

# On the Utilization and Construction of University Library Resources in China

Guihua Li\*, Li YANG

Yunnan Normal University, Library of Chenggong Campus, Kunming, China

\*corresponding author

**Keywords:** University library, Library resource, Network database, Current situation of utilization, Strategy and suggestion

**Abstract:** The library is the information center of universities, and library resources are the cornerstone of library service. With the rapid development of communication and network technology, the collection structure of university library has changed from traditional single print resources to the coexistence of print and electronic resources. Hence, it is imperative to optimize the collection structure and pay attention on the use of library resources. In this article, the recent situation about the use of university library resources in China is analyzed and factors that affect the utilization of library resources are identified and discussed. Strategies to optimize the collection structure of library resources and improve the utilization of library resources are suggested.

## 1. Introduction

As the carrying center of information documents in colleges and universities, university libraries bear the responsibility of serving teaching and scientific research, and it is their duty and obligation to provide immediate, authoritative and cutting-edge documents and information. Library resources are one of the core resources provided by libraries for users and the basis for shaping and defining a library. University library resources include physical resources and network virtual resources, in which physical resources refer to non-digitized print books, newspapers, magazines and digitized document information. Network virtual resources include self-built, purchased, rented or donated network-based databases, search or indexing systems, periodical images or journals, as well as various sounds, animations and other resources supported by non-paper media. Electronic resources gradually get the reader's approval due to their widely availability and ease to obtain, spread, download and carry for readers at anytime and anyplace. However, some materials and information recorded in print books and documents are historically and culturally valuable, therefore, print books and documents will always become a key part in the collection of the library, and there will always be corresponding readers. In addition, reading with electronic devices is a typical "one-way feeding" and "passive acceptance" reading, and excessive reading with them will restrict people's ability to think and appreciate.

In recent years, with the rapid development of communication and network technology, the collection structure of university library has changed from the traditional single print library resource to the coexistence of print and electronic resources. In such information times, university libraries began to shift the focus of library collection construction from library resource ownership to resource acquisition. Funding for the acquisition of electronic resources, in particular electronic journals, is yearly increasing, but the purchase funds for print resources decrease<sup>[1, 2]</sup>. In 2007, American Association of Research Libraries (ARL) found in a survey of journals ordered by its member libraries over the past five years that orders of electronic journals increased by 35%, but orders of print journals decreased by 34%<sup>[3]</sup>. It was reported that the purchase cost of print library resources of Sichuan University took about 62% of the total expenditure of library resources in 2008 and funds for the acquisition of electronic library resources took about 38%. However, the situation was reversed in 2017 that the funds for print library resources accounted for 32%, but the funds for electronic resources took about 68% of the total expenditure<sup>[4]</sup>.

Collection resources are one of the core resources provided by a library for users. Although the mission and development goal of colleges and universities are different, most university libraries

take it as the primary task to provide library and information resources for their teachings and researches. Therefore, in the new information times, it has become the general direction of library collection construction to adjust the construction of main resources, optimize the structure of library collection resources, and pay attention on the use of library resources.

The allocation of library resources over all subjects is a hot topic in library management, and its allocation mode is related to the development strategy and management concept of schools and libraries. In principle, the resources of the library should be allocated according to the discipline or subject structure and the level of running a school, so as to maximize the benefit of running a school<sup>[5]</sup>. However, such optimal allocation of resources is temporary and dynamic because the school running strategy will change with the development of society to meet the needs of the times. On the other hand, benefits from running a college or university include economic and social benefits but they are difficult to be quantified due to many factors those are complex and affect each other. Therefore, such optimal allocation model of library resources is difficult to implement in practice, and it is necessary to establish a set of reasonable and feasible methods for evaluating rationality of an allocation mode and utilization efficiency of library resources, so as to determine in time whether the allocation of library resources is consistent with the discipline construction strategy of the school. In this article, the present situation of the construction and utilization of university library resources in Chin is investigated, common problems resisting against the uses of library resources are identified and discussed in details, and strategies to optimize the allocation of resources and improve the use of resources are proposed.

