

## **Investigation of Changes in Library Usage after the Introduction of Outsourcing in Japan**

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**Abstract:** In Japan, local governments have long managed public libraries; however, in 2003, organizations including private enterprises took over their management with the introduction of an outsourcing system, namely the “designated administrator system.” Now, whether local governments should apply this system to public libraries is under discussion, and many argue that it is inappropriate for public libraries. To provide basic data for such discussions, we investigated changes in library usage after the introduction of outsourcing. Specifically, we obtained statistics on library usage such as the gate count, number of loans, and number of reference transactions, and measured changes in these statistics before and after the introduction of outsourcing. The results show that the statistics tended to increase after the introduction of outsourcing. This may suggest that the introduction of outsourcing promotes users’ library usage.

**Keywords:** Outsourcing; Library Management; Japanese Libraries; Public Libraries; Library Usage

### **1. Introduction**

In Japan, local governments have long managed public libraries; however, in 2003, organizations including private enterprises took over their management with the introduction of an outsourcing system, namely the “designated administrator system.” Although the number of public libraries managed under this outsourcing system (henceforth, “outsourcing libraries”) is increasing, whether local governments should apply this system to public libraries is under discussion. Many argue that it is inappropriate for public libraries. Nevertheless, few studies have examined the performance of outsourcing libraries.

To provide basic data for such discussions, we investigated changes in library usage after the introduction of outsourcing. Specifically, we obtained statistics on library usage and measured changes before and after the introduction of

outsourcing. For library usage, we used seven types of statistics: (1) the gate count, (2) number of loans, (3) number of reservations/requests, (4) number of ILL-borrowings, (5) number of ILL-lendings, (6) number of reference transactions, and (7) number of document copies. These statistics were obtained from the “*Statistics on Libraries in Japan (2005–2015)*,” which is published annually by the Japan Library Association. We used the “*Report on Public Libraries Managed by the Designated Administrator System (2016)*” to know which library introduced outsourcing and when. In addition, to clarify that changes are specific to outsourcing libraries, we also investigated changes in the same period in library usage at “traditional” libraries, which are managed directly by local governments (henceforth, “direct management libraries”).

Moreover, we classified libraries according to types such as being (a) a main library or annex and (b) according to the type of municipality served. We also classified outsourcing libraries (c) according to the form of administrators such as private enterprises or NPOs and (d) according to administrators such as *T company* and *H foundation*. For each category, we examined the changes in library usage.

Our research questions were as follows: (1) How did library usage change after the introduction of outsourcing? (2) Do the tendencies of outsourcing libraries differ from those of direct management libraries? (3) Do these tendencies vary depending on the type of library?

## 2. Related Studies

Few studies have examined the performance of outsourcing libraries. In 2007, Koyama and Nagata (2007) conducted a questionnaire survey to investigate the merits of outsourcing libraries, asking the staff of 82 public libraries that had introduced or planned to introduce the new system to describe the impact on costs and services. Maeda (2007) conducted a survey to determine which services improved under outsourcing, finding that 14 libraries introduced new services and 19 improved existing services such as reference services. The Japan Library Association (2007) also surveyed 51 libraries that introduced outsourcing, ascertaining that 17 libraries changed their operating hours and 10 changed their schedule of days open. Mizunuma and Tsuji (2016) and Mizunuma (2016) investigated reference services in outsourcing libraries. They compared the content of reference services and the number of reference transactions of outsourcing libraries to those of direct management libraries. The results showed that the services provided by these two types of libraries tended to differ, and the number of reference transactions tended to increase after the introduction of outsourcing.

## 3. Method

We selected the following seven statistics as indicative of library usage:

- 1) the gate count,
- 2) number of loans,
- 3) number of reservations/requests,

- 4) number of ILL-borrowings,
- 5) number of ILL-lendings,
- 6) number of reference transactions, and
- 7) number of document copies.

