Promoting ILL/DD within the Jiangsu Academic Library & Information System in China by small consortia

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Abstract

Purpose – This paper aims to describe and analyse the interlibrary loan and document delivery (ILL/DD) in university libraries in Jiangsu Province, China, and to evaluate the service quality of one library as an example of how to improve.

Design/methodology/approach – This paper first describes the ILL/DD of the Jiangsu Academic Library & Information System (JALIS). It then provides an analysis of the problems in JALIS ILL/DD and gives some suggestions for improvement. Finally, it evaluates the service quality of one library's ILL/DD based on the analytic hierarchy process (AHP).

Findings – It is found that JALIS ILL/DD can be done better via small consortia and discipline centres, and that AHP can be used to evaluate the service quality of a library's ILL/DD.

Social implications – More patrons can access better service, and the work effectiveness of librarians can be improved.

Originality/value – This paper is helpful to librarians interested in ILL/DD or resource sharing in China.

Keywords China, AHP, Document delivery, Interlibrary loan, Evaluation, JALIS

Paper type Research paper

1. Introduction

To improve the service level of resource sharing among all university libraries in Jiangsu Province, China, the Jiangsu Academic Library & Information System (JALIS) was founded in September 1997 (JALIS homepage, 2015). A JALIS management centre was established with eight discipline centres. These centres served the libraries appropriate to their abundant collection in their discipline area. Each centre appointed librarians in charge of interlibrary lending and document delivery (ILL/DD).

In addition, various small regional consortia were set up in Jiangsu Province between 2005 and 2009. These consortia comprised libraries that were located close together, and their aim was to provide resource sharing between university libraries. The JALIS organisation structure is illustrated in Figure 1.

Each of the eight discipline centres was operated by a central library, for example:

- an education discipline centre by the central library at Nanjing Normal University; and
- a medical discipline centre by the central library at Nanjing Medical University and so on.

In 2011, a ninth discipline centre, Jiangsu Technology Centre (JTC) (Jiangsu Technology Centre homepage, 2015), was created at the Jiangsu Science & Technology Information Research Institution.

JALIS does not operate a unified information technology system for ILL/DD but provides management, which includes:

- facilitating the development in Jiangsu Province of CALIS, the China Academic Library and Information System, whose mission it is to promote resource sharing among academic libraries in China;
- managing the discipline centres and small consortia; and
- building some special databases, for example, the images on stones of the Han Dynasty, the images of significant figures in the Qing Dynasty, as well as one for digital dissertations and theses in Jiangsu Province.

2. The JALIS ILL service used for returnables

There are 114 universities in Jiangsu Province. In total, 52 university libraries make up nine regional consortia by voluntary participation and reciprocity to meet the needs of their readers for documents in multiple formats. The details are shown in Regional consortia of university libraries in Jiangsu:

1 Name (Abbreviation)/Number of member libraries:
   - Changzhou Academic Library Consortium (CALC)/5;
   - East Nanjing Academic Library Consortium (ENALC)/5;
   - Huai'an Academic Library Consortium (HALC)/3;
   - Lianyungang Academic Library Consortium (LEALC)/9;

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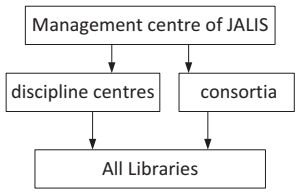
Figure 1 JALIS organisational structure



- Nanjing Xianlin Academic Library Consortium (NXALC)/6;
- Nantong Academic Library Consortium (NALC)/5;
- Xuzhou Academic Library Consortium (XALC)/9;
- Yangzhou Academic Library Consortium (YALC)/4; and
- Zhenjiang Academic Library Consortium (ZALC)/6.

