

Evaluating Special Library Service Quality using Importance-Performance Analysis

중요도-수행분석을 이용한 전문도서관 서비스 평가

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ABSTRACT: The purpose of this study is to investigate the service quality of special libraries using Importance-Performance Analysis (IPA) method. This study also applied the working year factor to IPA model for establishing more improved library service strategies. A total 127 library users who work in governmental policy or research institutions in South Korea participated in this study. This study conducted regression analysis to compare with the results of IPA. The results of survey revealed that special library users had high expectation for library services, but they perceived the performance of the library service as insufficient. Special library users assessed that the information services of libraries were well provided but required additional efforts in services related with space and provided by librarian. Interestingly, when the library services were measured by working years, special library users who have worked for more than eight years were generally satisfied with library services with no "possible overkill" services, but users with less than three years working experience particularly expressed dissatisfaction with the service provided by librarians. The results of regression analysis supported the results of IPA. Finally, this study provides several important suggestions for better special library service.

KEYWORDS: Special Library, Importance-Performance Analysis, Library Service, Regression Analysis

요약: 이 연구의 목적은 중요도-수행분석 방법을 이용하여 전문도서관의 서비스 질을 조사하는 것이다. 또한 더 나은 도서관 서비스 전략을 수립하기 위하여 근무연수 요인을 중요도-수행분석에 적용하였다. 총 127명의 국내 정책 연구소와 리서치 연구기관 직원들이 연구에 참여하였다. 이 연구는 또한 회귀분석을 실시하여 중요도-수행분석의 결과와 비교하였다. 연구결과, 전문도서관 이용자들은 도서관서비스에 대해 높은 기대를 가지고 있어 서비스 성과에 전반적으로 만족하지 못하는 것으로 밝혀졌다. 전문도서관 이용자들은 도서관들이 정보서비스는 비교적 잘 제공되지만, 사서 서비스나 도서관 공간 이용에 대한 서비스는 개선이 필요하다고 하였다. 도서관서비스를 인구통계학적인 요소로 분석하였을 때, 근무연수에 따라 유의미한 결과가 있었다. 8년 이상 근무한 직원들은 도서관 서비스에 대해 전반적으로 만족하였으며 도서관 서비스 중에 더 이상 제공이 필요치 않은 서비스가 없다고 하였다. 하지만 3년 이하 근무한 직원들은 사서에 의해 제공되는 서비스에 불만족도가 높았다. 이러한 결과는 회귀분석으로도 증명되었다. 마지막으로 더 나은 전문도서관 서비스를 위해 몇 가지 제안을 제시하였다.

주제어: 전문도서관, 중요도-수행분석, 도서관서비스, 회귀분석

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I. Introduction

Library service quality is an important subject for Library and Information science scholars. Libraries also have tried to assess the effectiveness of the library service. Recently, the swift changes in information and communication technologies have affected the ways that libraries use to deliver library services (Peng, Wang, & Chiou, 2009). While traditional library service quality focused primarily on assessment of the collection (Nitecki, 1996), the conventional evaluation of library service quality has recently shifted to the assessment of library information service, information technology service, learning service, and so on (Mallya & Patwardhan, 2018).

Library administrators and scholars has been extensively used LibQUAL+ to assess the quality of library services. LibQUAL+ is known to have been developed by the Texas A&M University Library Research Team over four years from late 1999 to 2003. LibQUAL+ is supported by the Association of Research Libraries and considered a reliable and valid survey instrument (Thompson, Cook, & Thompson, 2002). However, LibQUAL+ is not without its critics (Detlor & Ball, 2015). Some scholars criticize LibQUAL+ instrument is confusing and not inherently insightful (Bower & Bradford, 2007). Therefore, it is essential for libraries to adopt an additional matrix to evaluate the services they provide. This study uses Importance-Performance Analysis (IPA) to measure library service as one of alternatives to LibQUAL+.

Importance-Performance Analysis (IPA) is a technique to evaluate customer satisfaction towards product or service of an organization (Martilla & James, 1977). IPA is particularly useful in improving service quality and establishing an efficient management strategy, and is widely used in many areas where customer satisfaction is important for the organization. IPA is an evaluation technique that compares and analyzes how consumers perceive importance and satisfaction with the material attributes of a product or service (Silva & Fernandes, 2012). The basic assumption of IPA is that the customers' level of satisfaction attributes is derived mainly from the expectations and judgments of product or service performance (Martilla & James, 1977). Researchers in LIS have also used IPA analysis to evaluate library service quality (Ihsan, Pulungan, & Afiahayati, 2018; Mallya & Patwardhan, 2018; Ro & Noh, 2019). Thus, we adopt the IPA to assess the quality of library services in this study.