To investigate changes in library usage after the introduction of outsourcing, we calculated the increase rate (IR) for each usage. The IR is defined as follows:

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

where  $B_2$  is the average of the usage statistics during the two years before the introduction of outsourcing and  $A_2$  is the average for the two years after its introduction. These data were obtained from the annual “*Statistics on Libraries in Japan (2005–2015)*.” For example, Chiyoda Library introduced outsourcing in 2007; therefore, we calculated the average of the previously mentioned library usage in 2005 and 2006. There were 280,216 and 259,788 gate counts in 2005 and 2006 respectively. Therefore, the average number of gate counts in these two years was  $(280,216 + 259,788)/2 = 270,002$ . Similarly, the average number of gate counts after the introduction of outsourcing was 921,464 (for years 2008 and 2009). Therefore, the IR of gate counts for Chiyoda Library is  $(921,464 - 270,002)/270,002 = 2.413$ . We assume that if the IR is greater than zero, then library usage increased after the introduction of outsourcing.

We calculated the IRs (of the previously mentioned seven library usages) for each outsourcing library, and calculated the mean (average), median, maximum, minimum, and standard deviation of each. Note that we excluded libraries from our sample if certain statistics were not listed in the “*Statistics on Libraries in Japan (2005–2015)*.” For example, if the number of loans of one library was missing, that library was excluded from the sample used to calculate the IR of the number of loans.

In addition, to clarify that changes are specific to outsourcing libraries, we also calculated the averages of the IRs for direct management libraries and compared them to those for outsourcing libraries. Since there was no comparable point in time when direct management libraries underwent a change in the system, we calculated the IR for every year from 2004 (the year of the first outsourcing library) to 2014 (the most recent year available), and adopted the average of these numbers for comparison to the IR of outsourcing libraries.

We used 3,811 public libraries listed in the annual “*Statistics on Libraries in Japan (2005–2015)*” as our sample. We classified the libraries as either outsourcing or direct management libraries based on “*the Report on Public Libraries Managed by the Designated Administrator System (2016)*.” This source includes a list of outsourcing libraries. Thus, we identified libraries listed in the report as outsourcing libraries and all others as direct management libraries. This report also indicated when each library introduced outsourcing.

Furthermore, we classified the libraries as either main libraries or annexes, and according to the type of municipality served: (1) prefectures, (2) ordinance-designated cities, (3) Tokyo special wards, (4) cities other than ordinance-designated ones, and (5) towns or villages<sup>1</sup> based on the “*Statistics on Libraries in Japan (2005–2015)*.” In addition, we classified outsourcing libraries according to the corporate forms of administrators: (a) private enterprises, (b) NPOs, (c) public corporations, and (d) other organizations, using “*the Report on Public Libraries Managed by the Designated Administrator System (2016)*.” Next, we clarified the first three predominant administrators (i.e., those managing libraries most) using the “*Survey on the Introduction of the Designated Administrator System (2012)*” conducted by the Ministry of Internal Affairs and Communications, and calculated the IR of each administrator. Table 1 shows the total number of libraries in each category of our sample used to calculate the IR. The predominant administrators are also shown in Table 1.

**Table 1. Number of sample libraries**

		Outsourcing libraries	Direct management libraries
<b>(All libraries)</b>		489	3,322
<b>Main vs. Annex</b>	<b>Main libraries</b>	172	1,579
	<b>Annexes</b>	317	1,743
<b>Types of municipality</b>	<b>Prefectural library</b>	5	60
	<b>Ordinance-designated cities</b>	56	232
	<b>Tokyo special wards</b>	107	124
	<b>Other cities</b>	261	2,004
	<b>Towns and villages</b>	60	902
<b>Corporate form of administrator</b>	<b>Private enterprise</b>	381	/
	<b>NPO</b>	41	
	<b>Public corporation</b>	53	
	<b>Other organization</b>	14	
<b>Predominant administrators</b>	<b>T Company</b>	105	
	<b>V Company</b>	17	
	<b>H Foundation</b>	11	

