Survey on Public Libraries Managed by Outsourcing, with a Focus on Library Usage, Opening Days, and Directors' Qualifications

Yuhiro Mizunuma
Graduate School of Library, Information and Media Studies
University of Tsukuba
Kasuga, Tsukuba-city, Ibaraki-ken, JAPAN
yuhiro@klis.tsukuba.ac.jp

Keita Tsuji
Faculty of Library, Information and Media Science
University of Tsukuba
1-2 Kasuga, Tsukuba-city, Ibaraki-ken, JAPAN
keita@slis.tsukuba.ac.jp

Abstract—In Japan, public libraries have long been managed by local governments. However, in 2003, organizations including private enterprises took over the management of libraries and introduced an outsourcing system called the "designated administrator system." Today, it is being debated whether this outsourcing system is appropriate for use in libraries, wherein many argue that it is inappropriate. To provide basic data for this discussion, we used cross-sectional analysis and time series analysis on almost all public libraries in Japan in order to clarify the differences between public libraries managed by the outsourcing system ("outsourcing libraries") and those managed by local governments ("direct management libraries"). We focused on the changes made after the introduction of outsourcing, including differences in library usage, number of opening days, and director qualifications and workload. The results show that the number of opening days and the percentage of certified directors in outsourcing libraries were higher than those in direct management libraries. Our research also indicated that library usage, number of opening days, and the number of certified directors tended to increase after an outsourcing system was introduced.

Keywords—designated administrator system; library management; public libraries

I. INTRODUCTION

In Japan, public libraries have long been managed by local governments. However, in 2003, organizations including private enterprises took over the management of libraries and introduced an outsourcing system called the "designated administrator system." Although the number of public libraries managed under this outsourcing system (henceforth "outsourcing libraries") is increasing, many argue that it is an inappropriate system for public libraries due to concerns over degradation of services, decrease in staff expertise, and decline in the level of cooperation between libraries. Nevertheless, few

studies have examined the performance of outsourcing libraries using largescale comprehensive samples.

Within this context, we used almost all Japanese public libraries as data and conducted two types of analysis: (1) cross-sectional analysis and (2) time series analysis, with a focus on library usage, opening days, and director qualifications. For the cross-sectional analysis, we analyzed the differences between outsourcing libraries and "traditional" libraries directly managed by local governments (henceforth "direct management libraries") at a certain point in time. More specifically, we obtained statistics on library usage, opening days, and directors' qualifications, and compared statistics from approximately 300 outsourcing libraries with those from approximately 2,000 direct management libraries (the exact number varies depending on the investigation). This data was obtained from the 2015 edition of *Statistics on Libraries in Japan* [1], published by the Japan Library Association. For the time series analysis, we analyzed changes in statistics from approximately 200 libraries before and after they introduced outsourcing. This data was obtained from the 2003 to 2015 editions of *Statistics on Libraries in Japan* [1]. The following five types of statistics were considered to determine library usage: (a) gate count, (b) number of loans, (c) number of books borrowed through Inter-Library Loan (ILL), (d) number of books loaned through ILL, and (e) number of reference transactions. We examined the number of opening days per year and whether the libraries were open on holidays. Finally, we analyzed whether the directors held librarian certifications and were working as full-time equivalent employees.

II. RELATED STUDIES

In Japan, some librarians working in outsourcing libraries reported changes after the introduction of the outsourcing system [2][3]. In addition, Maeda (2007) [4], the Japan Library Association (2007) [5], and Koyama and Nagata (2008) [6] used questionnaires to investigate the merits of outsourcing

libraries or the changes that occurred after outsourcing systems were introduced. These investigations ascertained that outsourcing systems improved services; opening hours expanded and library usage increased. As we previously mentioned, there are many discussions regarding outsourcing libraries. In order to provide basic data for such discussions, statistical analysis based on large and encompassing data should be conducted. However, these studies had relatively small samples. Therefore, in this study, we conducted statistical analysis based on large and encompassing data. On the other hand, Mouri and Ohba (2015) [7] conducted a comparative study focusing on certified directors in outsourcing libraries and those in direct management libraries. However, unlike our study, they did not conduct time series analyses.