The purpose of this study is to investigate the service quality of special libraries using IPA method. This study examined how library services satisfied library users' expectations. This study also applied the demographic factors to IPA method. The demographic factors included gender,

working years, working types, and age. Finally, the result of this study provides several important suggestions for better special library service.

II. Literature Review

1. Special Library

The question of what a ‘special library’ is can never be answered simply as libraries may be viewed as ‘special’ from the perspective of a specific subject, form of collection, function, institutional affiliation, and class of users (Singh, 2006). According to Korean Libraries Act, special library refers a library which aims at providing specialized library services in the specific field to the staff of the agency or organization or to the public. Bilawar (2013, 134) also defined special libraries as follows:

Special libraries are established to serve the needs of special clientele group namely the scientists, the technologist, the industrialist, the economist, the statistician... and its collection is limited to “special” subject (single/cluster of specific subject/ interrelated) through “special” services

In general, special libraries provide specialized information resources on a particular subject and support their sponsoring organization’s mission (Mount & Massoud, 1999). Such libraries are information centers for specific researchers who work to meet the objects of the organization (Ahmed & Soroya, 2015). In other words, their collections and services are more targeted and specific to the needs of their researchers (Mount & Massoud, 1999). Special libraries differ from other types of libraries because of their characteristics (Murray, 2013). To this end, Ahmed and Soroya (2016) indicated different characteristics of the special libraries with other libraries. They found that clients of special libraries are different from other libraries because they use the library for a specific purpose such as medicine, law, and justice. As a result, the collections and services of special libraries differ from other libraries.

However, special libraries are not without problems. They usually face drastic budget cuts, staff shortages, and space constraints, even though librarians in special libraries spend more time accessing and searching for information for their users (Ahmed & Soroya, 2015). Singh (2006)

introduced three major paradigm shifts facing special libraries: the transition from paper to electronic media, increasing demand for accountability and shrinking financial resources, and new forms of teamwork and job-sharing environment. He explained that these paradigm shifts have been caused by IT technology, global competition, and the perceived need to measure the productivity of knowledge and service workers (Singh, 2006).

Even though the importance of special libraries is increasing in modern society, research is presently lacking. Ahmed and Soroya (2015) analyzed the current status of print format sources of special libraries depending on the budgets of these libraries. They found that these budgets were dependent on their parent organizations and were insufficient, furthermore 19 special libraries did not have a fixed budget. As a result, the provision of journals and newspapers in special libraries usually were insufficient for their users. Moreover, Ahmed and Soroya (2016) explored the different ratio of professionals and non-professionals headings of non-academic special libraries in Pakistan. The results revealed that LIS professionals headed at 56 percent of the libraries while 44 percent of the heads of no professional education. Singh (2006) discussed the emerging trends and developments taking place in special libraries in India. The author analyzed that most Indian special libraries strived to possess cutting-edge technologies, such as digital resources, network, and subject gateways. For example, special libraries developed libraries own web sites and the sophisticated application of digital technology. Valenza, Boye, Curtis (2014) interviewed librarians at special libraries who curate large digital portals. The authors found that the concerns of these librarians' focused on the quality and integrity of their collections and the appropriate description of records. Kagrbo (2003) explored current service and problems of special libraries in Sierra Leone. The author revealed that special libraries in Sierra Leone have been in a crisis due to the challenges of Information and Communication Technology (ICT), inadequate finance, rising cost of materials, and lack of trained personnel. He suggested that the special libraries should be more active in their services, emphasizing on the delivery of information rather than its storages. Park and Kim (2019) investigate the special library service quality using LibQUAL+ and interview method. They revealed that library service by human factor had more influence on satisfaction than space service and information quality factor. As problems of special library service, they indicated inactivation of digital data, lack of data, data sharing problem, space problem, and lack of experts. Interestingly, Park and Nam (2020) examined the effect of cultural events of special libraries on satisfaction of users. The results indicated that participation in cultural events positively affect all users' satisfaction on special library services, intention to reuse, and recommend.