#### 4. Results

The IRs of (1) the gate count, (2) number of loans, (3) number of reservations/requests, (4) number of ILL-borrowings, (5) number of ILL-lendings, (6) number of reference transactions, and (7) number of document copies of outsourcing libraries are provided in Tables 2, 4, 6, 8, 10, 12, and 14 respectively. The results of each library usage of direct management libraries

<sup>1</sup> In Japan, a “city” is defined as a municipality with a population of more than 50,000 people, and an “ordinance-designated city” is defined as a city with a population greater than 500,000 people. “Tokyo special wards” are 23 municipalities with the highest population densities in Japan. Towns and villages are other municipalities, which are smaller than those already mentioned.

are provided in Tables 3, 5, 7, 9, 11, 13, and 15 respectively. These tables show the mean, median, maximum, minimum, and standard deviation (SD) of IRs (by percentage). For outsourcing libraries, “n” represents the number of libraries and for direct management libraries, “n (total)” represents the total number of samples for each year. “(All libraries)” represents the results of all sample libraries. The results of each type of library (as mentioned in the Introduction) are shown below “(All libraries).”

We first explain the results for all libraries. The means and medians of the IRs of all usages for outsourcing libraries were more than zero, whereas some medians of the IRs for direct management libraries were less than zero, such as for the gate count (-2.6%) and number of document copies (-13.4%). The means of the IRs of five usages for outsourcing libraries were higher than the IRs of direct management libraries. For example, the mean of the IR of the gate count for outsourcing libraries was 30.7%, while that for direct management libraries was 6.6%. In addition, concerning all usages, the medians of the IRs for outsourcing libraries were higher than for direct management libraries. For example, the median of the IR for the gate count for outsourcing libraries was 9.7%, while that for direct management libraries was -2.6%. Furthermore, the median of the IR of the number of loans was 11.1% for outsourcing libraries, while that for direct management libraries was 0.6%. These results suggest that the usages tended to increase after the introduction of outsourcing.

Next, we explain the results of each type of library. The mean and medians of IRs concerning both main and annex outsourcing libraries were more than zero, except for document copies. The medians of the IRs for outsourcing libraries were higher than for direct management libraries for all usages. These results suggest that the usages tended to increase after the introduction of outsourcing in both main and annex libraries. Similar tendencies were observed for the other types such as type of municipality served and type of administrator. Thus, the tendencies for all libraries previously mentioned hold for most types of libraries (i.e., without depending on library type).

**Table 2. IRs of gate count for outsourcing libraries**

	n	Mean	Median	Maximum	Minimum	SD
(All libraries)	236	30.7%	9.7%	1207.7%	-45.1%	101.8%
Main libraries	92	38.8%	4.0%	1207.7%	-24.3%	144.1%
Annexes	144	25.5%	13.4%	645.3%	-45.1%	60.5%
Prefectures	3	211.6%	137.6%	493.7%	3.6%	206.8%
Ordinance-designated cities	25	14.4%	14.8%	53.5%	-18.3%	14.3%
Tokyo special wards	63	28.6%	18.4%	241.3%	-18.8%	36.6%
Other cities	114	36.6%	6.9%	1207.7%	-45.1%	135.2%
Towns and villages	31	8.6%	1.9%	71.1%	-24.3%	26.7%
Private enterprises	168	39.4%	12.4%	1207.7%	-24.7%	118.7%
NPOs	25	8.3%	-0.2%	55.2%	-23.1%	20.4%
Public corporations	36	11.1%	5.6%	66.6%	-45.1%	25.1%
Other organizations	7	1.2%	-1.6%	31.5%	-24.3%	15.3%
T Company	68	33.7%	9.6%	645.3%	-17.3%	93.4%
V Company	11	14.4%	7.4%	92.9%	-24.7%	28.3%
H Foundation	11	18.8%	15.2%	53.5%	0.0%	16.3%