III. METHOD

We conducted two kinds of analysis: cross-sectional analysis and time series analysis. In the following subsections, we explain each method.

A. Cross-sectional Analysis

Through the cross-sectional analysis, we investigated the differences between outsourcing and direct management libraries at a certain point in time. We selected the 2015 edition of *Statistics on Libraries in Japan* because it was the most recent edition available when we started our research. This edition listed the FY 2014 gate count, number of loans, opening days per year. Information on holiday openings and whether the directors held library certifications and worked full-time was included as of April 2015. We took the 3,253 public libraries listed in the *Statistics on Libraries in Japan* (2015) as our sample and classified them as either outsourcing or direct management libraries on the basis of how they were categorized in *The Report on Public Libraries Managed by the Designated Administrator System* (2015) [8].

We selected the following five usage statistics as indications of library usage: (1) gate count, (2) number of loans, (3) number of books borrowed through ILL, (4) number of books loaned through ILL, and (5) number of reference transactions. For the cross-sectional analysis, we considered library size by dividing the number of usage statistics by the population of the municipality where the library is located, and then calculated the usage statistics per resident for each library [because larger libraries tend to have more use as, in general, they have many residents (i.e., users) around them]. We compared the mean and median of usage between outsourcing and direct management libraries. We also compared the mean and median of the numbers of open days between both kinds of libraries. We further compared the rates of openings during holidays and whether directors held library certifications and worked full-time.

B. Time Series Analysis

For the time series analysis, we investigated changes after the introduction of the outsourcing system. We used 3,811 public libraries listed in the annual *Statistics on Libraries in Japan* (2005–2015) as our sample because the 2005 edition includes the data on the first outsourcing library and the 2015 edition is the most recent edition available. We classified the libraries as either outsourcing or direct management libraries on the basis of *The Report on Public Libraries Managed by the Designated Administrator System* (2016) because it was the latest edition available. This report also indicated the time when each library introduced outsourcing.

To track library usage and opening days, we calculated the increase rate (IR) for each category. The IR is defined as follows:

$$IR = \frac{A_2 - B_2}{B_2} \times 100 \ (\%)$$

where B_2 is the mean during the two years before the introduction of outsourcing and A_2 is the mean of the usage statistics for the two years after its introduction. For example, the Chiyoda Library introduced outsourcing in 2007; therefore, we calculated the mean of the previously mentioned usage statistics in 2005 and 2006. There were 280,216 and 259,788 gate counts in 2005 and 2006, respectively. Therefore, the mean number of gate counts in these two years was ((280,216 + 259,788)/2 =) 270,002. Similarly, the mean number of gate counts in the two years following the introduction of outsourcing was 921,464 (for years 2008 and 2009). Therefore, the IR of gate counts for Chiyoda Library is ((921,464 - 270,002)/270,002 * 100 =)241.3. We assume that if the IR is greater than zero, library usage increased after the introduction of outsourcing.

To measure whether they were open on holidays and whether the directors held librarian certifications and were working full-time, we first measured four years of patterns for each library (two years before the transition to outsourcing and two years after). For example, Chiyoda Library's status of directors holding library certification in 2005, 2006, 2008, and 2009 were No, No, Yes, and Yes, respectively. Therefore, the pattern is NNYY (N means No and Y means Yes). There were 16 possible patterns, (1) NNNN, (2) NNNY, (3) NNYY,..., (16) YYYY. We calculated the rate of each pattern for outsourcing libraries and assumed that if the pattern was NNYY, a non-certified director was assigned until the introduction of outsourcing and a certified director was assigned after outsourcing.

In addition, we also calculated the IRs and the rate of each pattern at direct management libraries, comparing them with those of outsourcing libraries. Since there was no comparable point in time when direct management libraries underwent a change in system, we calculated the IRs and the rate of each pattern for every year from 2005 to 2015.

IV. RESULTS

In this section, we show the results concerning library usage, opening days, and director statistics.