According to the ILL method used, these consortia are classified into three main types. In the first, the document requested will be sent to the reader's library or to the reader directly – used by five consortia. These libraries use dedicated transport to transmit a book or item for readers to save time and money. In the second, a patron can borrow books from the libraries of their own consortium with their library consortium card (Con. Card) – used by four consortia. The third type consists of 62 university libraries that are not part of any consortium. They use the Jiangsu General Library Card (JGL Card) to meet their patrons' ILL demand (Wang, 2009). If the JGL Card is used first, the patron can borrow books at any university library in Jiangsu province. However, this method has two shortcomings:

1 The JGL Card is not available for undergraduate students.
2 The patron must borrow and return material by physically attending the library which requires the patron's time and money.

The methods of JALIS ILL are summarised in Table I.

Using ENALC (East Nanjing Academic Library Consortium homepage, 2015) ILL as an example, the service process of JALIS ILL is described below.

2.1 ENALC ILL for returnables

ENALC comprises five universities in the eastern part of Nanjing which have well-stocked libraries and are geographically close, thus minimising the cost of transporting material. The integrated online catalogue of books held in member libraries ensures their visibility to a user search. Requests are recorded by the system and each university pays the cost of their annual usage.

The process of ENALC ILL is as follows:

- A patron can request an item in two ways; either online or physically attending the library and completing a printed ILL form at the ILL desk.
- The supplying library finds the item and sends it on the twice weekly ENALC transport.
- On arrival at the requesting library, the librarian will notify the patron by e-mail who will then pick the item up from the library.
- The patron will return the book to their library which will return it to the lending library.

Table II shows the development of ENALC ILL. From 2010 to 2014, the number of patrons registered with the consortium grew from 580 to 693. The number of requests satisfied increased from 1,269 to 1,478, and the satisfaction rate increased from 57.3 to 67.5 per cent. The number of member libraries grew from three to five.

3. JALIS document delivery (non-returnables)

JALIS DD provides three types of document delivery. In the first, the consortia or discipline centres have their own network platforms, which are built jointly; CALC and five other consortia use this method. In the second, some consortia do not have their own platforms but their DD is managed by their own librarians; NALC and three other consortia use this method. The third type is used by 57 libraries that are not part of any consortium; they have adopted the China Academic Library & Information System (CALIS) (Yao and Zeng, 2012) to fulfil DD. Table III shows the methods of JALIS DD.

When all these methods are compared, that of JTC – the most recent discipline centre – is considered the best; the number of documents delivered is large and its delivery speed is fast. The transmission time is about half a day, but, in other systems, the time is at least a day. The reason is that the librarians of the system conduct DD at any time, even in the evening or weekend unlike in other systems. Although the system is good, it is too expensive for others to adopt. Taking JTC's DD as an example, the operation of JALIS DD is described below.

3.1 Jiangsu Technology Centre (JTC) DD

JTC has developed its own networked platform utilising ten well-stocked libraries. The highlight of the JTC is the electronic document delivery service. JTC is responsible for the platform operation, management of the relations with the

Table I Methods of JALIS ILL

Method	Free delivery	ConCard	JGL card
Consortium	ENALC, HALC, LALC, NALC, ZALC	CALC, NXALC, XALC, YALC	62 universities, not members of any consortium

Table II ENALC ILL activity

	2010	2011	2012	2013	2014
Patrons registered	580	477	666	688	693
Requests made	2,215	1,753	1,974	1,983	2,190
Requests satisfied	1,269	1,036	1,194	1,315	1,478
Satisfaction rate (%)	57.3	59.1	60.5	66.3	67.5
Member libraries	3	3	5	5	5

Table III Methods used by JALIS DD

Method	Platform	No platform	CALIS
Consortium	CALC, ENALC, HALC, JTC, LALC, YALC	NALC, NXALC, XALC, ZALC	57 universities, not members of any consortium

libraries and financial settlements. The response speed of the centre is fast and the platform is open 24 hours a day.