## 2. Present Situation of the Use of University Library Resources

### 2.1 Annual Borrowings of Print Library Resources Decreased

As compared with print library resources, the electronic library resources share many advantages. For users, e-books provide accessibility regardless of time and space, and can realize remote access, full-text download, copy and paste of text and image outside the physical library. For libraries, the use of e-books saves a lot of storage space, manpower and time required for placing print books on book shelves, and avoids loss, damage, theft of print books. Table 1 lists the annual borrowings of print and electronic books in Yunnan Normal University during 2015-2019. It can be seen that the number of print books' borrowing is decreasing year by year, whereas the amount of downloads of e-books is rising sharply. Compared with 2015, the number of print books borrowed in 2019 fell about 45%, while the number of e-books downloaded increased by 125 times. Statistics show that junior undergraduates are the largest group of print books' borrower, while graduates prefer electronic literature resources.

Table 1 Uses of Print and Electronic Books in the Library of Ynnu

Year	Print books			e-books	
	Borrowings (thousands)	Ave. borrowings /person	Utilization rate (%)	Downloads (thousands)	Ave. downloads /person
2015	711.8	24.1	21.37	3.5	0.1
2016	602.4	20.4	17.44	19.3	0.7
2017	563.3	19.1	15.88	77.2	2.6
2018	411.4	13.9	11.37	312.4	10.6
2019	386.9	13.1	10.47	446.7	15.1

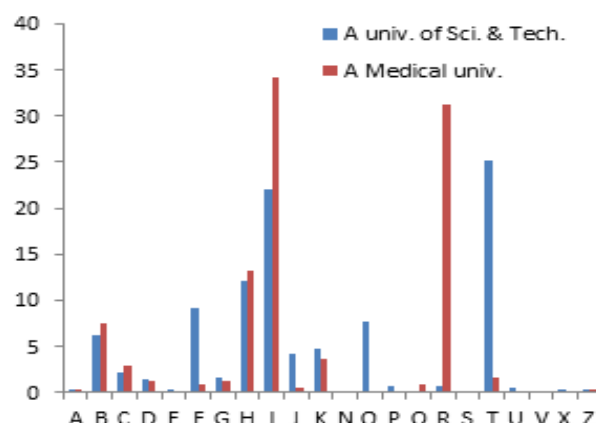


Fig.1 Shares (in%) of Different Categories of Print Books Borrowed in the Total Borrowings in 2018 (Categorized Based on the Classification Method of Library Books in China)

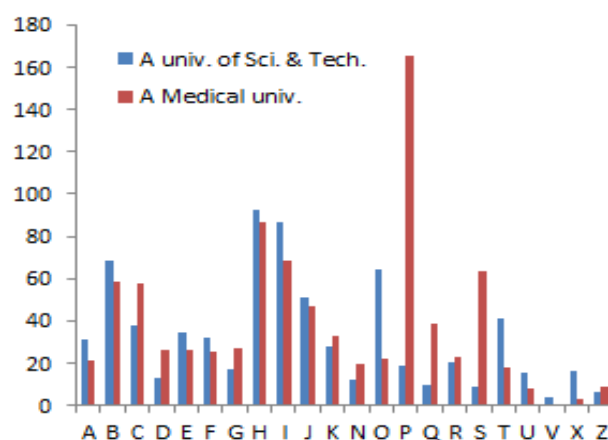


Fig.2 Utilization Rate (in %) of Different Categories of Print Books in 2018.

As shown in Figure 1, the shares of different categories of print books borrowed are different, and the distribution of shares for a given university annually changes little but quite different for different university as different universities have different discipline structures. It is seen that shares of social science (A-K) books borrowed in the total borrowings differ little except those of economics (Category F) and art (Category J) for different university, but shares of natural science (N-X) books borrowed differ quite. The survey shows that for social science books, the most popular with students is literature (Category I), followed by language books (Category H), and the least popular books are category A. For books of natural science, the number of different categories of books borrowed is obviously related to the discipline structure of the school.

As seen from Fig.1, medical books (Category R) and industrial technology books (Category T) are most borrowed by students in Medical Universities and Universities of Science and Technology, respectively. Fig.2 indicates that there are also large differences in the utilization rate of various categories of books (the ratio of annual borrowings to the collection books of the category), but the overall utilization rate is low and decreases yearly as seen in Table 1. Therefore, in order to improve the uses of print books, books should be purchased based on the development requirement of various disciplines and the uses of various kinds of books, making full use of all kinds of book resources. In general, the utilization rate of social science books is higher than that of natural science books and this is related to the wide applicability of social science books and the professional limitations of natural science literatures.