**Table 3. IRs of gate count for direct management libraries**

	n (total)	Mean	Median	Maximum	Minimum	SD
(All libraries)	12,609	6.6%	-2.6%	1519.1%	-97.1%	60.8%
Main libraries	6,806	5.2%	-3.6%	1088.8%	-90.3%	59.2%
Annexes	5,803	8.2%	-1.2%	1519.1%	-97.1%	62.5%
Prefectures	482	2.6%	-3.6%	669.5%	-53.9%	41.8%
Ordinance-designated cities	1,007	-0.3%	-2.7%	199.2%	-67.0%	19.9%
Tokyo special wards	496	5.9%	0.2%	213.5%	-74.7%	28.8%
Other cities	7,616	9.6%	-1.5%	1519.1%	-97.1%	67.5%
Towns and villages	3,008	2.1%	-5.7%	1088.8%	-89.4%	57.6%

**Table 4. IRs of the number of loans for outsourcing libraries**

	n	Mean	Median	Maximum	Minimum	SD
(All libraries)	256	20.6%	11.1%	608.1%	-38.2%	59.0%
Main libraries	111	21.6%	6.8%	608.1%	-38.2%	74.7%
Annexes	145	19.9%	13.2%	401.4%	-35.0%	43.4%
Prefectures	3	217.0%	217.3%	411.6%	22.0%	159.0%
Ordinance-designated cities	23	13.2%	13.4%	32.2%	-6.9%	9.3%
Tokyo special wards	69	17.1%	14.6%	109.5%	-28.6%	20.0%
Other cities	125	24.3%	9.0%	608.1%	-35.0%	71.8%
Towns and villages	36	3.4%	1.4%	55.4%	-38.2%	18.2%
Private enterprises	182	25.0%	12.2%	608.1%	-38.2%	68.7%
NPOs	28	9.8%	11.0%	53.4%	-21.1%	16.9%
Public corporations	39	10.6%	8.4%	78.8%	-15.0%	17.9%
Other organizations	7	7.1%	6.1%	31.2%	-13.4%	14.4%
T Company	82	23.0%	12.4%	401.4%	-22.8%	55.9%
V Company	13	9.1%	1.9%	109.5%	-35.0%	33.9%
H Foundation	11	16.3%	14.4%	32.2%	1.7%	9.3%

**Table 5. IRs of the number of loans for direct management libraries**

	n (total)	Mean	Median	Maximum	Minimum	SD
(All libraries)	17,853	51.6%	0.6%	524845.0%	-99.8%	4477.2%
Main libraries	8,921	63.6%	0.2%	524845.0%	-99.8%	5556.6%
Annexes	8,932	39.7%	1.2%	287100.0%	-98.8%	3037.8%
Prefectures	468	6.0%	0.6%	289.1%	-50.2%	30.9%
Ordinance-designated cities	1,371	0.9%	-1.2%	259.4%	-45.6%	17.5%
Tokyo special wards	881	8.5%	3.7%	312.8%	-83.4%	31.7%
Other cities	11,152	80.3%	1.6%	524845.0%	-98.8%	5664.5%
Towns and villages	3,981	3.7%	-2.3%	1033.3%	-99.8%	45.8%