The workflow of JTC DD is as follows:

- A patron first applies for an account at their library. After registering, the patron will receive 120 yuan which will be replenished without limit when spent. In addition, a patron who comes from another university can also receive 120 yuan after registering. However, in this case, once spent, the patron must pay themselves for additional DD (one yuan = 10p).
- The patron sends a request via the platform.
- A librarian will process the request and find the request in a publisher's database or scan a print copy within half a day and send the document directly to the patron's e-mail account or give another reply – e.g. not available.

Shared platform building means that all the costs of DD will be borne by the relevant universities. At the end of the year, every university pays for the cost of its actual usage at 0.5 yuan per page. If the platform receives other funds, these will be used to reduce the cost of DD. In recent years, JTC has not required any fees from the universities as sufficient funds have come from regional government. All copies are provided under "Fair Use" provision.

The status of JTC DD is shown in Table IV. In the past four years (September 2011 to December 2014), the number of patrons registered rose from 256 to 5,195; the number of requests satisfied rose from 766 to 14,051; the number of requests made rose from 972 to 17,455; and the average satisfaction rate was about 80 per cent.

4. Development of JALIS ILL/DD

Table V shows the development of ILL and DD in JALIS. From 1997 to 2014, JALIS ILL/DD developed quickly. The number of ILLs yearly increased from 167 to 11,653 (Manager, 2014). The number of DDs increased from 225 to 18,865. And between 2005 and 2007, both rose sharply as three more consortia were set up. The number of regional consortia grew to nine (Bao and Bao, 2002), and that of discipline centres from eight to nine. The number of libraries dealing with DD in consortia is 52, and the number of libraries dealing with DD themselves is 62 (Wang, 2011; Wang and Han, 2013).

Table IV The development of JTC DD

	September-December			
	2011	2012	2013	2014
Patrons registered	256	2,613	4,020	5,195
Requests satisfied	766	6,992	1,1108	1,4051
Requests made	972	8,784	13,596	17,455
Satisfaction rate (%)	78.8	79.6	81.7	80.5

5. Problems and suggestions for improvement

JALIS has encountered some problems in developing these services:

1. *Higher logistics cost*: Some consortia of JALIS use transport companies to deliver books or items which improves the service. However, as the number of member libraries and individual users increases so does the demand for the service and the high cost is becoming a problem. ENALC noted in 2013 that the transport costs account for the biggest share of all service expenses. The high cost of providing delivery is a serious concern, but libraries would rather not participate in a consortium unless there is a transport service.
2. *Vacation suspension of ILL*: Although the JALIS ILL service is provided during regular semesters, it is suspended during the summer and winter vacation because there are not enough ILL librarians and the number of requests is small. However, this is a problem for some teachers and students who need documents from other libraries.
3. *Lower fill rate of ILL/DD*: The fill rate of ILL/DD reflects the supplying library's ability to meet reader demand and can be used as an important measure of ILL/DD service quality. Because the ILL/DD of consortia and centres in Jiangsu Province has been established, the fill rate has been growing slowly for two reasons. First, the search systems of the consortia are not completely accurate so a request is not submitted or cannot be met in time. Second, inaccurate or incomplete bibliographic citation information provided by the reader makes it difficult for DD librarians to find the material.
4. *Insufficient collections*: The service quality of ILL/DD is largely dependent on the adequacy of the collections, so it is necessary to develop both collection discovery and size. Only with a certain scale of collections is it possible to provide users with a high quality service. The consortia and centres of JALIS now have many catalogue databases, thesis and dissertation databases and so on, but the extent of their discovery and the scale of available collections are still insufficient.
5. *Multiple request systems and lack of interoperability*: The service systems of ILL/DD in Jiangsu Province have

