

# Research on the Reader Satisfaction of University Library

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**Abstract:** This paper takes the reader satisfaction of university libraries as the research object, constructs a set of scientific evaluation index system for University Library Readers' satisfaction. Empirical analysis is carried out by testing the reliability and validity of the original data and using Structural equation modeling (SEM) method to validate the model with Amos7.0 software. Through many adjustments and revisions, this paper constructs the reader satisfaction model of university library, and advances some corresponding preventive measures, suggestions and rectification measures.

**Keywords:** University library, Reader satisfaction, Structural equation mode

## 1. Introduction

Building the entity model of reader satisfaction of university library and promoting the change of library comment system from work experience description to scientific description is the evaluation index system of the satisfaction level of readers to the library management mode and personal behavior of service projects. Building a model is not only a reflection of the introduction of the reader supervision and certification system, but also a key component of library service quality. Compared with traditional library evaluation methods, the questionnaire survey can prevent the subjectivity of peer review and reflect the service level of the library from the perspective of readers.

Based on this, this paper conducts a systematic discussion and analysis of the previous theories, takes the reader satisfaction of university libraries as the research object and takes the current perfect basic theory of consumer satisfaction as the basic theory, analyzes various factors that affect the reader satisfaction, creates a structural equation model of the reader satisfaction of university libraries that conforms to the characteristics of libraries and conducts empirical analysis. To build the operation mode of university library, the relative proposals are clearly put forward.

## 2. Research status at home and abroad

The empirical research on library information services by American researchers Landram et al. shows that the main factors affecting library satisfaction include the quality of literature resources, service quality, system quality and data availability. The research of Franklin and Nietzsche shows that at least three types of indicators can affect the performance of libraries. Since 1992, the library of Washington University has conducted large-scale reader surveys every three years by using various methods such as centralized grouping, application ability, observation research, interview, interview, etc [1].

In the 1990s, the United States established an econometric entity model of consumer satisfaction index. This model conducts a basic scientific research on consumer satisfaction in commercial organizations. When evaluating CSI library reader satisfaction, the secondary index values are reader satisfaction, reader complaint, reader expectation, perception ability and perception value[2-3], but these index values cannot be accurately measured and analyzed at the same time.

German scholars Anne Mortensen and Lars Granholm first applied the structural equation model to the evaluation of library reader satisfaction. They creatively and explicitly pointed out the model of reader satisfaction of university libraries [4].

In China, Zeng Xianzi's definition of reader satisfaction is based on the key operation and relative academic research and analysis of library reader satisfaction. In his opinion, reader satisfaction means that readers feel that the management mode, personal behavior of service, engineering architecture and

structural perspective of the library have exceeded or exceeded the estimates. This feeling may or may not be consistent with the actual situation [5].

### 3. Variable definition

This paper defines reader satisfaction as a subjective and abstract experience of readers after they arrive at the library.

According to the relevant references of various countries in the world, this paper studies the factors that affect reader satisfaction as shown in Table 1.

*Table 1: Evaluation Indicators of Library Reader Satisfaction.*

Latent variable	Observed variables
Resource condition	Abundance and accessibility
Service condition	Service items and service attitude
Library environment	Cultural atmosphere, comfort and hygiene
Facilities condition	System response speed and auxiliary service facilities
Readers' own condition	Collection Mastery and Collection Interest
Readers' satisfaction	Overall satisfaction, satisfaction compared with expectation, satisfaction compared with ideal

### 4. Model Assumptions

According to the evaluation indicators listed above, a structural equation model of influencing factors on reader satisfaction of university libraries is constructed. The following relationship assumptions exist among various variables:

- H1: "Resource condition" has a positive impact on "reader satisfaction";
- H2: "Service condition" has a positive impact on "reader satisfaction";
- H3: "Library environment" has a positive impact on "reader satisfaction";
- H4: "Facilities condition" has a positive impact on "reader satisfaction";
- H5: "Readers' own condition" has a positive impact on "reader satisfaction";
- H6: The "internal environment of library" has a positive impact on the "reader's own state";
- H7: "Service condition" has a positive impact on the "library environment";
- H8: "Service condition" has a positive impact on "readers' own status".

### 5. Questionnaire development and design

The questionnaire of this study consists of two parts: basic personal information and core scale. In the core scale section, the Likert five level scale is used, and each variable is verified through 3-5 measurement questions [6]. In order to ensure the discriminant validity and credibility of the scale, most of these problems come from the existing perfect scientific research, and only a few variables with special practical significance have been designed.

#### 5.1. Distribution and Recovery of Scale

This questionnaire is distributed online through QQ, Weibo, WeChat, Zhihu and other social access software links. It will be issued from August 1, 2022 to August 10, 2022.

During the distribution and collection of all questionnaires, 488 online questionnaires were collected, 200 invalid questionnaires were removed, and 288 reasonable questionnaires were finally obtained.