**Table 6. IRs of the number of reservations/requests for outsourcing libraries**

	n	Mean	Median	Maximum	Minimum	SD
(All libraries)	281	64.0%	37.8%	1818.5%	-84.8%	146.5%
Main libraries	112	69.4%	39.0%	976.0%	-84.8%	136.0%
Annexes	169	60.5%	36.3%	1818.5%	-72.3%	152.9%
Prefectures	3	208.4%	161.7%	367.2%	96.1%	115.5%
Ordinance-designated cities	36	76.8%	69.0%	257.5%	-12.2%	52.7%
Tokyo special wards	60	44.4%	26.0%	490.6%	-72.3%	76.1%
Other cities	146	73.6%	40.2%	1818.5%	-84.8%	189.5%
Towns and villages	36	32.9%	18.7%	286.2%	-65.4%	66.7%
Private enterprises	205	60.0%	39.7%	976.0%	-72.3%	101.7%
NPOs	27	135.5%	47.7%	1818.5%	-84.8%	360.6%
Public corporations	41	45.2%	31.7%	410.6%	-37.1%	71.3%
Other organizations	8	21.4%	13.5%	141.0%	-48.4%	50.4%
T Company	96	57.2%	40.0%	292.4%	-50.8%	68.9%
V Company	13	20.6%	6.8%	122.7%	-13.6%	39.8%
H Foundation	11	89.7%	97.1%	107.9%	55.6%	18.7%

**Table 7. IRs of the number of reservations/requests for direct management libraries**

	n (total)	Mean	Median	Maximum	Minimum	SD
(All libraries)	19,300	54.1%	21.5%	18100.0%	-96.9%	216.1%
Main libraries	9,280	48.5%	21.2%	7435.7%	-96.9%	173.3%
Annexes	10,020	59.2%	21.8%	18100.0%	-96.1%	249.2%
Prefectures	426	66.4%	22.4%	3677.5%	-69.9%	252.3%
Ordinance-designated cities	1,649	43.7%	16.5%	1555.2%	-92.8%	109.6%
Tokyo special wards	975	46.9%	22.7%	3137.6%	-89.1%	176.2%
Other cities	12,458	60.4%	24.9%	18100.0%	-96.9%	238.3%
Towns and villages	3,792	38.1%	12.1%	5591.4%	-96.0%	174.0%

**Table 8. IRs of the number of ILL-borrowings for outsourcing libraries**

	n	Mean	Median	Maximum	Minimum	SD
(All libraries)	251	65.2%	16.7%	1484.7%	-80.0%	188.0%
Main libraries	111	66.2%	24.3%	1228.6%	-80.0%	172.3%
Annexes	140	64.4%	12.0%	1484.7%	-77.3%	199.5%
Prefectures	3	31.9%	5.6%	88.9%	1.4%	40.3%
Ordinance-designated cities	26	101.3%	23.0%	700.0%	-54.8%	200.2%
Tokyo special wards	64	14.0%	1.3%	570.3%	-77.3%	85.1%
Other cities	124	81.2%	32.0%	1484.7%	-71.1%	219.9%
Towns and villages	34	78.4%	23.4%	841.4%	-80.0%	181.4%
Private enterprises	179	48.0%	14.7%	1228.6%	-77.3%	138.1%
NPOs	27	184.9%	45.8%	1484.7%	-71.1%	382.6%
Public corporations	37	75.1%	20.5%	700.0%	-45.9%	165.1%
Other organizations	8	0.4%	5.9%	69.4%	-80.0%	45.2%
T Company	75	42.3%	32.1%	352.1%	-64.1%	70.8%
V Company	15	-2.9%	0.9%	42.2%	-37.0%	23.6%
H Foundation	9	184.3%	60.2%	700.0%	-38.0%	270.2%

**Table 9. IRs of the number of ILL-borrowings for direct management libraries**

	n (total)	Mean	Median	Maximum	Minimum	SD
(All libraries)	15,460	60.6%	11.6%	50350.0%	-99.6%	658.9%
Main libraries	9,177	71.4%	14.6%	50350.0%	-99.4%	822.0%
Annexes	6,283	44.8%	6.9%	14400.0%	-99.6%	284.2%
Prefectures	475	49.6%	27.2%	1097.5%	-99.0%	103.6%
Ordinance-designated cities	1,235	36.9%	12.2%	1433.3%	-93.1%	110.6%
Tokyo special wards	944	8.8%	3.5%	354.8%	-98.7%	47.2%
Other cities	9,176	57.6%	10.7%	50350.0%	-99.6%	711.3%
Towns and villages	3,630	91.2%	15.1%	31100.0%	-99.4%	749.7%