A. Results of Library Usage

The results of cross-sectional analysis concerning (1) gate count, (2) number of loans, (3) number of books borrowed through ILL, (4) number of books loaned through ILL, and (5) number of reference transactions, for both outsourcing and

direct management libraries are provided in Table I. In this table, "N" represents the number of libraries and the double asterisks in the "Mean" column represent significant differences based on Welch's test and those in the "Median" column represent the significant differences based on the Brunner-Munzel test. The asterisks "*" and "**" in these columns represent the differences at 0.05 and 0.01 significance levels, respectively. Concerning the number of books borrowed through ILL, the mean and median of direct management libraries (0.0169 and 0.0054, respectively) were higher than those of outsourcing libraries (0.0095 and 0.0024, respectively). For the number of books lent through ILL, the mean and median of direct management libraries (0.0090 and 0.0032, respectively) were higher than those of outsourcing libraries (0.0061 and 0.0016, respectively). There were significant differences at the 0.01 level, suggesting that direct management libraries borrow more library materials from other libraries and lend more library materials to other libraries than outsourcing libraries do.

The IRs of individual library usage are provided in Table II. This table shows the means and medians of IRs (by percentage) for outsourcing and direct management libraries. The means and medians of IRs for usages at outsourcing libraries were all more than zero, whereas the median of IR for gate count at direct management libraries was less than zero (-2.6%). The means of the IRs for four usages at outsourcing libraries were higher than the IRs at direct management libraries. The mean of the IR for gate count at outsourcing libraries was 30.7% while that for direct management libraries was 6.6%. In addition, the medians of the IRs for all usages at outsourcing libraries were higher than those for direct management libraries. The median of the IR for the number of loans was 11.1% for outsourcing libraries while that for direct management libraries was 0.6%. These results suggest that library use tends to increase after the introduction of outsourcing.

B. Results of Opening Days

The results of cross-sectional analysis with regard to opening days at outsourcing and direct management libraries are provided in Table III. Results of whether they were open on holidays are provided in Table IV. In Table IV, the columns indicate the rates of libraries that do not open on holidays and are not planning to ("No"); the rates of libraries that open on six holidays or less ("Yes (=< 6 days)"); the rates of libraries that open on more than six holidays ("Yes (>=7 days)"); and the rates of libraries that do not open on holidays but are planning to ("Planning"). The double asterisks represent significant differences based on the Z-test for proportions.

Table III shows that the means and medians for opening days at outsourcing libraries (309.0 and 303.0, respectively) were significantly higher than those for direct management libraries (288.8 and 290.0, respectively). In addition, Table IV shows that the rates of outsourcing libraries that open on more than six holidays, "Yes (>=7 days)," was (94.4%), which was significantly higher than that of direct management libraries (64.7%). The rates for "No" and "Yes (=< 6 days)" at direct

management libraries (22.6% and 12.4%, respectively) were significantly higher than those of outsourcing libraries (4.2% and 1.4%, respectively). These results suggest that more outsourcing libraries tend to be open on holidays while direct management libraries tend to be closed on holidays or open on fewer holidays.

The results of the time series analysis are provided in tables V and VI. The IRs of opening days are provided in Table V while the rates of each pattern concerning holiday opening are provided in Table VI. In this table, a library is not open on holidays and is not planning to ("N"), open on six holidays or less ("6"), open on more than six holidays ("7"), or not open on holidays but is planning to ("P"). The numbers in parentheses represent the number of libraries. For instance, "NN77" for outsourcing libraries was "21.8 (78)," which represented 78 outsourcing libraries that were not open on holidays during the two years before the introduction of the outsourcing system but were open on more than six holidays during the two years after introduction. Such libraries account for 21.8% of outsourcing libraries for all patterns.

Due to space limitations, we omitted the line if there was no outsourcing library that corresponds to a pattern. Table V shows that the means and medians of the IRs of opening days for outsourcing libraries were 4.5% and 2.3%, respectively, whereas those for direct management libraries were 1.5% and 0.4%, respectively. As previously mentioned, 21.8% of outsourcing libraries were not open on holidays during the two years before the introduction of the outsourcing system but were open on more than seven holidays in the two years after introduction, whereas only 2.5% of direct management libraries followed this pattern. These results suggest that opening days tended to increase after the introduction of outsourcing and more libraries began to open on holidays after the introduction of the outsourcing system.