Table V JALIS ILL/DD statistics

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
ILL	167	684	1,285	1,689	2,183	2,420	2,680	3,134	5,500	5,984	6,565	6,850	8,044	8,592	9,976	10,660	11,012	11,653
DD	225	1,444	2,894	3,487	4,518	5,031	5,616	6,253	8,636	9,312	9,989	11,306	12,509	13,023	15,224	16,687	17,687	18,865
Consortia	0	0	0	0	0	0	0	0	3	4	8	8	9	9	9	9	9	9
Discipline centres	8	8	8	8	8	8	8	8	8	8	8	8	8	8	9	9	9	9
Libraries doing ILL in consortia	8	8	8	8	8	8	8	8	21	26	41	46	52	52	52	52	52	52
Libraries doing DD in consortia	8	8	8	8	8	8	8	8	21	26	41	46	52	52	62	62	62	62

multiple forms. For example, some libraries use their own small service systems, while other libraries adopt the national service system, CALIS. Therefore, end-users have to register for an account in each system, which results in confusion. Cooperation between these systems is needed in order to provide joint ILL/DD services.

6 *Limited use of DD systems*: In Jiangsu Province, the DD system of JTC is the best. However, some libraries are reluctant to adopt such a system for three reasons. First, the system must be installed in all member libraries, which need to provide specific hardware and software. Second, every library would need several librarians to provide an online service, to compensate for the current lack of manpower. Third, significant training would need to be implemented.

7 *Functional imperfections of the system*: Although the ILL/DD system platforms of the consortia in Jiangsu Province are being used and basic functions are being satisfied, there are some aspects that need to be improved. For example, in some platforms, the consortia catalogue does not yet cover all member libraries; in other platforms, the statistics and accounting functions need to be modified and in yet other systems, multiple delivery options need to be added.

8 *Suggestions for improvement*:

- The incentive mechanism of JTC should be revised, for it is focused on the number of documents delivered and quality is ignored.
- Member libraries should provide its users with bibliographic instruction and training to ensure that they have the skills to use the system.
- Only half of university libraries take part in consortia in Jiangsu Province, so the number should be increased. The small consortia could be consolidated into a city based consortium; for example, ENALC could become a larger consortium for all the universities in Nanjing. In the same way, JTC could become a larger centre for all the libraries in Jiangsu Province.
- The consortia and centres of JALIS should continue to maintain their own search systems and improve the professional skills of the staff. ILL/DD staff need to be familiar not only with the resources of each library but also with database retrieval skills.

6. Evaluating the service quality of a library ILL/DD

To evaluate the service quality of a library's ILL/DD and to analyse which factors are most important, a mathematical model called the Analytic Hierarchy Process (AHP) has been adopted (Analytic Hierarchy Process, 2015). The theory continues to be a highly regarded and is a widely used in decision-making (Saaty, 1980). It is designed to analyse complex decisions that involve the comparison of decision elements that are difficult to quantify. It entails building a hierarchy of decision elements and making comparisons between each possible pair in each cluster (creating a matrix). AHP will give a weight for each element within each level of the hierarchy and a consistency ratio, which is used to check the consistency of the data. In this paper, the AHP model is used to evaluate the service quality of a library's ILL/DD.

6.1 AHP methodology

The methodology of AHP creates a paired comparison matrix for each alternative for each criterion that is used in a decision-making process. The decision-maker can express their preference between each pair of elements as equally important, moderately important, strongly important, very strongly important or extremely important. These descriptive preferences are then translated into the numerical values 1, 3, 5, 7 and 9, respectively, with 2, 4, 6 and 8 as intermediate values for comparisons between two successive qualitative judgments.

6.2 Indicators of evaluating ILL/DD

According to the AHP theory, a basic goal should first be set; in this case, the quality of ILL/DD which is termed "P". Factors affecting the quality of the ILL/DD are then identified and divided into five primary indicators, P_i where i = 1, 2, 3, 4 and 5 corresponding to: work conditions, librarian quality, librarian ability, work effect and user situation. Furthermore, secondary indicators, P_{ij}, i = 1, 2, 3, 4, 5; j = 1, 2, 3, 4 of the five primary indicators are identified. These factors can be expressed in a hierarchical structure, as shown in Table VI below.