## 2.2 High Investment and Low Utilization of Database Resources

Because of its quickness, large amount of information and convenient use, digital resources have

become the main direction of expanding the collection resources of university libraries. In addition, universities for their development needs, a lot of money is required to buy relevant professional databases every year. However, whether the investment is proportional to the uses of resources has become an important factor in the budget and purchase decision of university libraries. Because university libraries mostly annually pay for the use of a database at a fixed price, therefore, the less number of downloads or searches, the higher the average cost for one download or search. Table 2 presents the number and cost of using main databases in a university of China in 2018. There were more than 27000 teachers and students in this university, the number of references downloaded from China Knowledge Internet (www.cnki.net) and Wanfang data was 5395426 and 1143259, respectively, the average times of download or search for one person in the year was 199.6 and 42.3, respectively, and the average cost for a download or search was 0.07 and 0.32 RMB Yuan, respectively. The number of downloads or searches using other professional databases was considerable small due to a narrow range of disciplines covered by the database and less users who often use them, thus the cost of a download or search was high. Among them, the cost of a search using EI (Engineering village) is as high as 9.28 RMB Yuan, and cost of downloads from IOP and ASME are 28.79 and 15.97 RMB Yuan per article, respectively. Obviously, significant differences in the use of various database resources are seen, many database resources are wasteful thus the acquisition cost of literature or information is high.

Table 2 the Uses Of Key Library Databases of a University in China in 2018

Database	Number of Searches	Cost (RMB/search)	Downloads	Cost (RMB/download)
CNKI	5395426	0.07	413277	0.92
Wangfang Database	1143259	0.32	565673	0.65
EBSCO	11268	0.79	3678	2.45
Superstar e-books	-	-	164909	0.96
Elsevier	-	-	286863	2.93
ACS	-	-	62191	5.33
IOP	-	-	1721	28.79
RSC	-	-	41894	3.09
ASME	-	-	18786	15.97
Taylor & Francis	-	-	34748	8.61
Emerald	-	-	19465	4.47
Springer	-	-	11686	0.66
Superstar Discovery	276256	0.32	-	-
Web of Knowledge	61268	5.44	-	-
CPCI-S	16381	3.87	-	-
Engineering Village	14623	9.28	-	-

### 3. Analysis of the Causes of Low Utilization of Library Resources

The low utilization rate of university library resources is a common problem encountered in the construction and management of university library resources. There are many factors, mainly the following six factors.

#### 3.1 Old Teaching Pattern

Although colleges and universities in China have been carrying out the reform of teaching mode, they have never got rid of the traditional spoon-feeding teaching method. Teachers impart knowledge to students in the form of lectures according to designated textbooks and fixed syllabuses, while students passively accept the knowledge taught by teachers. Teachers do not guide students to use library literature and information resources to learn what they must know for the course. Because of the popularity of internet technology and mobile phones, it may be difficult for many students to listen carefully in class, they can easily complete their studies by simply using mobile phones to take pictures or download teachers' teaching materials (PPT files) from the school

website. Therefore, there is no need to use library resources to actively acquire relevant professional knowledge. The content of the examination is basically the teacher's class content or exercises in the textbook, so students do not worry any more about examination of courses at all. Statistics show that nearly one thirds of college students never go to the library, most of the students who go to the library borrow books in novels and languages (Categories I and H), and few students borrow professional books<sup>[6]</sup>.

### **3.2 Insufficient Training on the Use of Library Resources for New Students**

At present, in the entrance education of freshmen in colleges and universities, the training on the use of library resource has not been paid enough attention. Students only visit the library, the training time is short, and there is no reasonable method to evaluate the training. After a short period of training, students will not take the initiative to further understand the library resources collected by the library and their potential values for their studies, only some senior students will take the initiative to use library electronic resources for their graduation thesis<sup>[7]</sup>.