2. Importance–Performance Analysis (IPA)

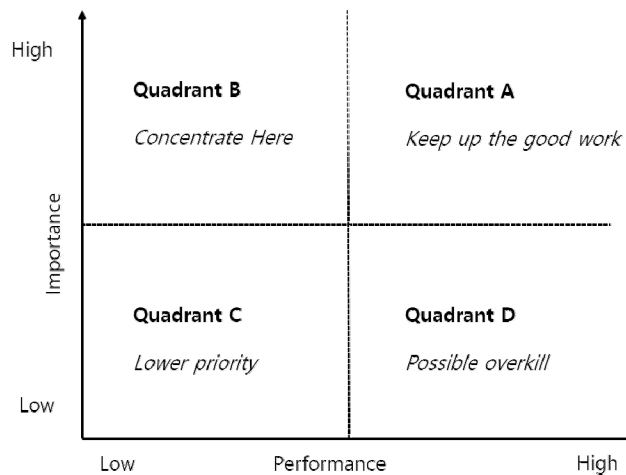
IPA is a simple and useful technology to improve service quality and to establish an efficient management strategy (Phadermrod, Crowder, & Wills, 2019). IPA helps service providers identify strengths and key areas for improvement to increase overall customer satisfaction (Martilla & James, 1977). Since Martilla and James (1977) first introduced IPA to marketing studies, it has been widely used in various industries around the world where customer satisfaction is important to a thriving business (Koh, Yoo, & Boger, 2009). IPA measures satisfaction via user surveys based on two components of attributes: the performance of the organization in providing its product or service and the importance of a product or service to a user (Martilla & James, 1977). A two-dimensional matrix is created by the intersection of these two components, where the x-axis indicates importance and the y-axis indicates performance (Phadermrod, Crowder, & Wills, 2019). Martilla and James (1977, 78) explained the four quadrants as follows:

- **Quadrant A.** *Keep up with the good work.* Customers value courteous and friendly service and are pleased with the service provider's performance.
- **Quadrant B.** *Concentrate here.* Customers feel that low service prices are very important but indicate low satisfaction with the service provider's performance.
- **Quadrant C.** *Low priority.* The service provider is rated low in terms of providing courtesy buses and rental cars, but customers now perceive this feature to be very important.
- **Quadrant D.** *Possible overkill.* The service provider is judged to be doing a good job of sending out maintenance notices, but customers attach only slight importance to them.

Thus, the IPA model is divided into four quadrants (see Fig. 1).

This tool can also be used to measure the importance-performance attributes of library services for further improvement in library service quality (Mallya & Patwardhan, 2018). Mallya and Patwardhan (2018) explained that if four quadrants are applied to library service, they will be as follows: Quadrant A represents success areas, where the special library is perceived as doing adequate work with services that library users value. Quadrant B is perhaps the most critical quadrant, as it delivers services that library users value but which suffer from poor performance ratings. Special library would examine to improve their library service in this area. Quadrant C contains services with low importance and low performance. Library services in this quadrant

do not require a great deal of significance for improvement because there will be less satisfaction from library users. Quadrant D represents low-importance services, but those that require high-performance service. This quadrant is overly emphasized by libraries, instead they should allocate resources to other quadrants.



〈Figure 1〉 Quadrants of Importance-Performance Analysis (IPA) model

There are numerous studies in the literature on the adoption of IPA in higher education and marketing, but only several studies focus on the measurement of library service quality using IPA. Ihsan, Pulungan, Afiahayati (2018) investigated library service quality using LibQUAL and IPA. The authors found that even though librarians were doing well in their work, users' complaints regarding library collections were high. They also suggested lessening the efforts to decorate the appearance of the library. Mallya and Patwardhan (2018) examined the perceived importance and experiences of library service quality of hospitality management students. This study adopted IPA as a research framework for evaluating students' perception of importance-performance of library service quality. The authors found that librarians should have the inclination to help users and understand the need for users to make the library a gateway for study, learning and research. Ro and Noh (2019) measured importance-performance of library users for complex cultural space to find factors which need to be improved. They found that libraries should provide balanced development and need to focus on priority improvements than a specific sector. This study also suggest to provide various programs and services considering visit characteristics.

III. Research Method

This study used survey method to investigate special library service quality. The questionnaire used for this study was revised from the three dimensions of LibQUAL+ and comprised 42 questions. The dimensions are as follows: librarian service, library space service, and information service. The questionnaire includes 11 additional questions about satisfaction and demographic information. Three experts with at least three years of experience working in a library were invited to ensure reliability and validity of questionnaire. They examined and modified the questionnaire. In addition, a pretest with 10 library users was conducted. Therefore, this study confirmed the content validity of the research method.

This research focused on special libraries located in governmental policy and research institutions in South Korea. The libraries defined in this research are limited to specialized libraries that provide researchers with information service on specialized subjects necessary for professional research activities of the parent organization. The sample consisted of researchers and employees of eight governmental policy and research institutes that were cooperate with this study. Librarians of the targeted institutes were actively involved in collecting questionnaires.