The signs, indicators and definitions are shown in Table VII below:

6.3 Weight of the indicator

Generally, in their research field, an expert objectively judges the importance of the various factors. In our evaluative research, five experts were asked to give their proposals for these indicators. Next, 15 experts were asked to give their preferences for every indicator; finally, the responses of the 15 experts were averaged and used to construct comparison matrices. Table VIII below is a comparison matrix of the primary indicators.

By Saaty's method, the matrix is resolved. By lengthy calculation (the calculation process is omitted), the weights of the primary indicators (W_i) were calculated (Li, 2007) – see Table VIII. The relational consistency ratio was also found, namely, CR = 0.025 < 0.1, so the matrix of the primary indicators meets the consistency requirement (Xi, 2013).

Just as in the above example, the comparison matrix of the secondary indicators (P_{ij}) is first constructed, and then the weights of the secondary indicators W_{ij} (i = 1, 2, 3, 4 and 5; j = 1, 2, 3 and 4) are calculated as shown in Table IX.

Table VI Hierarchical structure of ILL/DD indicators

P	Quality of ILL/DD				
P_i	P_1 work condition	P_2 librarian quality	P_3 librarian ability	P_4 work effect	P_5 user situation
P_{ij}	P_{11}	P_{21}	P_{31}	P_{41}	P_{51}
	P_{12}	P_{22}	P_{32}	P_{42}	P_{52}
	P_{13}	P_{23}	P_{33}	P_{43}	P_{53}
	P_{14}	P_{24}	P_{34}	P_{44}	P_{54}

Table VII Criteria and definitions

Sign	Indicator	Definition of indicator
P_1	Work condition	Basic condition of a library
P_{11}	Collection quantity	Number of hard copy books
P_{12}	Database amount	Number of electronic sources
P_{13}	System platform	A platform used to process ILL/DD, e-mail etc
P_{14}	Charge of ILL/DD	The charge for ILL/DD
P_2	Librarian quality	ILL/DD librarian basic condition
P_{21}	Academic degree	Academic degree
P_{22}	Period of operating ILL/DD	Period the librarian has been operating ILL/DD
P_{23}	English level	English level certification librarian has gained
P_{24}	Amount of fields	How many fields librarian has studied
P_3	Librarian ability	The librarian has the ability to deal with ILL/DD
P_{31}	Skills	The librarian has skills confirmed by a test
P_{32}	Urgent ILL/DD	The librarian can handle an urgent ILL/DD request
P_{33}	Speedy response to failed requests	The librarian can respond speedily to failed requests
P_{34}	Help patron with retrieval	The librarian can help a patron with retrieving material
P_4	Work output	Work output of a team or library
P_{41}	Volume	Volume of ILL/DD requests fulfilled yearly
P_{42}	Fill rate	Number of requests satisfied against total requests
P_{43}	Time doing a DD	Time spent fulfilling a DD (average)
P_{44}	Accuracy	The proportion of ILL/DD requests fulfilled accurately
P_5	User status	Status of the users
P_{51}	New registered user	Number of newly registered users yearly
P_{52}	Requests from internal user	Requests made by internal users
P_{53}	User satisfaction rate	User satisfaction rate measured by a survey
P_{54}	User training	How many times a year the library gives user training

Table VIII Comparison matrix of the primary indicators

	P_1	P_2	P_3	P_4	P_5	W_i
P_1	1	3/4	3/6	3/7	3/5	0.1196
P_2	4/3	1	4/5	4/7	4/5	0.1657
P_3	6/3	5/4	1	6/8	7/5	0.2318
P_4	7/3	7/4	8/6	1	7/4	0.2976
P_5	5/3	5/4	5/7	4/7	1	0.1853

6.4 Evaluation criterion of the secondary indicator

For the secondary indicator to be used in actual application, a detailed scale is set up. Four scores are set: 2, 4, 6 and 8. If the actual condition is in between, the numbers 1, 3, 5, 7 and 9 can be selected. The details of the evaluation criterion of the secondary indicator are shown in Table X.