### **3.3 Disconnection between Needs of Readers and Purchase of Library Resources**

At present, many university libraries have the problem of disconnection between book purchase and actual demand of readers, especially in local colleges and universities. The library managers in many universities have not made a detailed statistical analysis on the collection structure and utilization rate of the existing library resources, the book purchasing staff has not known the demand of books for teaching and scientific research in each of disciplines or subjects of the school, and there is a lack of communication between book purchasing staff and readers. The procurement of library resources often does not implement based on the actual demands of readers. This situation leads to teachers and students can't borrow books required, consequently they rarely borrow books from the library, and collection library resources are idle, but all kinds of management costs still need to pay.

### **3.4 Book Prices Rose and Library Purchasing Power Declined**

With the popularization of internet and information technology, the utilization rate of print books or documents in university libraries is getting lower, while that of electronic library resources is getting higher. As a result, many university libraries have increased the procurement of electronic resources, and the purchase of database resources is yearly increasing. On the other hand, the number of print books annually purchased by libraries is inevitably restricted because the rising of the print books' price is much faster than that of financial budget for most university libraries<sup>[8]</sup>. Due to the shortage of funds, some university libraries adopt the procurement strategy of keeping variety of books and reducing number of copies, reducing the purchase of books in humanities and social sciences, especially books of literary and artistic novels. In fact, limited new books are difficult to cause group reading effects. Because according to the conventional reading habits, people are bound to look for some classic books in this field when they search for new books, but the practice of limiting purchase and reducing number of copies makes improvement of the use of print books more difficult. In addition, reading with electronic equipment is harmful for human body due to stimulation and radiation. Therefore, temporary, emergency reading with electronic equipment and traditional reading with print books should be complementary, and not be replaced each other.

### **3.5 Insufficient Introduction of Databases, Restricted Network Access**

The introduction of database resources is not enough, which is an important factor affecting the use of electronic documents and information resources. Some universities invite database merchants to train users, but the number of training is too few, and the schedule of lectures is not reasonable,

many teachers and students are difficult to participate in training due to teaching or research activities. An investigation by Chai showed that about a quarter of readers did not know what e-book resources the library had<sup>[7]</sup>. At present, most university libraries only list the databases owned by the school for teachers and students to inquire. Many students do not know how to use these databases to carry out search of information and download of literatures. Because the library database navigation system is not meticulous enough, it does' not allow databases to correspond to their respective disciplines or subjects, some teachers and students even do not know that the school library has the database which they urgently need.

The access to electronic library resources is usually restricted by IP. Users in schools can use database resources freely. Outside users usually use authorized access to relevant digital resources, but it is only for staff and workers of the university. Graduates and undergraduates living outside the school can't use databases, which to some extent affects the use of library electronic resources.

### **3.6 The Professional Level of the Service Team Needs to Be Improved**

The service mode of library and the professional level of librarians are also an important influencing factor, because the utilization rate of electronic resources depends to a great extent on the professional quality of library staff. At present, many university libraries still adopt the traditional service mode, waiting for readers to come, lacking the consciousness of active service. Librarians do not further analyze all kinds of electronic resources, especially network databases, and the recognition of databases is not high. In addition, the poor skill of computer and network technology and poor English makes it impossible to carry out the deep information service.

## **4. Strategies to Improve the Use of Library Resources**

To improve the use of library resources in colleges and universities, libraries first need to change the service concept, change "passive" to "active", and establish a reader-centered management mode and service system. In order to realize the best matching of resource allocation to the development strategy of colleges and universities, the demand of library resources for both strong and weak disciplines should be taken into consideration, and the utilization of collection library resources should be regularly investigated. In general, following measures can be adopted.

### **4.1 Improving Training and Assessment Methods on the Use of Library Resources for New Students**

In order to improve the utilization of library resources, it is necessary to improve the readers' recognition and acquisition ability of library resources. Therefore, it is necessary to strengthen the training and education of freshmen in the use of library resources and propose a reasonable assessment method of the training. In order to deepen the understanding of library resources, the library brochure should be sent when mailing admission notice for new students. The library brochure contains the collection library resources and their use methods, the examination request about the training on the use of library resources. After the freshmen pass the examination, the borrowing function is opened for the student in one week; if failed, re-testing is required until pass the examination. If possible, the examination results can be included in the student's academic assessment.

