collaboration with the Media Library Online service by Horizons Unlimited for some of the humanities subjects, it was extended in 2022 to scientific areas with the inclusion of the online manuals of publisher Zanichelli, arousing great interest of both faculty and

students. In future, other services will also be made available, such as those in the Pandora campus of Il Mulino and access to the digital catalog of the publisher Pearson.

### **The organization model is changing**

In response to the changes, it was necessary to create a new organizational model with the characteristics of flexibility, adaptability with the contingent situation, collaboration, and trust and shared responsibility.

The new organizational model favors greater flexibility in the roles of librarians. Before the lockdown, there was a clear division between librarians working in branch libraries who purchased and managed print material and librarians working in the Digital Library Office who purchased and managed electronic materials. This distinction was determined by the differences in the procedures and software used in the management and treatment of the different formats: the Italian software Sebina OnLine for print bibliographic resources and Metalib, SFX, and Summon for electronic resources. After the pandemic, following the increase in electronic resources and the acquisition of one software to replace the previous ones, the need to overcome the rigidity of roles was understood, and everyone had to acquire the skills to manage electronic resources. Working groups based on specific roles were created, and the results of mutually acquired knowledge were shared. Blogs, webinars, and tutorials were created to allow the librarians to develop the basic skills for managing print and electronic resources in the new bibliographic environment.

The result has been increased work efficiency for librarians and users, and a single point of access for all resources, regardless of format. Furthermore, the integration of the Alma management software with the Primo VE discovery tool made it possible to update information in real time. In fact, as they are both produced by Ex Libris, they share the same database; any update made within the management system is implemented a few minutes after in the discovery, and the user is updated in real time.

Between the outbreak of COVID-19 and the present, the awareness of the interdependence of the processes and the role of stakeholders (faculty, librarians, students, and publishers) has spread widely among the academic community.

As far as the teaching staff is concerned, in 2022, the process of strongly engaging with them will begin. The Faculty Development group of the Università degli studi di Milano has designed a training course with blended modality for the teaching staff to help them deal with the theoretical foundations of topics such as training planning, teaching how to handle bibliographic resources, teaching methodologies, and methods of evaluation. The librarians participated by creating video lessons on teaching how to handle bibliographic resources. This was a significant opportunity to provide visibility to the role of librarians in the training process and to the resources of the Digital Library, creating greater awareness of the interdependencies between the skills of librarians and faculty members.

Students were another important element to consider in the revision of the new organizational model. During the pandemic, when the libraries were closed, assistance was provided to the students in finding content that was not available in the print format. The trust between the librarians and the students established during the crisis has subsequently strengthened. In fact, with the gradual subsidence of the pandemic, the students could be further encouraged and supported to improve their skills in using electronic resources more efficiently, writing bibliographies, carrying out bibliographic searches both online and within the main resources made available by the university, evaluating and

correctly using the information useful for drafting academic papers, recognizing the different kinds of documents within a bibliography, using the information found effectively, and correctly citing the sources.

Asynchronous information literacy courses have been designed to support the preparation of final thesis. Subsequently, passing all the assessment tests results in the provision of a certificate of skills that students can include in their curricula, and use in their academic and professional career and as proof of soft skills.

In addition, partnerships with publishers established during the pandemic have been further strengthened in support of learning, improving both methods of access, and as assistance.

Tutorials have been made available on Digital Library websites and social media, and remote seminars have also been organized in collaboration with publishers to reach the faculty and students and explore critical issues with them.

Finally, during the COVID-19 pandemic some libraries have become the focus of self-recording workstations that support the creation of asynchronous educational materials. This choice arose from the awareness that libraries are places where the skills for creating learning content for research and teaching purposes are found.

During the pandemic, Digital Library helpdesks for the use of electronic resources were greatly enhanced, reflecting the exponential growth in the access to electronic resources and the number of requests received. Between 2019 and 2021, requests for assistance more than doubled from 461 to 974, demonstrating an increase in the use of resources and their relevance in the university context as support for teaching and research. Furthermore, in the same period, there was a significant increase in requests from students; between 2019 and 2021, requests tripled, from 88 to 289. This must be interpreted as a sign that students are increasingly relying on the tools and resources made available by the Digital Library to prepare for exams, and that the inclusion of e-books in programs is increasingly becoming relevant. The tool and its operators have gained the trust of the users owing to the timely assistance in solving access-related problems and consulting resources. Though solution to problems is guaranteed within three working days, tickets are almost always resolved within 24 hours. Thus, Digital library contribute to the digital literacy of students.

During the lockdown, students' awareness of their roles and rights increased, opening a channel of closer dialogue with the faculty. The requests for more interactive study tools for a teaching approach closer to the needs of the students have been listened to, giving way to the process of blended teaching, which is currently at its early stages. The market of electronic resources is also offering new tools, which help with this transformation process and propose solutions with a very captivating marketing policy. Consequently, the students' requests are being heeded more often, and the requests have become an important point of view to be considered by the administration. The students' level of satisfaction makes academic institutions more attractive, both in Italy and abroad.

