

A study on the influence factors of the university library service image based on SEM

Jinhua Xuan^{1, a}, Mengqing Ding^{2, b}

¹The Library of Zhejiang University of Finance and Economics, China

²Zhejiang University of Finance and Economics, China

apiaozhefan@126.com

dream5023056@126.com

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Abstract.In this paper, we have discussed and analyzed the impact on the university library service image using questionnaire data of the college students in Zhejiang Area based on the Structural Equation Model (SEM). The determinants include the service time, the service consciousness, the service space and the service attitude. And not only that, but this study put forward tactics for the improve university library service image based on this paper's result.

Since 1996, China's Cultural Studies Library continues to heat up, many published articles, which greatly enriched the theoretical system of library science, provides a solid theoretical basis on the construction of the library culture and the development of the library. But as personnel training and scientific research base of university library, service should be regarded as its vocation and reflect scientific and social value with its unique diversity of literature books and the richness of data . But now, the image of university libraries in the service can not meet the demand to maintain a competitive advantage and sustainable development so far. Therefore, this paper will start from the basis of the service image of university library factors as the breakthrough point, according to the sample of 200 investigation data of Zhejiang Higher Education Park, 7 colleges and universities to empirical research the elements which will influence the impact of the university service image through structural equation model in the points of perspective of service consciousness, service hours, service space and service attitude.

1. The influence factors of library service image

Anne F. Roberts et al.,(1989) considered that the library service image is the sum of unique values, behavior, management style, library spirit, ethics which gradually develop under the certain social and historical context during the long term management of activities to service for readers. It is subject to common underlying ideology of material culture, behavior, institutional culture and all librarians . Qin Qiwen(2004) believes that the image of university library services should be defined by three dimensions from the relationship of subject, object to subject and object. Subject, service image of university library is the library staff of the service intension and service attitude. Object, service image of university libraries is the overall appraisal and impression of the university teachers and students to staff service intension and service attitude.

On the basis of the literature, there are four component elements of the service image of university library: service time, service space, service intension and the service attitude. The service time refers to the time when the library provides service. The service space refers to material carrier of university library building, facilities, equipments, books, furnishings and other services. The service consciousness refers to the staffs' enthusiasm and intension as well as their mental preparation to do better work. The service attitude refers to the staffs' attitude and behavior performance during the process for serving.

2. An empirical analysis of factors affecting the service image library based on SEM

2.1 Structural equation modeling (SEM) analysis process.Structural equation model integrates path analysis, confirmatory factor analysis test and general statistical method, which can analyze the causal relationship between variables, including the advantages of factor analysis and path analysis. At the same time, it remedies the defect of factor analysis without being restricted by the assumptions of path analysis because of the consideration of the error factors.

Generally speaking, structural equation model consists of three equations:

$$\eta = B\eta + \Gamma\xi + \zeta. \quad (2-1)$$

$$y = \Lambda_y\eta + \varepsilon. \quad (2-2)$$

$$x = \Lambda_x\xi + \sigma. \quad (2-3)$$

The structural equation model above consists of the measurement model and structural model. Equation (2-1) is a structural model, (2-2) and (2-3) is a measurement model. Structural model explains the causal relationship between potential exogenous variables and latent endogenous variables, which is expressed in graphical form called road map. Γ is structure coefficient matrix, ξ is potential exogenous variable matrix, η is latent endogenous variable matrix, B is the coefficient of structural models in η , ξ is residual value. The measurement model illustrates the relationship between potential η , ξ and measurement of variables y and x . In the equation (2-2), y is a matrix measured variables of η ; Λ_y , the measurement of coefficient matrix, expresses the relationship between potential endogenous variable matrix η and its measurement variable y ; η is latent endogenous variable matrix; ε is a matrix of measurement equation residuals. In the equation (2-3), x is a matrix of measured variables of ξ ; Λ_x is measurement of coefficient matrix, which expresses the relationship between potential exogenous variable matrix ξ and its measurement variable x , ξ is potential exogenous variable matrix; σ is a matrix of measurement equation residuals. The Data processing software used in this paper is AMOS7.

2.2 Data selection and variable definitions.In order to understand the factors influencing service image of our library, questionnaire surveys outline are designed from the points in service attitude, service spaces, service time and service intension, and more than 200 college students from seven universities in Zhejiang Higher Education Park(Zhejiang Gongshang University, Zhejiang University of Finance and Economics, Hangzhou Normal University, Zhejiang Sci-Tech University, Hangzhou Dianzi University, China Jiliang University) participated in this survey and exchange with iedas. Summary information is shown in Table 1.