#### 5.2. Descriptive Statistics

The basic information of the respondents in this study mainly includes gender, educational background, discipline background, and the frequency of using library resources. Most of the women in

this survey have bachelor's degrees. This survey is mainly aimed at college library students. In this survey, there are 226 undergraduate students, accounting for 78.50% of the total survey population. The survey sample is highly representative; The 288 people surveyed were from five disciplines, including science and engineering, liberal arts, economic management, and law and art departments. The two disciplines with the highest percentage of participation in the survey were economic management and science and engineering, respectively. The proportion of participants in the total number of respondents was 37.82% and 33.70%, respectively. The survey results show that the number of people who use library resources more than 15 times per month is higher than that who use library resources 6-15 times per month and 2-6 times per month, respectively 79, 87 and 86, accounting for 27.40%, 30.86% and 29.86%, respectively, and 36 people who use library resources less than twice per month, accounting for 12.54%.

**5.3. Exploratory Factor Analyses**

Before factor analysis, KMO value test and Bartlett sphere test shall be carried out [7], When KMO value exceeds 0.6, factor analysis is applicable; The closer the KMO value is to 1, the stronger the correlation between variables. If the original assumption is denied, it indicates that the variable is not independent, and factor analysis can be carried out [8]. KMO value and Bartlett spherical test value of this scale are shown in Table 2 and Table 3 respectively.

*Table 2: Overall Satisfaction KMO and Bartlett Test.*

KMO sampling suitability quantity		0.949
Bartlett sphericity test	Approximate chi square	5686.804
	Freedom	528
	Significance	0.000

The results showed that the overall KMO value of the scale was 0.949; The significance probability of the chi square statistical analysis value of Bartlett test is 0.000, lower than 1%, indicating that the data information is relevant and it is appropriate to carry out factor analysis.

*Table 3: KMO and Bartlett Test Values of Each Variable.*

index	KMO	Bartlett sphericity test		
		Approximate chi square	Freedom	Significance
Resource condition	0.849	630.290	10	0.000
Service condition	0.815	512.358	15	0.000
Library environment	0.893	827.496	21	0.000
Facilities condition	0.863	619.819	15	0.000
Readers' own condition	0.890	907.548	15	0.000
reader satisfaction	0.721	330.087	3	0.000
population	0.949	5686.804	528	0.000

This study examined the conclusions of factor analysis from four aspects. First, the cumulative variance growth rate after orthogonal rotation (as shown in Table 4) should exceed 50%; The minimum acceptable value of common factor variance should be 0.5.

In the statistical data in Table 4, the eigenvalue of four factors exceeds 1, and their cumulative variance interpretation rate is 57.170%, meeting the requirement of cumulative variance interpretation rate.

*Table 4: Eigenvalue of Each Variable and Total Variance of Interpretation.*

Ingredients	Initial Eigenvalue			Extract Square Sum Load			Rotate Square Sum Load		
	Total	% of the variance	Cumulative%	Total	% of the variance	Cumulative%	Total	% of the variance	Cumulative%
1	14.800	44.849	44.849	14.800	44.849	44.849	5.516	16.715	16.715
2	1.635	4.953	49.802	1.635	4.953	49.802	4.505	13.651	30.365
3	1.326	4.019	53.822	1.326	4.019	53.822	4.503	13.644	44.009
4	1.105	3.349	57.170	1.105	3.349	57.170	4.343	13.161	57.170
5	.992	3.006	60.176						
6	.958	2.902	63.079						
7	.891	2.701	65.780						
8	.878	2.659	68.440						
9	.781	2.368	70.807						
10	.692	2.095	72.903						
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#### 5.4. Exploratory Factor Analysis

Before analyzing the structural equation model, the discrimination validity and reliability of the questionnaire indicators were tested to ensure the credibility and accuracy of the research conclusions. Before modeling and fitting the model, the internal structure relationship is used to test the reliability of indicators. The specific method is: if the CITC value is less than 0.5, delete the indicator; Calculate Cronbach's  $\alpha$  Coefficient, if the coefficient is more than 0.6, the reliability of the index can be carried out. The Cronbach's  $\alpha$  Coefficient of this questionnaire are shown as Table 5.

Table 5: Reliability Coefficient of Each Variable.

index	Cronbach's $\alpha$	Number of items
Resource condition	0.863	5
Service condition	0.806	6
Library environment	0.870	7
Facilities condition	0.842	6
Readers' own condition	0.893	6
reader satisfaction	0.833	3
population	0.961	33

Six indicators involved in the questionnaire and Cronbach of the total scale  $\alpha$  the coefficients are all greater than 0.80, with high reliability.

#### 5.5. Construct Validity Analysis

The validity of this paper is construct validity.