The survey participants were asked to rate the importance-performance of all variables on a 7-point Likert scale where; 1 is being low, and 7 is being high. Surveys were conducted among this sample from Oct. 2019 to Jan. 2020. The total number of a questionnaire distributed were 309, out of which 127 questionnaires were usable resulting in a response rate of 41%.

This study applied the demographic factors to IPA method for establishing more improved library service strategies. The demographic factors included gender, working years, working types, and age. As a result of analysis, a meaningful result was obtained from only one factor, working years. Therefore, this study analyzed the results of application of working year factor to IPA model. Regression analysis was also performed to compare with the results of IPA.

Data were analyzed using SPSS 21 for Windows. To measure reliability, Cronbach's alpha coefficient was obtained for each scale. Frequencies and percentages for demographic variables of gender, working years, working type, and age were calculated. This study defines a level of significance at an alpha of 0.05. IPA data were analyzed using T-test to determine if differences existed between the average of respondents' recognition of *Importance* and *Performance* of special library service. The regression analysis was conducted to measure the influences of attributes on overall user satisfaction.

IV. Results

1. Demographic Characteristic and t-test results

The demographic statistics were collected about each participant's gender, age, working years, and work type. Table 1 lists some characteristics of students who responded to the questionnaire. The sample consisted of 127 respondents, in which 65% are male and 35% female. The majority were between ages 40-49, and had worked at institutions for more than eight years.

<Table 1> Demographic statistics

Characteristics		Frequency	Percentage
Gender	Male	83	65%
	Female	44	35%
Working years	Less than three year	37	29.1%
	More than three years but less than eight years	43	33.8%
	More than eight years	47	37.1%
Working type	Research workers	105	82.6%
	Office workers	22	17.4%
Age	20s	23	18.1%
	30s	23	18.1%
	40s	58	45.7%
	Over 50s	23	18.1%
Total		127	100%

This study performed Cronbach's alpha test to measure the reliability of questionnaires. The results of reliability test indicated that all questionnaires were highly reliable for further analysis, as Cronbach's alpha coefficients for questionnaires ranged from 0.946 to 0.952.

The average of respondents' recognition of *Importance* of library service was 5.4 and recognition of *Performance* was 4.6. Thus, special library user's recognition of *Performance* of library service was not up to library user's perception of its *Importance*. Results of an independent T-test showed that respondents' recognition of *Importance* of library service was statistically and significantly higher than recognition of *Performance* except for three attributes: kind attitude and assistance, guide for new library service, and accessibility (see Table 2). These results indicated that users generally have high expectations for library services, and they perceived the performance of the library service quality insufficient.

〈Table 2〉 Results of Importance-Performance comparison and T-test

Attribute #	Attribute Description	Mean Importance Rating	Mean Performance Rating	T-test	
HQ1	Librarian Service	Kind attitude and assistance	5.13	5.01	1.12
HQ2		Professional knowledge	5.11	4.61	4.37**
HQ3		Active willingness to solve problems	5.38	4.85	4.54**
HQ4		Quick response to request	5.45	5.16	3.11*
HQ5		Response to complaints	5.45	4.91	5.20**
HQ6		Ability to provide educational programs	4.66	3.91	5.36**
HQ7		Guide for new library service	4.74	4.42	2.31
SQ1	Library space	Accessibility	5.55	5.46	0.68
SQ2		Efficient use of space	5.42	4.57	6.16**
SQ3		Learning & conference space	4.94	4.18	4.69**
SQ4		IT & multimedia facilities	5.43	4.43	5.83**
SQ5		Comfortability	5.26	4.35	5.54**
SQ6		Transparent space guide	5.49	4.39	6.81**
SQ7		Digital library service	5.49	4.43	6.68**
IQ1	Information Service	Up-to-date collections	5.65	4.83	5.60**
IQ2		Diversity of collections	5.43	4.45	7.19**
IQ3		Usefulness of collections	5.57	4.69	6.01**
IQ4		Sharing data with other libraries	5.43	4.35	7.14**
IQ5		Accuracy of retrieval service	5.74	4.86	6.40**
IQ6		Immediacy of Info service	5.70	4.98	4.90**
IQ7		Convenience of Info service	5.73	4.65	7.04**

2. Importance-Performance Analysis

This study adopted the IPA method to investigate the service quality of special libraries. As shown in Figure 2, library services in the upper right-most quadrant categorized as the “keep up the good work” were considered as part of a special library’s success. At the same time, the special libraries exhibited high levels of performance in *Information service* (IQ01, IQ03, IQ05, IQ06, IQ07), *Librarian service* (HQ04, HQ05), and *Library space* (SQ01). Special library users viewed the special library as doing a good job in providing *information services* but a poor job in *space services* because there was just one attribute (Learning & conference space) from *space service*. Special libraries continue to invest in maintaining this high level of performance included in this quadrant.