C. Results of Directors

The results of cross-sectional analysis concerning whether the directors held librarian certifications are provided in Table VII and the results concerning whether the directors were working full-time are provided in Table VIII. Significant differences were observed between outsourcing and direct management libraries in the rates of library certification as well as full-time versus part-time employment. Table VII shows that the rate of outsourcing libraries where the director held a librarian certification was 58.7%, whereas at direct management libraries, the rate of certification was 25.1%. Table VIII shows that the rate of outsourcing libraries where the director worked full-time was 91.9%, whereas at direct management libraries it was 84.9%. These results suggest that more directors of outsourcing libraries tend be certified librarians and work full-time as compared to directors of direct management libraries.

The results of the time series analysis are provided in tables IX and X, wherein "N" and "Y" represent "No" and "Yes," respectively. The line of "NNYY" in Table IX shows that 31.5% of the directors of outsourcing libraries did not hold librarian certification during the two years before the

introduction of outsourcing system but did hold librarian certification during the two years after its introduction, whereas 5.0% of the directors of direct management libraries did so. On the other hand, the line of "YYNN" in the Table IX shows that only 4.2% of the directors of outsourcing libraries held librarian certification during the two years before the introduction of the outsourcing system but did not hold librarian certification during the two years after its introduction. These results suggest that outsourcing libraries tended to install certified directors after the outsourcing system was introduced.

Further, the line of "NNYY" in Table X shows that 6.3% of the directors of outsourcing libraries were not working full-time during the two years before the introduction of the outsourcing system but were working full-time during the two years after its introduction, whereas only 2.0% of the directors of direct management libraries made the transition to full-time work in that same period. In addition, the line of "YYNN" in Table X shows that 4.3% of the directors at outsourcing libraries were working full-time during the two years before the introduction of the outsourcing system but were not working full-time during the two years after its introduction, whereas 1.9% of the directors of direct management libraries made the same shift. These results suggest that outsourcing libraries tend to change the director's employment form of full-time with the introduction of the outsourcing system.

Table I Results of the cross-sectional analysis of library usage per capita

		N	Mean	Median
The gate count	Outsourcing libraries	381	1.534	0.563
	Direct management libraries	2,149	1.204	0.584
Number of loans	Outsourcing libraries	417	2.253	1.015
	Direct management libraries	2,629	2.158	1.149
Number of ILL-borrowings	Outsourcing libraries	385	0.0095	0.0024
	Direct management libraries	2,150	0.0169 **	0.0054 **
Number of ILL-lendings	Outsourcing libraries	333	0.0061	0.0016
	Direct management libraries	1,879	0.0090 **	0.0032 **
Number of reference transactions	Outsourcing libraries	374	0.0186	0.0057
	Direct management libraries	2,089	0.0209	0.0064

Table II Results of the time series analysis of library usage

		N	Mean	Median
The gate count	Outsourcing libraries	236	30.7	9.7
	Direct management libraries	12,609	6.6	-2.6
Number of loans	Outsourcing libraries	256	20.6	11.1
	Direct management libraries	17,853	51.6	0.6
Number of ILL-borrowings	Outsourcing libraries	251	65.2	16.7
	Direct management libraries	15,460	60.6	11.6
Number of ILL-lendings	Outsourcing libraries	198	782.2	43.1
	Direct management libraries	12,278	152.0	14.2
Number of reference transactions	Outsourcing libraries	178	665.7	24.1
	Direct management libraries	12,262	170.5	1.7

Table III Results of the cross-sectional analysis of opening days

	N	Mean	Median
Outsourcing libraries	415	309.0 **	303.0 **
Direct management libraries	2,738	288.8	290.0

Table IV Results of the cross-sectional analysis of whether libraries were open on holidays