According to Kaiser, the KMO value exceeds 0.6, which indicates that the sample data is suitable for factor analysis and the questionnaire has good aggregation validity. In the above factor analysis, the unqualified items have been deleted. Therefore, the remaining questionnaire items meet the condition, and the model and data have good aggregation validity.

The correlation coefficients of the variables in this study are shown in Table 6.

Table 6: Correlation Coefficient of Each Variable.

	Resource condition	Service condition	Facilities condition	reader satisfaction	Library environment	Readers' own condition
Resource condition	1	.377	.342	.344	.194	.161
Service condition	.377	1	.479	.471	.226	.295
Facilities condition	.342	.479	1	.627	.317	.393
reader satisfaction	.344	.471	.627	1	.372	.510
Readers' own condition	.161	.295	.393	.510	.432	1

The AVE squared value of each variable and its corresponding cross coefficient are shown in Table 7.

Table 7: Comparison between AVE Value and Cross Correlation Coefficient Value of Each Variable.

Variable	AVE square root	Whether it is greater than each cross coefficient
Resource condition	0.749	yes
Service condition	0.644	yes
Library environment	0.703	yes
Facilities condition	0.689	yes
Readers' own condition	0.765	yes
reader satisfaction	0.792	yes

The discriminant validity of all variables has passed the test, and the model and data in this study have good discriminant validity.

## 6. Model hypothesis construction, testing and fitting

### 6.1. Model Settings

Based on the above assumptions and tests, this research uses AMOS software to draw the path diagram and it is shown in Figure 1.

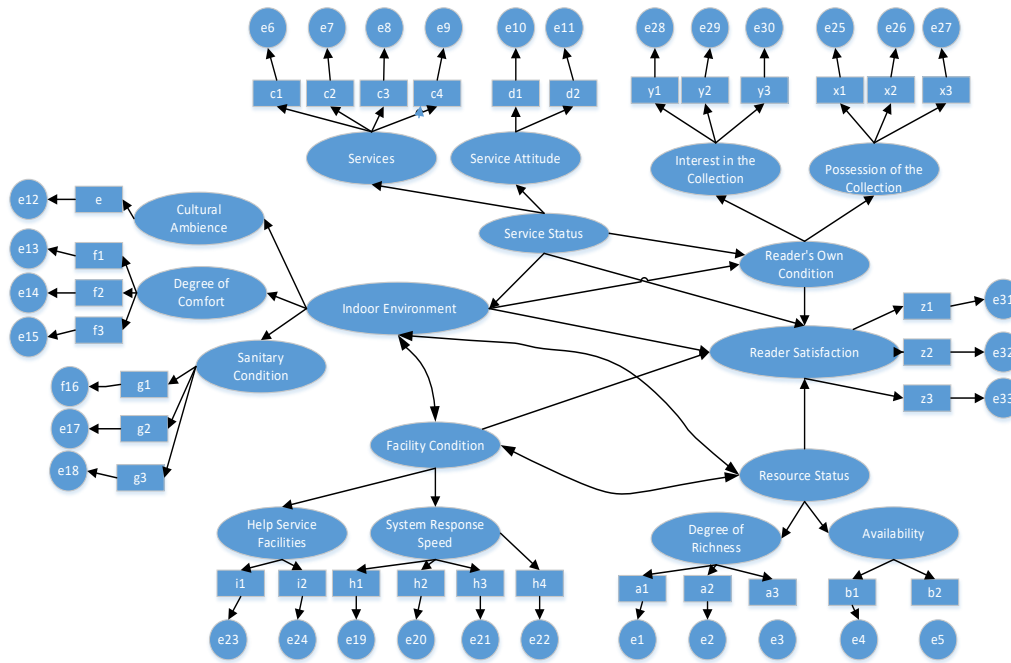


Figure 1: AMOS Overall Assumption Model Diagram.

6.2. Model Fitting

The model fitting standard and the fitting data in this paper are shown in Table 8.

Table 8: Model Fitting Data.

Statistical inspection quantity	Adaptation standard	Adaptation standard	Whether the model matches
Chi square degree of freedom ratio	<3	2.100	yes
RMSEA	<0.05 excellent; <0.08 good	0.062	yes
GFI	>0.90	0.828	no
IFI	>0.90	0.904	yes
NFI	>0.90	0.831	no
TLI	>0.90	0.893	no
CFI	>0.90	0.903	yes
CN value	>200	210	yes

According to the data statistics in Table 8, the consistency of most fitting parameters of the digital model has passed the inspection, and only two parameters are not ideal, but the GFI and NFI values are close to 0.9, which is acceptable. Therefore, this model has a good fitting effect.

6.3. Analysis on the Influencing Factors of Reader Satisfaction

The path fitting results of this study are shown in Table 9.