### **4.2 Improving Teaching Mode, Change "Passive" to "Active" Study**

In fact, a person's cognitive level of knowledge is closely related to the way of acquisition. The knowledge acquired through active learning with the desire for knowledge is more profound, and the knowledge accepted passively in the form of indoctrination is not only shallow but easy to forget. College teachers should change the traditional teaching mode of "teaching people with fish" to "giving people with fishing", and highly address on the learning methods in teaching and guide

students to acquire the knowledge they need through scientific ways. Teaching content, method and examination of a course should not be restricted to the designated textbook, and teachers should guide students to actively search for relevant literature resources based on the requirement of teachers themselves instead of syllabus, and cultivate students' independent learning and analysis ability. In the course of teaching, the teacher tells the students in advance the teaching content, thinking questions and related references of the next lecture, and brings the self-acquisition ability of knowledge into the course examination. This is conducive to the cultivation of innovative talents.

#### **4.3 Establishment of Reader-Centered Services and Acquisition Systems of Resources**

Discipline construction is an important way to build a high-level university, and the resource construction of the library should match the discipline development plan of the school. Firstly, the managers of the library should regularly investigate the structure of collection resources, guarantee and utilization of resources corresponding to each discipline, and propose a purchasing plan of library resources in line with the development plan of school disciplines. The library should establish a system of multi-channel communication with users, collect the needs, opinions and suggestions of teaching and scientific research in various colleges and departments, and strengthen the construction and guarantee of library resources based on the needs of readers and planning of discipline development of the school. Discipline librarians strengthen their contacts with educational departments, departments and readers through various channels, grasp the dynamics of the professional setting of each college in time, synthesize the characteristics of the various disciplines, the excellent courses offered and the readers' reading needs, and propose the proportion of all kinds of books purchased in combination with the use of all kinds of book resources and the budget of funds.

Secondly, according to the purpose of using library book resources, readers are divided into research type, learning type, expanding knowledge type and cultural enjoyment type. The library needs to investigate the specific needs of readers at different levels, purchase books pertinently, and meet the needs of teachers and students in various aspects of reading and information.

#### **4.4 Enhanced Awareness and Training of Databases**

Readers' limited recognition of electronic library resources is one of the main reasons for the low utilization of electronic resources. First of all, through the library home page and the distribution of library resources brochure to let readers know what database resources the library has, and how to use these resources. Establish digital resources navigation and discipline thematic database, and provide database online consulting services. Users within the campus can access databases through different electronic terminals all the time, and legal users outside the school can use databases by authorized access. Establish a multi-level and all-round reader service system. Because users are limited by time and energy, they rarely take the initiative to try to use new databases. They are basically used to the use of existing resources. Libraries should regularly carry out specific training, provide users with guidance and advice, answer questions, expand old resources, and update new resources in a timely manner. As readers and users, we should also actively change the traditional learning concept, realize the importance of using electronic resources for studies and works, and strive to master modern information technology and information search methods.

#### **4.5 Establishment of Book Resource Sharing Platforms**

In principle, the allocation of book resources in universities should match the discipline structure and development plan of the school, but the new era requires universities to cultivate and shape the complex talents which integrate knowledge, ability and quality, which requires the university library to have a complete variety of book and literature resources. However, limited by the budget, it is almost impossible for ordinary local universities to have all the database and book resources. On the other hand, the repetition rate of electronic and print resources purchased by university

libraries is high, thus it is wasteful<sup>[8]</sup>. Through the establishment of different levels and types of resource sharing platform, the shortage of funds for libraries can be avoided, and the waste of resources can be reduced. University libraries should realize that today's libraries are living in an age of interdependent information, each library must see itself as part of the world library system; they must be free from self-sufficiency and obtain information from the world library system in a convenient and economical way and reach its users; and they must be ready to make its own collection available for other libraries around the world. Therefore, to realize interlibrary borrowing and information transmission, it is necessary to establish a large-scale alliance of electronic libraries in colleges and universities by signing cooperation agreements.