Table 1 Frequency survey data analysis table

	N o.	questions		Very satisfied	Satisfied	General	Poor	Very Poor	Total
Service attitude	a 1	Friendly and helpful staff	copies	40	60	47	40	13	200
			%	20	30	23.5	20	6.5	100
	a 2	Staff have the patience	copies	40	40	64	44	12	200
			%	20	20	32	22	6	100
	a 3	Understand the reader needs	copies	80	26	48	34	12	200
			%	40	13	24	17	6	100
Service time	a 4	Provide real-time service	copies	34	41	53	38	34	200
			%	17	20.5	26.5	19	17	100
	a 5	the satisfaction of the open time	copies	44	33	46	61	16	200
			%	22	16.5	23	30.5	8	100
	a 6	Opening hours during the holidays	copies	33	64	59	31	13	200
			%	16.5	32	29.5	15.5	6.5	100
Service space	a 7	beautiful library construction	copies	72	71	31	19	7	200
			%	36	35.5	15.5	9.5	3.5	100
	a	Orderly	copies	59	68	47	13	13	200

	8	museum design	%	29.5	34	23.5	6.5	6.5	100
	a	Perfect	copies	64	51	52	18	15	200
	9	exhibition guide	%	32	25.5	26	9	7.5	100
Service intension	a	The librarian has strong Initiative	copies	33	48	48	50	21	200
	0		%	16.5	24	24	25	10.5	100
	a	Timely communicate with the readers	copies	44	33	51	55	17	200
	1		%	22	16.5	25.5	27.5	8.5	100
	a	The librarian works proficient	copies	64	28	48	35	25	200
	1		%	32	14	24	17.5	12.5	100
	a	Reader's interest comes first	copies	63	33	55	29	20	200
	1		%	31.5	16.5	27.5	14.5	10	100
Service image	a	Reader's interest comes first	copies	77	21	43	29	30	200
	1		%	38.5	10.5	21.5	14.5	15	100
	a	Service image scores	scores	》 90	89-80	79-70	69-60		Total
	1		copies	81	63	39	17		200
	5		%	40.5	31.5	19.5	8.5		100

Table 1 shows that the highest satisfaction is the service space, to which satisfaction reached 65%, but as a service provider, librarians in the university library service innovation plays a vital role. Library service quality, service level and depth is the key to improving the image of library services. The four aspects of service meant the title, satisfaction is very low (40.5%, 38.5%, 46% and 48%).

2.3 Estimation of model fitting degree and path coefficient. Reliability in the structural equation model refers to the consistency and stability of the measurement results, that is, to keep the error of the measurement results in a smaller range, observed values will not change along with the change of form or time. From the table 2, Cronbach 's was 0.585, more than the critical value of 0.35, fitness value (GFI, AGFI, NFI and CFI) is close to 1, indicates that the simulation results are satisfactory, the model can be accepted. The amendment process through residual value and the error value, model output path was eventually accepted as shown in figure 1.

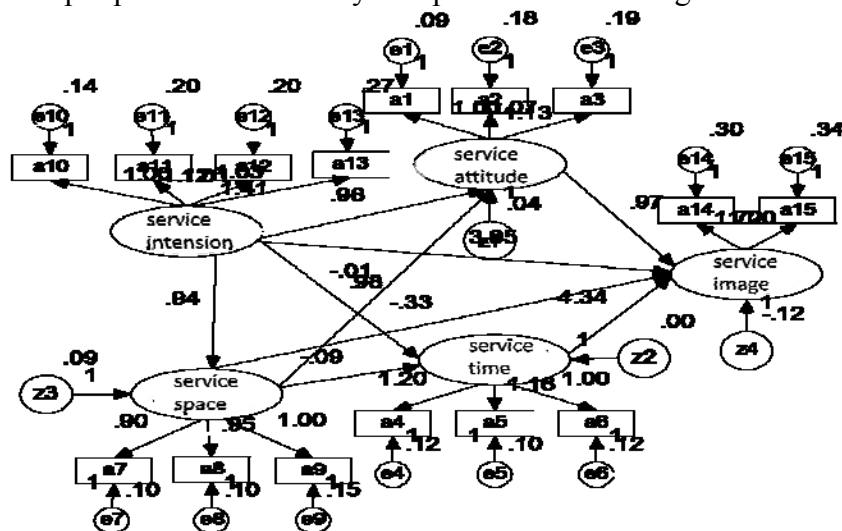


Fig. 1. The library image structure path graph

Table 2 Cronbach's α and adaptation value

Index	Cronbach's Alpha	GFI	AGFI	RMSEA	NFI	CFI
	2.861	0.924	0.902	0.079	0.908	0.921

The estimation and test results of the path coefficient from table 3, "service intension" to "service

space", " service time " and "service attitude", the path coefficient of “ service attitude" to "service image" has reached a significant level of 0.01. The path coefficient of "service attitude" on a2 and a3, " service time " on a4, a5 and a6, " service space " on a7, a8 and a9, " service intension " on a11, a12 and a13, “service image" of a14 and a15 were all significant at 0.01 level.