Table 9: Path Analysis Results.

route	assumptions	Estimated value	P value	Significance
H1	Resource condition→reader satisfaction	0.392	0.017	significant
H2	Service condition→reader satisfaction	0.852	0.000	significant
H3	Library environment→reader satisfaction	0.890	0.000	remarkable
H4	Facilities condition→reader satisfaction	-0.257	0.587	Not significant
H5	Readers' own condition→reader satisfaction	-0.013	0.899	Not significant
H6	Library environment→Readers' own condition	0.187	0.125	significant
H7	Service condition→Library environment	0.211	0.406	significant
H8	Service condition→Readers' own condition	0.394	0.005	significant

H1 Establishment: The resource condition will significantly and positively affect the reader satisfaction of the library, that is, if the resource status of the library is rich enough and the accessibility is simple and convenient, the reader satisfaction will be improved.

H2 is established: the service condition will significantly and positively affect the library's reader satisfaction, that is, if the library's service projects and service personnel have a good service attitude, the reader satisfaction will be high.

H3 establishment: The internal environment of the library will significantly and positively affect the library's reader satisfaction, that is, the library has a good cultural atmosphere, excellent comfort, good hygiene, and high reader satisfaction.

H4 failure: the facilities condition will not significantly and positively affect the reader satisfaction of the library, that is, the response speed of auxiliary service facilities and systems will not affect the improvement of reader satisfaction.

H5 is not tenable: the reader's own status will not significantly affect the library's reader satisfaction. That is, readers' mastery and interest in library resources have little impact on the improvement of readers' satisfaction.

H6 is established: the internal environment of the library will significantly and positively affect the readers' own state. That is, the lighting environment, cultural atmosphere and comfort level in the library can directly affect the readers' grasp and interest in the library resources, and then affect the improvement of library readers' satisfaction.

H7 establishment: the service of the library will have a great positive impact on the library environment. That is to say, if the service items of the library are flexible and diverse, and the service level of the service staff is relatively moderate, it will immediately affect readers' satisfaction with the internal structure and environment of the library, thus indirectly affecting readers' satisfaction.

H8 is established: the service condition of the library will significantly and positively affect the reader's own condition. That is, if the library service items are diversified and the service attitude of the service personnel is good, it will directly affect the readers' grasp and interest in the library collection resources, and indirectly affect the improvement of satisfaction.

## 7. Conclusion

Through the above research, in order to improve the university library reader satisfaction, suggestions and measures are as follows.

### ① Enriching the Collection Resources of University Libraries.

The resource situation of colleges and universities, the basic construction of hardware facilities, and the rich and colorful level of library resources can simultaneously affect the reading management level of libraries. The more resources, the wider the scope of readers' selection, and the stronger the attraction to readers. Rich resources can further improve the overall comprehensive ability and competitiveness of the library, and improve the satisfaction of readers.

### ② Improve the service condition of university library.

The university library must ensure the consistency and integrity of service through the service level, and reasonably serve various service objectives. The service mode selected in the traditional library management process is relatively clear, but now this kind of management mode will no longer give full play to its main effect. Therefore, according to different service objectives, we should change the service methods flexibly, clarify the consultation needs of readers, provide more humanized and personalized services for readers, and improve the reader satisfaction of university libraries from the source.

### ③ Improving the Management System of University Library.

In the process of implementing the measures, university libraries should further optimize and improve the library management mechanism and important methods of construction. In the process of studying the evaluation system of university library's reader satisfaction, we should continue to optimize the internal structure and operation mode, the standard's own operation steps, provide clear service environment for readers, and finally complete the overall goal of satisfying the readers of university library.

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### References

- [1] Peng Jingjing. *Research on the Evaluation of Readers Satisfaction of GS College Library [D]*. Guangxi University, 2012.
- [2] Hou Mingyan. *Research on evaluation of reader satisfaction in university library [D]*. Jilin University, 2011.
- [3] Cheng Lixia. *Investigation and Analysis of Library Reader Satisfaction -- Taking the Library of Xinjiang University of Finance and Economics as an Example [J]*. *Oriental corporate culture*, 2014(16):263-266.
- [4] Wu Haidong. *Constructing evaluation index system of library reader satisfaction with structural equation model [J]*. *Information science*, 2011, 29(02):227-230.
- [5] Zhang Jingli. *An empirical study on website evaluation of medical university library based on reader satisfaction [D]*. Southwest University, 2017.
- [6] Lie Wenwen. *On the strategies of improving readers' satisfaction in university libraries under the new situation [J]*. *Intelligence*, 2019(15):91-92.
- [7] Li Jing. *An empirical study on reader satisfaction of wuhan library [D]*. Central China Normal University, 2020.
- [8] Wu Haidong. *An empirical study of library reader satisfaction based on structural equation [J]*. *Information science*, 2009, 27(09):1378-1382.