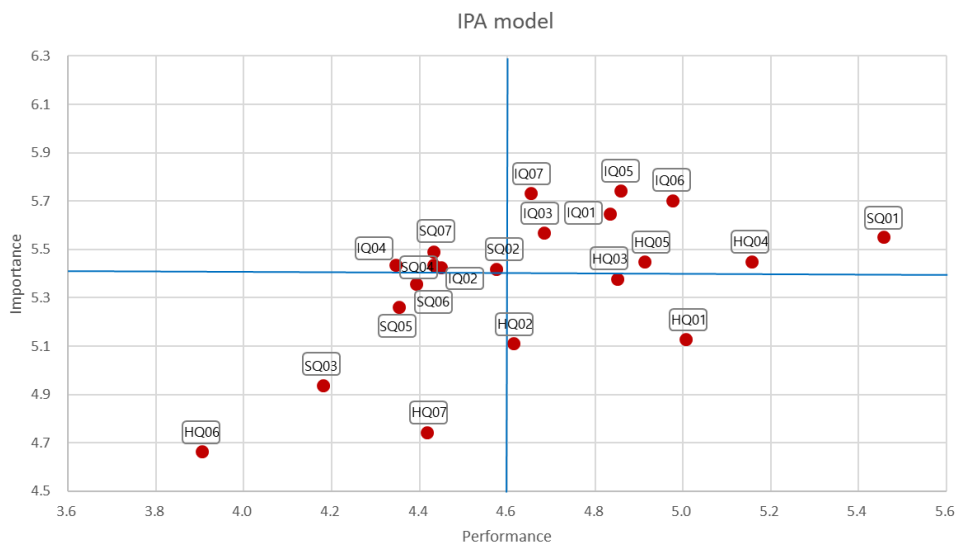
Second, library services in the upper left-most quadrant, “concentrate here”, were identified as needing immediate attention. This area indicated key success factors to improve library service quality, but performance levels were rather low. Library services identified in this area have

the potential to library users. This suggests that improvement efforts should be concentrated here, including *Information service* (IQ02, IQ04) and *Library space* (SQ02, SQ04, SQ07).

Third, library services fell in the “Lower priority” of the lower left quadrant was having low importance and low performance. This area is not perceived to be very important in the IPA model. Therefore, special libraries should not be overly concerned about this area, including *Librarian service* (HQ06, HQ07) and *Library space* (SQ03, SQ05, SQ06).

Fourth, library services that found in the lower right quadrant, “possible overkill”, had low importance, but where performance was relatively high. Library users view library services in this area to be of lesser concern. Special libraries do not need to devote too much energy towards enhancing the performance of library services in this area as their service quality was exceeding library users’ needs. Thus, special libraries should consider present efforts related to librarian services as being unnecessary in *Librarian service* (HQ01, HQ02, HQ03). No *Information service* and *Library space* was included in this quadrant.

Overall, special library users assessed that the *information services* were well provided but required more effort in several services related with space and provided by librarian. Special library users assessed that the three *librarian services* (kind attitude and assistance, professional knowledge, active willingness to solve problems) were no longer necessary for the libraries to improve services.



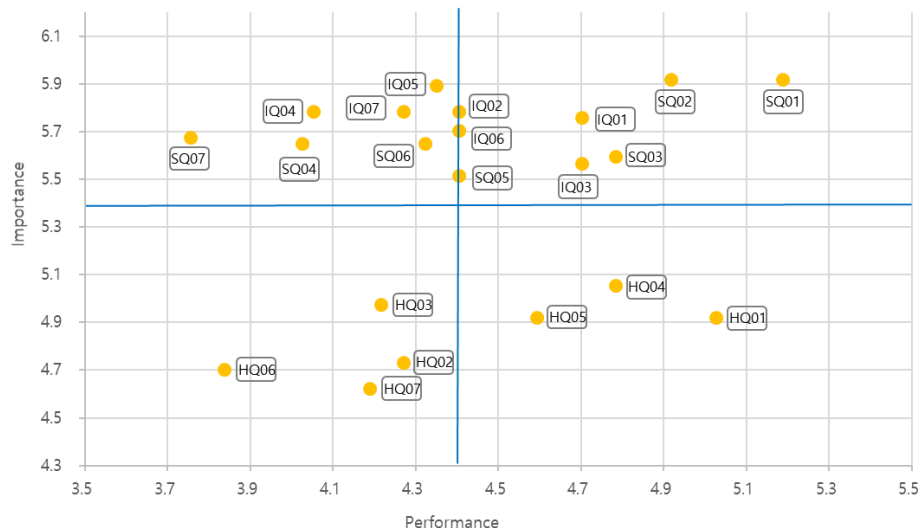
<Figure 2> Results of IPA for all library users

3. IPA with working year factor

Library services quality analysis with IPA were measured by working year factor to establish more improved library service strategies. Working years were divided into three categories: less than three years, between three and eight years, and more than eight years.