Table 3 Estimation of path coefficient

			Estimate	S.E.	C.R.	P
Service space	<---	Service intension	0.945	0.036	26.205	***
Service time	<---	Service intension	0.984	0.096	10.248	***
Service time	<---	Service space	-0.092	0.095	-0.969	0.333
Service attitude	<---	Service space	-0.008	0.109	-0.074	0.941
Service attitude	<---	Service intension	0.965	0.109	8.888	***
Service image	<---	Service intension	3.947	7.129	0.554	0.58
Service image	<---	Service attitude	0.975	0.202	4.815	***
Service image	<---	Service time	-4.339	7.034	-0.617	0.537
Service image	<---	Service space	-0.328	0.881	-0.372	0.71
a2	<---	Service attitude	1.129	0.034	33.49	***
a5	<---	Service time	1.162	0.034	34.058	***
a8	<---	Service space	0.946	0.03	31.53	***
a11	<---	Service intension	1.008	0.035	28.761	***
a10	<---	Service intension	1			
a12	<---	Service intension	1.117	0.037	30.162	***
a13	<---	Service intension	1.03	0.039	26.546	***
a1	<---	Service attitude	1			
a3	<---	Service attitude	1.075	0.033	32.21	***
a14	<---	Service image	1			
a15	<---	Service image	1.716	0.097	17.744	***
a7	<---	Service space	0.903	0.029	30.682	***
a9	<---	Service space	1			
a4	<---	Service time	1.196	0.035	33.708	***
a6	<---	Service time	1			

2.4 The empirical results.Through the consolidation of table 4, we can conclude that the total effect degree on the independent latent variable to the dependent latent variable. From table 4 we can draw the following conclusions:

Table 4 The comprehensive effect coefficient table

	Service intension	Service space	Service time	Service attitude	Service image
Service space	0.945	0	0	0	0
Service time	0.898	-0.092	0	0	0
Service attitude	0.957	-0.008	0	0	0
Service image	0.674	0.062	-4.339	0.975	0

(1) Library service intension has positive influence of the service space, service time, service attitude and service image, and the coefficients is 0.945, 0.898, 0.957 and 0.674, which shows the sense of service is the key to improving the services image of library.

(2)Service space has a negative impact on service time and service attitude, the coefficient is -0.092 and -0.008, demonstrating that the service time setting should respect the needs of readers and improving service attitude.

(3)The impact coefficients of service spaces and service attitude to service image is 0.062 and 0.975 respectively, the service time on the service image coefficient is -4.339, indicating that optimize university library service hours,make readers greatest satisfaction is one of the vital strategies to improve the services image of the library.

3. Conclusion

From empirical study in 200 investigation data of 7 colleges and universities in Zhejiang Higher Education Park, we can conclude that the main factors leading to the service image is relatively low in the sense of service, service attitude and service time satisfaction. Thus, measures need to be taken to further enhance its service image.

First of all, strengthen the sense of service and innovate the service concept. In 21th Century, we ushered in the era of knowledge economy, the library staff must further clear objectives and guide ideology of library construction, strengthen the service consciousness, improve their own quality, do a good job in the new century library work.

Second, improve service attitude, specify service behavior. Librarians who communicate with readers every day, should provide them with books of intelligence information, then readers could search for what they need. So the librarians and readers should have good communication on information, ideas and emotion, reaching a goal to achieve mutual understanding, resolve conflicts friendship and cooperation, then the potential value of library materials could be further utilized.

Third, optimize service time and improve service efficiency. There are two aspects to optimize the library service time, One is the specific requirements on the service of University Library from the laws and regulations, and further improve the service standard of time to adapt the library services and education reform; The second one is the university library itself should further correct the library-running idea, strengthen the service consciousness and carefully study the law of demand of readers, to improve the level of management, the establishment of self-study room (extend the opening hours), maximum satisfy the needs of readers.

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