### **The development of a technology-based environment**

The pandemic has driven the development of a more technologically advanced environment in terms of the access to electronic resources, retrieval activities, and processing of usage statistics.

Access via Shibboleth was implemented in addition to access via ez-proxy for platforms that adopted this technology. Furthermore, platforms are increasingly aiming to develop access to their products using mobile devices through applications with single-sign-in recognition. In particular, for electronic

resources in the medical field, access via mobile devices allows consultation by Faculty working in the hospital ward in an agile manner. This solution has proven to be particularly useful during the pandemic. This access method has been successfully tested for resources such as Uptodate and Lexicomp, and users have been notified of it, with adequate assistance being offered.

The Università degli studi di Milano has been monitoring the statistics of electronic resources for several years; however, the retrieval and normalization processes used to be done manually, resulting in a considerable waste of time and enhanced possibilities of error. The adoption of Alma by Ex Libris and its integration with Analytics have made the implementation of the automatic retrieval of statistics through the SUSHI account very useful during the pandemic phase, as it has become necessary to evaluate the use of Digital Library. The objectives of the required innovations are as follows: to have a single point of retrieval and processing of usage statistics, to adopt uniformity in the criteria, to share data internally and externally, and to create greater awareness of the use of resources. Due to a project that lasted a few months, the measures were identified, all the providers surveyed and entered in the management system, and SUSHI accounts were set up for each supplier. The benefits of these innovations can be reaped even after the COVID-19 pandemic.

### **A communication campaign**

During the COVID-19 pandemic, more effective methods of communication were studied within the organization through periodic calls with the heads of Library Departments; meetings with governance to agree on objectives; surveys on user expectations with respect to expected services; monitoring of services through usage statistics and benchmarking and the external evaluation of the market through the organization of periodic calls to update and verify the expected results, workshops on emerging issues, and market surveys.

It is necessary to open new channels of communication with publishers and suppliers without being bound by unilateral contracts in the form of collective bargaining agreements. The need to open up promptly and flexibly was noted, and new offers were evaluated if they responded to the emerging need for access to information. For example, the request for access to a resource useful for starting a university course was accepted even when it required ad hoc negotiation, and an innovative resource requested by the students was subscribed to as it improved the quality of learning.

Understanding and communicating changes is one of the lessons learned during the pandemic. The transition to digital technology is inevitable, and changes in teaching and learning cannot be postponed.

However, much more can be done to improve communication and institutionalize changes. A conference is being planned at our university, to which all stakeholders will be invited. This will be an important opportunity to increase the university library system's reputation, understand how to measure the public value generated in the last three years, identify the results achieved, and discuss future objectives.

The experience of the pandemic has transformed the Digital Library with the aim of circulating scientific content quickly and effectively, overcoming physical, technological, and temporal barriers to create widespread knowledge. To this end, it was necessary to be innovative, know how to seize the opportunities offered by technology and the market, know how to analyze and interpret (sometimes anticipate) the needs of the stakeholders, and understand how to negotiate both within and without the organization. Even when the demand was not expressed, it was necessary to create an appreciable offer, which could make our institution not only competitive but also avant-garde.



## **Conclusion: what we have learned during the COVID-19 crisis**

We learned that the transition to a digital format is unstoppable, and digital resources allow the sharing of information quickly. After the COVID-19 pandemic the relationship between library service and users has become more intensive: not only must the expressed needs of users be interpreted, but the unexpressed needs must also be anticipated in preparation of emergencies. Relationships with publishers must be more collaborative. Librarians must sign a pact of solidarity with publishers to find a strategy to increase the diffusion of information and knowledge.

We also learned that the pandemic has created a deep change in organizational flow, resulting in a synergy and collaboration among all sectors of the academic community. To further this goal, information, data, and knowledge must be shared.

We learned that the most important thing is to create a sense of urgency that arises from dissatisfaction with the present situation (pandemic), listen to and interpret needs, have a valid project, have a clear vision, communicated and implemented in a coherent manner, design intermediate stages, prepare for the change and institutionalize the results achieved by creating symbolic moments to celebrate it. To achieve the goal, it was necessary to create a climate of trust and sharing.

After the pandemic we are facing new challenges that have made us aware of the importance of sharing the sense of belonging with an organization and the same organizational culture. The value component is of great importance and is represented by the centrality of the value expressed by access to information and continuous learning and by the contribution that each of us (faculty, librarians and students) can bring to the achievement of this goal. If everyone is aware of the importance of their role and of how their behavior can influence that of the others, they will give their best, eliminate or reduce absence, delays and non-delivery. The resulting orientation and compliance with deadlines are therefore one of the main factors that have allowed us to carry out innovative projects such as the initiation of new Digital Library services.

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