3.1 Library users with less than three years working experience

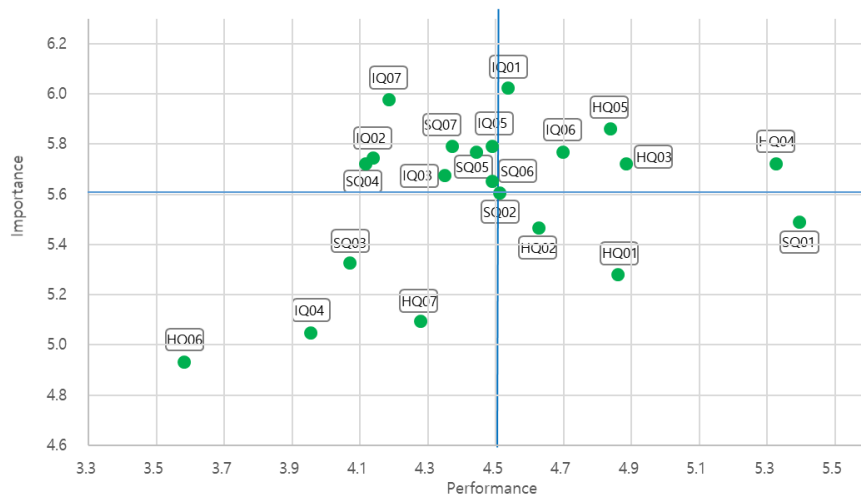
Special library services in the upper right-most quadrant, “keep up the good work”, were identified as high levels of performance. Special library users who worked less than three years chose eight attributes as part of a special library’s success, including *Information service* (IQ01, IQ02, IQ03, IQ06) and *Library space* (SQ01, SQ02, SQ03, SQ05). Interestingly, those attributes are associated with *library space* and *information service*, but no *librarian service* was included (see Figure 3). Also, the “possible overkill” areas of the lower right quadrant showed that three attributes were related to *Librarian service* (HQ01, HQ04, HQ5). The “low-priority” areas of the lower left quadrant included four attributes in *Librarian service* (HQ02, HQ03, HQ06, HQ07). Thus, special library users with less than three years working experience considered that that library service provided by librarians was unnecessary. They may require some improvement with *librarian service* regarding the results.



〈Figure 3〉 Results of IPA for library users working less than three years

3.2 Library users between three and eight years working experience

Special library users who worked more than three years and less than eight years chose five attributes for the upper right-most quadrant categorized as the “keep up the good work”, including *Librarian service* (HQ03, HQ04, HQ05) and *Information service* (IQ01, IQ06). This area is considered as part of a special library’s success. They selected eight attributes for the “concentrate here” quadrant in the upper left-most area, including *Library space* (SQ04, SQ05, SQ06, SQ07) and *Information service* (IQ02, IQ03, IQ05, IQ07). This area is important to improve library service quality because performance levels are relatively rather low. Four attributes were fell in the “Lower priority” of the lower left quadrant, including *Librarian service* (HQ06, HQ07), *Information service* (IQ04), and *Library space* (SQ03). Finally, they considered three attributes as being unnecessary services, which included *Librarian service* (HQ01, HQ02) and *Library space* (SQ01). Special libraries do not need to devote too much energy towards enhancing the performance of those library services in this area. Thus, special library users who have worked between three to eight years may require to improve library services from some *Librarian service*, *Information service*, and *Library space*.