#### **4.6 Improving the Professionalism of Librarians**

The utilization rate of library resources is related to the service mode of library and the professional accomplishment of librarians to a great extent. The traditional university library is limited to simple literature provision and information consultation, which is a typical passive service mode and lacks active service consciousness. Librarians do not recognize all kinds of electronic resources especially network databases, and do not understand the characteristics and search functions of databases. The library does not establish a perfect management system of discipline librarians. Librarians can't put forward practical opinions from a professional point of view on the problems encountered by researchers in searching and downloading, stimulate readers' interest in using electronic resources, and make them develop into habits. Therefore, the library needs to improve the traditional service mode, take the initiative to carry out personalized and professional services to meet the needs of users, conduct regular training for librarians, encourage discipline librarians to participate in relevant academic and scientific research activities, introduce high-level professional and technical personnel, respond to the information needs of teachers and students in a timely manner, and provide interactive network services all the time.

#### **4.7 Create a Better Learning Environment for Readers**

With the acceleration of the digitization process of book resources, the acquisition of book and information resources is more convenient and fast. Therefore, fewer and fewer teachers and students go to the library to read and learn. Space reengineering is one of the effective methods to attract readers to the library. By creating a comfortable and convenient reading space, attract more readers to the library to read and learn. Design cultural walls in corridors to create a cultural atmosphere and stimulate readers' interest in reading; place tables and chairs in broad corridors to facilitate teachers and students to learn and rest; set up special reader rest areas and teahouses to facilitate academic exchanges and leisure. In short, the library can create a beautiful reading and learning environment based on local conditions, attracting more readers to the library.

### **5. Conclusion**

As the knowledge and information center of universities, the structure of collection library resources has changed from the traditional single print resources to the coexistence of print and electronic resources due to the rapid development of network and communication technology. The amount of traditional print books borrowed is decreasing year by year, and the amount of e-book resources used by readers is increasing as it is easy to obtain, easy to download and carry. However, the utilization rate of electronic library resources is not high, and many database resources are wasted seriously. The main reasons are that the teaching method is old, the resource purchase is out of touch with the reader's demand, the introduction of the database is not enough, and the fund for the resource purchase is short. Therefore, optimizing the structure of collection library resources and improving the utilization of the resources are common problems faced by university libraries. Therefore, the university library must improve the management and purchasing systems of book resources which are centered on the readers' needs and adapted to the



development plan of the university. To improve the use of library resources, it is necessary to regularly investigate and analyze the structure and utilization situation of the collection resources, and establish a wider resource sharing platform to realize the resource sharing and exchange needs. At the same time, we should strengthen the introduction of e-book resources, change the service mode, and improve the professional and individualized service ability of librarians.

## **6. Acknowledgment**

This work is partial fulfillment of funded research program QN2017041, financially supported by Philosophical and Social Science Foundation of Yunnan, China.

## **References**

- [1] M. Zhang, P. Zhou, Y. Cui. An empirical study on the use of paper Chinese books in university libraries: A case study of NJUCM library. *Contemporary Library*, vol. 127, pp. 54-57, 2016.
- [2] Y. Tian, Y. Jin, Z. Mao, R. Sun. Research on current situation and countermeasure of library resources utilization in universities. *Journal of Changzhou Institute of Technology*, vol.32, No.2, pp. 73-78, 2018.
- [3] C. Prabha. Shifting from print to electronic journals in ARL University Libraries. *Serials Review*, vol.33, No.1, pp. 4-13, 2007.
- [4] H. Xia, L. Liu. Impact of the growth of electronic resources on library utilization: A case study of Sichuan university library. *Journal of Sichuan Library*, vol.233, pp.43-46, 2020.
- [5] W. Yu. Interpretation of University Futures, Library Futures. *Library Development*, vol.297, pp.149-153, 2019.
- [6] Z. Cao. Analysis on collection structure and utilization of print book resources in university library: A case study of Tarim university library. *Media Management*, vol. 77, pp.147-149, 2019.
- [7] J. Chai. Research on Utilization of Electronic Resources in University Library. *Jiangsu Science and Technology Information*, vol.25, pp.13-16, 2017.
- [8] L. Zhang. Empirical analysis on the use of Chinese print books: A case study of Guangxi University Library. *Journal of Henan Library*, vol.36, No.1, pp.101-103, 2016.