**Table 10. IRs of the number of ILL-lendings for outsourcing libraries**

	n	Mean	Median	Maximum	Minimum	SD
(All libraries)	198	782.2%	43.1%	128220.0%	-99.9%	9089.0%
Main libraries	98	177.0%	39.9%	4740.0%	-99.9%	569.3%
Annexes	100	1375.3%	60.0%	128220.0%	-85.7%	12749.2%
Prefectures	3	157.9%	71.0%	343.4%	59.2%	131.3%
Ordinance-designated cities	25	82.4%	73.3%	270.0%	-85.7%	81.1%
Tokyo special wards	56	105.2%	62.0%	686.0%	-53.6%	163.7%
Other cities	86	1673.4%	39.5%	128220.0%	-99.9%	13738.8%
Towns and villages	28	90.7%	19.8%	1004.1%	-86.6%	242.6%
Private enterprises	139	1043.2%	57.4%	128220.0%	-99.9%	10829.6%
NPOs	22	295.3%	12.6%	4740.0%	-62.1%	983.1%
Public corporations	31	107.5%	40.0%	829.2%	-64.2%	201.7%
Other organizations	6	7.0%	21.3%	65.9%	-86.6%	50.8%
T Company	55	162.8%	39.0%	2344.2%	-75.5%	384.8%
V Company	9	73.1%	-6.3%	473.0%	-53.6%	155.2%
H Foundation	9	117.8%	120.9%	270.0%	-10.3%	82.2%



**Table 11. IRs of the number of ILL-lendings for direct management libraries**

	n (total)	Mean	Median	Maximum	Minimum	SD
(All libraries)	12,278	152.0%	14.2%	54550.0%	-99.6%	1272.9%
Main libraries	7,886	169.1%	17.4%	50900.0%	-99.6%	1190.5%
Annexes	4,392	121.3%	7.6%	54550.0%	-99.6%	1408.2%
Prefectures	483	27.7%	8.8%	1652.1%	-92.2%	125.3%
Ordinance-designated cities	850	62.8%	7.5%	6788.6%	-98.1%	354.3%
Tokyo special wards	904	33.8%	-1.3%	2850.0%	-98.6%	161.6%
Other cities	7,397	173.9%	17.3%	54550.0%	-99.6%	1525.2%
Towns and villages	2,644	182.6%	17.5%	20100.0%	-99.3%	975.2%

**Table 12. IRs of the number of reference transactions for outsourcing libraries**

	n	Mean	Median	Maximum	Minimum	SD
(All libraries)	178	665.7%	24.1%	45205.3%	-89.7%	4594.6%
Main libraries	62	1635.0%	50.0%	45205.3%	-89.7%	7614.5%
Annexes	116	147.6%	21.4%	8377.3%	-84.4%	795.9%
Prefectures	3	186.2%	87.0%	409.6%	62.1%	158.3%
Ordinance-designated cities	27	45.7%	16.6%	714.7%	-73.0%	147.1%
Tokyo special wards	42	122.0%	10.9%	2080.8%	-80.7%	423.3%
Other cities	91	1216.5%	36.0%	45205.3%	-89.7%	6370.2%
Towns and villages	15	58.3%	60.0%	231.0%	-80.1%	96.0%
Private enterprises	140	784.2%	26.9%	45205.3%	-84.4%	5164.5%
NPOs	12	285.4%	21.3%	2601.8%	-89.7%	713.2%
Public corporations	22	27.5%	16.9%	269.8%	-51.8%	65.2%
Other organizations	4	1168.2%	1048.7%	2407.5%	168.0%	964.5%
T Company	60	970.9%	35.3%	45205.3%	-80.1%	5857.8%
V Company	14	38.7%	9.4%	356.2%	-84.4%	107.8%
H Foundation	11	12.3%	16.6%	48.7%	-39.9%	19.9%