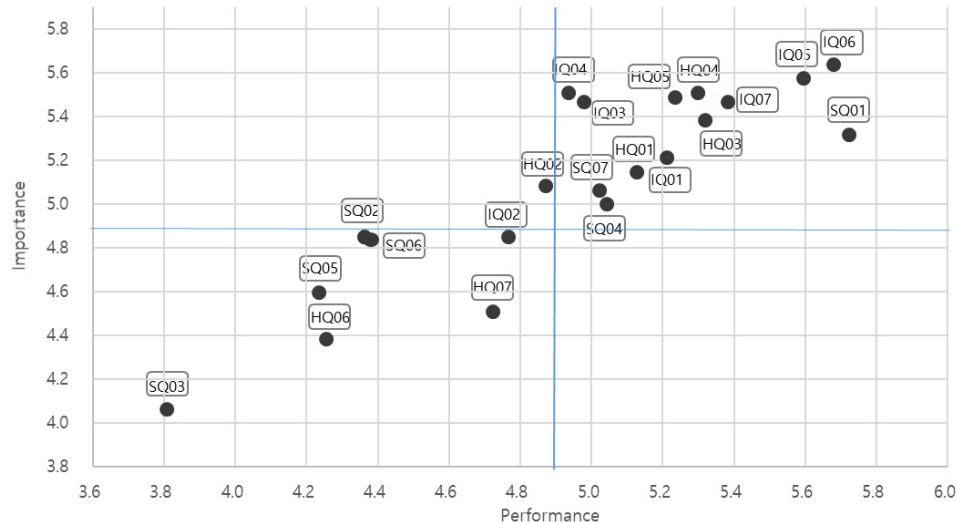


〈Figure 4〉 Results of IPA for library users working between three to eight years

3.3 Library users more than eight years working experience

Special library users who worked for more than eight years generally gave satisfactory responses to library services. Interestingly, they included no attribute in the “possible overkill” quadrant

where represents low-importance services, but with high-performance services. They considered that none of the library services was overly emphasized by the libraries to allocate resources to other quadrants. In addition, they included thirteen attributes of *Librarian service* (HQ01, HQ03, HQ04, HQ05), *Library space* (SQ01, SQ04 SQ07), and *Information service* (IQ01, IQ03, IQ04, IQ05, IQ06, IQ07) in the “keep up the good work” quadrant, where was considered as part of a special library’s success. The results showed that they were generally satisfied with all library services. Special library users who had worked for more than eight years also chose seven attributes in the “Lower priority” of quadrant, where represented low importance and low performance, including *Librarian service* (HQ06, HQ07), *Library space* (SQ02, SQ03 SQ05, SQ6), *Information service* (IQ02). Since this area is not perceived to be very important in the IPA model, special libraries should not be overly concerned about this. One attribute of *Librarian service* (HQ02) was included in the upper left-most, “concentrate here” quadrant, where were identified as needing immediate attention. This area indicated key success factors to improve library service quality, but performance levels were rather low.



<Figure 5> Results of IPA for library users working more than eight years

Interestingly, the results of IPA analysis with working year factor revealed that special library users showed different satisfaction with library services depending on their working years. Only those who have worked more than eight years were generally satisfied with librarian services.

However, special library users with less than three years working experience particularly expressed dissatisfaction with the service provided by librarians.

4. Regression analysis

A regression analysis was conducted to compare with the results of IPA and to examine which of the three library services (*librarians service, library space, information service*) influenced overall user satisfaction. The results of regression analysis were shown in Table 3. This model explained a considerable amount of variance ($R^2 = .625$). The results revealed that *librarian service* and *information service* had a significantly influence on overall satisfaction. In detail, *information service* (standardized coefficient = 0.507) had the more influence on overall satisfaction than *librarian service* (standardized coefficient = 0.237). However, library space did not appear to have a statistically significant influence on overall satisfaction with a significance level of 0.05. This result demonstrated that special library users required additional efforts in *Library space* service as revealed by IPA.

〈Table 3〉 Regression Analysis

Division	R ²	F value	Unstandardized coefficient	Standard error	Standardized coefficient	T value
			B		β	
Model	.625	68.375**				
(constant)			.055	.357		
Librarian service			.282	.099	.237	2.855*
Library space			.157	.089	.130	1.758
Information service			.591	.100	.507	5.888**

*p < .05, **p < .01.

The regression analysis was used to measure the degree of influence of the attributes on overall user satisfaction according to working years (*see* Table 4). All three models explained a considerable amount of variance. The results of regression revealed that *library space* service and *information service* had a significant influence on overall satisfaction of special library users who worked less than three years. *Information service* (standardized coefficient = 0.610) had more influence on overall satisfaction than *library space* (standardized coefficient = 0.520). However, *librarian service* did not appear to have a statistically significant influence on overall

satisfaction with a significance level of 0.05. Also, all *librarian service*, *library space*, and *information service* were all significant predictors for overall satisfaction of special library users who worked more than three years and less than eight years. *Information service* (standardized coefficient = 0.465) had the most influence on overall satisfaction than *librarian service* (standardized coefficient = 0.330) and *library space* (standardized coefficient = 0.255). Finally, the results of regression revealed that *librarian service* (standardized coefficient = 0.876) had a significant influence on overall satisfaction of special library users who worked more than eight years. However, *library space* service and *information service* did not appear to have a statistically significant influence on overall satisfaction with a significance level of 0.05.