Table IX Weights of the secondary indicator

Secondary indicator P_{ij}	W_{ij}	Secondary indicator P_{ij}	W_{ij}
P_{11}	0.0186	P_{31}	0.0381
P_{12}	0.0229	P_{32}	0.0467
P_{13}	0.0474	P_{33}	0.0619
P_{14}	0.0306	P_{34}	0.0850
P_{21}	0.0376	P_{41}	0.0538
P_{22}	0.0598	P_{42}	0.0852
P_{23}	0.0215	P_{43}	0.0615
P_{24}	0.0468	P_{44}	0.0971
P_{51}	0.0495	P_{53}	0.0621
P_{52}	0.0413	P_{54}	0.0324

6.5 Calculation of the formula for quality evaluation

The total score formula for the quality evaluation is $Q = \sum P_{ij} \times W_{ij}$. Here, Q is the total score of a library ILL/DD. If the 20 scores for the secondary indicators P_{ij} are found through the evaluation in Table X and their corresponding weights W_{ij} are as in Table IX, the value of Q is obtained. In actual application, to avoid decimals, Q will be multiplied by 100 first and then rounded.

For easy understanding, Table XI expresses the quality grade of ILL/DD which is classified into ten grades: AAA_+, AAA, AAA_-, AA_+, AA, AA_-, A_+, A, A_- and B.

6.6 Actual application

Nanjing Agricultural University Library (NAUL) was used as an example for the evaluation of the service quality of a library ILL/DD. The scores can be found with the criteria of the indicators in Table X. The results are shown in Table XII below.

The scores in Table XII and the weights in Table IX, with the above total score formula, show the total score for the quality of NAUL ILL/DD which is 555 giving a quality grade of AA_-.

7. Conclusion

A unified network platform for ILL/DD in Jiangsu Province does not exist, but the features of JALIS ILL/DD makes it best able to meet the demands for documents and resource sharing

Table X Evaluation criterion of the secondary indicator

Indicator	Evaluation criterion	Score	Indicator	Evaluation criterion	Score
Collection quantity (10,000) – P_{11}	351+	8	Use skill of various resources % – P_{31}	90	8
	250-300	6		80	6
	151-200	4		70	4
	<100	2		60	2
Database number – P_{12}	175<	8	Do urgent ILL/DD requests – P_{32}	Very good	8
	125-150	6		Good	6
	75-100	4		Adequate	4
	<50	2		Slow	2
System platform – P_{13}	Has platform, uses QQ 1	8	Return request if not fulfilled – P_{33}	0.5 days	8
	Has platform	6		1 day	6
	No platform, delivered by QQ	4		2 days	4
	No platform, delivered by e-mail	2		> days	2
Charge for ILL/DD (per page) – P_{14}	0.2 yuan+	8	Help patrons with retrieval – P_{34}	Very good	8
	0.3-0.4 yuan	6		Good	6
	0.7-0.8 yuan	4		Adequate	4
	1 yuan	2		slow	2
Academic degree – P_{21}	Doctorate	8	Total volume – P_{41}	1,500-1,600	8
	Master's	6		1,100-1,200	6
	Bachelor's	4		701-800	4
	Associate	2		<400	2
Years operating ILL/DD – P_{22}	5 years+	8	Fill rate % – P_{42}	90	8
	4 years	6		80	6
	2 years	4		65	4
	1 years	2		50	2
English level – P_{23}	level 8	8	Time for a DD – P_{43}	1 day	8
	level 6	6		< 1 day	6
	level 4	4		2 days	4
	No degree, studied	2		>2 days	2
Number of fields P_{24}	4	8	Accuracy % P_{44}	99+	8
	3	6		97	6
	2	4		95	4
	1	2		<95	2
New registered users P_{51}	1,200-1,300	8	User satisfaction rate P_{53}	Very strong	8
	801-900	6		Strong	6
	601-700	4		Moderate	4
	<300	2		Equal	2
Requests of internal user P_{52}	1,750+	8	Yearly user training P_{54}	3 times	8
	1,250-1,500	6		2 times	6
	750-1,000	4		1 time	4
	250-500	2		Occasionally	2

Table XI Evaluation grade

Grade	AAA_+	AAA	AAA_-	AA_+	AA	AA_-	A_+	A	A_-	B
total score	800–751	750–701	700–651	650–601	600–576	575–551	550–526	525–501	500–476	475–400

in Jiangsu Province because almost half of the universities adopt this method.