**Table 13. IRs of the number of reference transactions for direct management libraries**

	n (total)	Mean	Median	Maximum	Minimum	SD
(All libraries)	12,262	170.5%	1.7%	330280.0%	-99.9%	3223.2%
Main libraries	6,058	152.5%	0.2%	67816.7%	-99.2%	1429.8%
Annexes	6,204	188.1%	3.5%	330280.0%	-99.9%	4305.4%
Prefectures	497	13.4%	1.7%	667.5%	-78.9%	62.0%
Ordinance-designated cities	1,541	56.3%	8.4%	7131.4%	-95.7%	298.3%
Tokyo special wards	698	54.5%	-1.4%	5540.0%	-96.1%	335.9%
Other cities	7,491	221.0%	2.0%	330280.0%	-99.9%	3998.0%
Towns and villages	2,035	149.2%	-3.4%	67816.7%	-99.8%	1903.3%

**Table 14. IRs of the number of document copies for outsourcing libraries**

	n	Mean	Median	Maximum	Minimum	SD
(All libraries)	223	31.9%	2.1%	3828.9%	-81.2%	272.3%
Main libraries	89	60.8%	5.8%	3828.9%	-71.1%	406.4%
Annexes	134	12.7%	-2.1%	1218.7%	-81.2%	112.9%
Prefectures	3	10.9%	6.5%	24.5%	1.6%	9.9%
Ordinance-designated cities	34	7.9%	7.6%	70.4%	-49.6%	32.7%
Tokyo special wards	49	-0.5%	-4.3%	126.2%	-63.6%	29.1%
Other cities	110	57.9%	2.1%	3828.9%	-81.2%	383.5%
Towns and villages	27	17.7%	12.8%	303.2%	-45.4%	66.7%
Private enterprises	169	36.7%	-0.2%	3828.9%	-81.2%	310.5%
NPOs	19	37.6%	5.7%	303.2%	-71.1%	94.1%
Public corporations	31	4.4%	8.3%	103.4%	-62.2%	35.8%
Other organizations	4	17.8%	27.3%	53.2%	-36.4%	33.6%
T Company	73	23.1%	-0.8%	1218.7%	-75.5%	149.5%
V Company	14	-4.9%	-8.0%	33.5%	-42.9%	17.0%
H Foundation	10	19.9%	15.1%	70.4%	-11.6%	26.8%

**Table 15. IRs of the number of document copies for direct management libraries**

	n (total)	Mean	Median	Maximum	Minimum	SD
(All libraries)	14,659	61.7%	-13.4%	348086.6%	-99.9%	3678.6%
Main libraries	7,620	107.4%	-12.5%	348086.6%	-99.9%	5080.4%
Annexes	7,039	12.2%	-14.5%	29688.7%	-99.5%	484.8%
Prefectures	461	-5.7%	-10.7%	363.4%	-88.1%	35.4%
Ordinance-designated cities	1,370	435.9%	-16.8%	348086.6%	-94.4%	11715.5%
Tokyo special wards	780	-10.6%	-15.9%	365.2%	-96.7%	35.8%
Other cities	9,314	29.9%	-13.2%	58652.1%	-99.9%	1039.7%
Towns and villages	2,734	14.6%	-10.1%	3360.0%	-93.7%	126.5%

## 5. Conclusions

In this study, we calculated the IRs for seven library usages to investigate changes in library usage after the introduction of outsourcing. The results of our investigation suggest that the IRs tended to increase after the introduction of outsourcing, and the rate of the increase for outsourcing libraries was higher than that for direct management libraries during the same period. In addition, similar tendencies were shown for each type of library such as main, annex, type of municipality, and type of administrator. Based on this, we suggest that the introduction of outsourcing promotes library usage.

In the future, we aim to examine the cause of the increase of IRs for outsourcing libraries. Furthermore, we hope to focus not only on library usage, but also on other library services such as reference services, book selection, and loan services to users to clarify the impact of switching to outsourcing by Japanese libraries.

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