	N	No	Yes (=<6 days)	Yes (>=7days)	Planning
Outsourcing libraries	431	4.2%	1.4%	94.4% **	0.0%
Direct management libraries	2818	22.6% **	12.4% **	64.7%	0.2%

Table V Results of the time series analysis of opening days

	N	Mean	Median
Outsourcing libraries	259	4.5	2.8
Direct management libraries	18,272	1.5	0.4

Table VI Results of the time series analysis of whether libraries were open on holidays

	Outsourcing libraries		Direct management libraries	
NNNN	3.6	(13)	24.7	(5,168)
NN66	0.3	(1)	1.7	(351)
NN7N	0.3	(1)	0.0	(3)
NN77	21.8	(78)	2.5	(521)
NNPP	0.3	(1)	0.1	(18)
N677	0.3	(1)	0.3	(56)
N777	1.1	(4)	1.4	(293)
NPNN	0.3	(1)	0.0	(1)
6NNN	0.3	(1)	0.4	(77)
6666	1.7	(6)	9.6	(1,999)
6667	0.6	(2)	0.9	(184)
6677	5.6	(20)	2.5	(517)
6777	0.6	(2)	1.6	(343)
7777	63.1	(226)	47.1	(9,839)
P777	0.3	(1)	0.3	(69)

Table VII Results of the cross-sectional analysis of whether directors held librarian certifications

	N	No	Yes
Outsourcing libraries	431	41.3%	58.7% **
Direct management libraries	2792	74.9% **	25.1%

Table VIII Results of the cross-sectional analysis of whether directors worked full-time

	N	No	Yes
Outsourcing libraries	419	8.1%	91.9% **
Direct management libraries	2787	15.1% **	84.9%

Table IX Results of the time series analysis of whether directors held librarian certifications

	Outsourcing libraries		Direct management libraries	
NNNN	39.3	(140)	66.5	(13,857)
NNNY	4.5	(16)	3.1	(647)
NNYN	2.5	(9)	1.0	(217)
NNYY	31.5	(112)	5.0	(1,051)
NYNN	0.3	(1)	0.9	(191)
NYNY	0.0	(0)	0.1	(22)
NYYN	0.0	(0)	0.6	(125)
NYYY	1.4	(5)	1.9	(395)
YNNN	0.6	(2)	2.6	(550)
YNNY	0.0	(0)	0.3	(57)
YNYN	0.0	(0)	0.1	(12)
YNYY	1.4	(5)	0.4	(88)
YYNN	4.2	(15)	4.4	(908)
YYNY	0.3	(1)	0.4	(88)
YYYN	1.4	(5)	1.6	(341)
YYYY	12.6	(45)	11.0	(2,304)

Table X Results of the time series analysis of whether directors worked full-time

	Outsourcing libraries		Direct management libraries	
NNNN	3.2	(11)	10.0	(2,080)
NNNY	0.6	(2)	0.7	(152)
NNYN	0.0	(0)	0.2	(37)
NNYY	6.3	(22)	2.0	(410)
NYNN	0.3	(1)	0.2	(34)
NYNY	0.3	(1)	0.0	(7)
NYYN	0.0	(0)	0.1	(14)
NYYY	0.9	(3)	1.2	(253)
YNNN	0.0	(0)	1.0	(204)
YNNY	0.0	(0)	0.2	(34)
YNYN	0.0	(0)	0.0	(0)
YNYY	0.9	(3)	0.3	(62)
YYNN	4.3	(15)	1.9	(395)
YYNY	0.0	(0)	0.3	(64)
YYYN	0.3	(1)	1.1	(225)
YYYY	83.1	(290)	80.9	(16,825)

V. DISCUSSIONS

Many people in Japan argue that introducing the outsourcing system to public libraries is inappropriate because it may degrade library services, decrease the expertise of librarians, and reduce cooperation with other libraries. In this section, we focus on these arguments.