Although there are some problems with JALIS ILL/DD, the situation can be improved through the various initiatives described above in Section 6. For example, some small consortia or discipline centres should be enlarged or consolidated for more readers to use, user training should be carried out and so on.

Efforts to control the service quality of the ILL/DD of these small consortia or centres should be adopted. AHP can be used yearly or periodically to evaluate the quality of ILL/DD. This paper has attempted to evaluate the quality of one library's ILL/DD. As this involves many subjective, objective and other complex factors that are difficult to quantify, the use of AHP is fitting.

Table XII Scores of NAUL

Secondary indicator P_{ij}	Score	Secondary indicator P_{ij}	Score
P_{11}	4	P_{31}	6
P_{12}	5	P_{32}	6
P_{13}	6	P_{33}	5
P_{14}	8	P_{34}	6
P_{21}	6	P_{41}	6
P_{22}	4	P_{42}	5
P_{23}	5	P_{43}	6
P_{24}	4	P_{44}	6
P_{51}	6	P_{53}	6
P_{52}	6	P_{54}	4

Note

1 QQ is a chat tool software, produced by TENCENT company, similar to Skype. Most Chinese use it.

References

Analytic Hierarchy Process (2015), available at: http://en.wikipedia.org/wiki/Analytic_hierarchy_process (accessed 5 January 2015).

Bao, P. and Gao, Y.H. (2002), "Review on building of JALIS agricultural document centre", *Journal of Library and Information Sciences in Agriculture*, Vol. 14 No. 5, pp. 17-19.

East Nanjing Academic Library Consortium homepage (2015), available at: http://202.195.243.104/uopac/s/search.action (accessed 30 July 2015).

Jiangsu Academic Library & Information System (JALIS) homepage (2015), available at: www.jalis.org.cn (accessed 30 July 2015).

Jiangsu Technology Centre homepage (2015), available at: http://portal.e-library.com.cn/ (accessed 30 July 2015).

Li, A.G. (2007), "A kind of transformation of information service – science and technology novelty search in Chinese University libraries", *The Journal of Academic Librarianship*, Vol. 33 No. 1, pp. 144-148.

Manager (2014), "Real-time data statistics (in Chinese)", 21 June, available at: www.jstgw.org/NTPT-web/PageViewAction.do?method=viewPage&data={ID:136}

Saaty, T.L. (1980), *The Analytic Hierarchy Process*, McGraw-Hill, New York, NY.

Wang, F.M. (2009), "Analysis on the use of Jiangsu general library card", *Science & Technology Information*, Vol. 35 No. 14, pp. 11-12.

Wang, Q. and Han, Y. (2013), "Analysis of BALIS interlibrary loan service management", *Interlending & Document Supply*, Vol. 41 No. 3, pp. 90-94.

Wang, X.L. (2011), "The BALIS interlibrary loan system: a new network in Beijing Library", *Interlending & Document Supply*, Vol. 39 No. 2, pp. 111-114.

Xi, Q.K. (2013), "Method on quality evaluation of Novelty search branch base on analytic hierarchy process", *Library Theory and Practice*, Vol. 166 No. 8, pp. 36-37.

Yao, X.X. and Zeng, L.J. (2012), "CALIS: interlibrary loan and document delivery services in China", *Interlending & Document Supply*, Vol. 40 No. 2, pp. 111-114.

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