The results of regression analysis with working year factor were consistent with IPA analysis.

Librarian service did not appear to have a statistically significant influence on satisfaction for special library users with less than three years work experience. Also, those who have worked between three to eight years were significantly influenced by all three dimensions. Only users with more than eight years work experience generally satisfied with *Librarian service*.

<Table 4> Regression analysis according to working years

Division	R ²	F value	Unstandardized coefficient	Standard error	Standardized coefficient	T value
			B		β	
Model(less 3 years)	.812	47.362**				
(constant)			.366	.486		.753
Librarian service			-.300	.156	-.251	-1.926
Library space			.671	.208	.520	3.219**
Information service			.603	.165	.610	3.660**
Model(3 to 8 years)	.750	39.041**				
(constant)			-1.254	.591		-2.123
Librarian service			.409	.131	.330	3.110**
Library space			.309	.125	.255	2.473*
Information service			.588	.163	.465	3.600**
Model(more 8years)	.548	17.366**				
(constant)			1.243	.862		1.441
Librarian service			1.002	.230	.876	4.352**
Library space			-.282	.165	-.259	-1.717
Information service			.062	.244	.041	.255

*p < .05, **p < .01.

V. Conclusion and Discussion

1. Conclusion

This study investigated the service quality of special libraries using Importance-Performance Analysis (IPA) method. This study applied the demographic factors to IPA method for establishing more improved library service strategies. The results indicated that special library user's recognition of performance of library service was not up to their perception of its importance. This means that special library users had high expectations for library services, but they perceived the performance of the library service quality insufficient. The results using the IPA method demonstrated that special library users assessed that *information services* were well provided but required more efforts in *librarian* and *space* services. These results are consistent with previous study of Park and Kim (2019). They revealed that library service by human and space factor had important influence on satisfaction. Special library users assessed that the three *librarian* services (kind attitude and assistance, professional knowledge, active willingness to solve problems) were no longer necessary for the libraries to improve. Interestingly, when the library services were measured by working years, special library users with less than three years working experience particularly expressed dissatisfaction with *librarian service*. They included all *Librarian service* into the “low-priority” and “possible overkill” quadrant. The results of regression analysis supported the results of IPA. *Librarian service* did not appear to have a statistically significant influence on satisfaction for special library users with less than three years work experience. On the contrary, special library users who had worked for more than eight years considered that none of the library services was overly emphasized by libraries. They rather generally satisfied with *Librarian service*. Also, those who have worked between three to eight years were significantly influenced by all three service dimensions. The results of regression analysis with working year factor were consistent with IPA analysis.

2. Discussion

The findings of this study regarding library service quality support that IPA is adoptable for a LIS research framework. Special library users expected library services to be good enough to fulfill their information needs and demanded better service from libraries. Based on these

findings, the study makes several meaningful suggestions to improve library services.

First, since librarian services were recognized as a particularly unsatisfied service by new special library users, continuous education and training for librarians are required. Special librarians should have a good understanding of their roles and be equipped with the ability to provide the necessary services. Moreover, in the present era of information overload, special librarians should be special analysts who can provide value from the undigested information to library users.

Second, convenient and modern library facilities are required. The research results showed that special library users had relatively low satisfaction with library space. Library users demanded space for learning, conference, IT, and multimedia. Specialized libraries affiliated with policy and research institutes usually have limited financial support due to budget constraints and other problems. However, considering the unique competencies of special libraries in our society, efforts should be made to actively equip them with modern facilities to create an atmosphere suitable for research and work.

Finally, library users rated information services as very important and asked for increased data sharing services of professional materials. Therefore, it is required that special libraries not only cooperate with related research institutes, but also develop e-resources in specialized subject area with other libraries to meet the information needs of users.

This study is meaningful in that it examined the practical problems of special library services. In addition, this research represents one of a few comprehensive studies using IPA method to suggest analytical and scientific explanations rather than a descriptive approach, which is common to the literature in this area. The findings of this study will benefit special librarians who are seeking an effective method to provide services to library users. However, as a limitation of this study, this study was able to apply only working year factor to IPA method. Therefore future studies should conduct a more carefully planned research to extend those factors and to better understand the situation of special libraries. Since special libraries perform an important role in the development and growth of ministries, corporations and research organizations, there should be more research related to special libraries. The standardized procedures and measures of the IPA method will also allow it to be easily repeated in the future.

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