The first issue concerns the degradation of library services. Our results indicate that the introduction of the outsourcing system to libraries does not degrade services. The results of our cross-sectional analysis indicate that outsourcing libraries are open on more days than direct management libraries, including holidays. In addition, the results of time series analysis suggest that the number of opening days tended to increase after the introduction of outsourcing. While the cross-sectional analysis indicated that some usages, such as ILL borrowing, were higher at direct management libraries, the time series analysis showed that library usage did tend in increase after outsourcing.

The second area of contention concerns the accusation that outsourcing library management decreases the expertise of librarians. However, we found that the designated administrator system did not lead to a decrease in expertise, at the least among directors. The results of cross-sectional analysis on the directors suggested that a higher number of directors at outsourcing libraries held librarian certification and worked full-time when compared to directors at direct management libraries. In addition, the results of time series analysis indicate that outsourcing libraries tended to employ certified directors with the introduction of the outsourcing system.

Lastly, some worry that outsourcing libraries will cooperate less with other libraries. Nevertheless, our results indicate that ILL lending and borrowing actually increased after the introduction of outsourcing although the degree of activity may still be under the national average. As previously mentioned, the results of cross-sectional analysis concerning library usage suggest that ILL borrowing and ILL lending at direct management libraries was higher than those at outsourcing libraries. However, the results of time series analysis suggest that library usage, including ILL borrowing and ILL lending, tended to increase after the introduction of outsourcing. We might conclude that ILL services at outsourcing libraries were inactive before the introduction of the outsourcing system. If we assume the rates of ILL borrowing and ILL lending as indexes of cooperation, it can be concluded that cooperation with other libraries was inactive before the introduction of the system in outsourcing libraries, and became active afterwards.

VI. CONCLUSIONS

In this study, we conducted cross-sectional analysis and time series analysis with a focus on library usage, opening days, and director qualifications. This study clarified several differences between outsourcing and direct management libraries. The results can be used as basic data for local governments that are considering the introduction of the designated administrator system. This study also found that some arguments regarding the outsourcing system were incorrect. We expect that discussions concerning outsourcing libraries will become more constructive based on our results.

There are five limitations of this study: (1) only quantitative analyses were conducted, (2) the cause-effect relationship was not proven, (3) many other library services were left unexamined, (4) library budgets were not investigated, and (5) only the current situation was clarified (tendencies may change). It would be beneficial for future studies to examine other library services, such as those provided to minorities, library budget, and feelings of satisfaction among users as well as librarians. Through these studies, the appropriateness of switching from direct management libraries to outsourcing libraries can be determined.

[1] Japan Library Association. Statistics on Libraries in Japan 2003-2005 edition, 2004-2016. (text in Japanese)

[2] M. Takahiro. Further seriousness of seven-year-old designated administrator: The Yamanakako public library for the people's creativity and the society for digitization of local materials (NPO) and the future of library. Social Education, 2010, 65(10), pp.66-69. (text in Japanese).

[3] H. Yorozuya. How is regular staffs in the regularization: with the designated administrator. Everyone's library, (441), pp.45-49. (text in Japanese).

[4] H. Maeda. "A Study on the Actual State of Introduction of Designation Administrator System to Public Libraries," Summaries of Technical Papers of Annual Meeting Architectural Institute of Japan. E-1, Architectural Planning and Design I, Building Types and Community Facilities, Planning and Design Method Building Construction System Human Factor Studies Planning and Design Theory 2007, 2007, pp.109-110. (text in Japanese).

[5] Committee on library policies of Japan Library Association. "Results of the questionnaire on introduction of designated management system in libraries," Libraries Today, 2007, 45(1), pp. 41-51. (text in Japanese).

[6] N. Koyama and H. Nagata. Report on Public Library Management, 2008, 34p. http://www.slis.tsukuba.ac.jp/grad/assets/files/project/h19/report.pdf, (accessed 2018-03-01). (text in Japanese).

[7] R. Mouri and I. Ohba. "Desirable capabilities for public library directors in Japan, " Library World, 2015, 66(5), pp.326-342. (text in Japanese).

[8] Japan Library Association. Report about Public Libraries Managed by Designated Administrator System, http://www.jla.or.jp/library/tabid/311/Default.aspx, (accessed 2018-03- 01). (text in Japanese).