

The Relationship Between University Research Administrators and World University Rankings in Japanese Universities

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Paper Number: 240511

<https://doi.org/10.68089/202609240511>

Abstract:

Declining research capabilities at Japanese universities in recent years have highlighted the importance of university research administrators (URAs), especially given that Japanese institutions prioritize university rankings as indicators of their reputation. This study aims to examine the relationship between the number of URAs at Japanese universities and the rankings of those universities. Data on university rankings, number of URAs employed, and several research-related indicators were quantitatively analyzed using multiple regression and correlation analyses. The results show a positive relationship between the number of URAs and the university's ranking, indicating that universities with a better ranking tend to employ a greater number of URAs. Moreover, the amounts of monetary gifts received, external funds acquired, and research outputs also exhibit positive relationships with university rankings, while the number of URAs and amount of acquired external funds are statistically significant determinants of university rankings. Therefore, increasing the number of URAs can potentially improve both research management and university rankings.

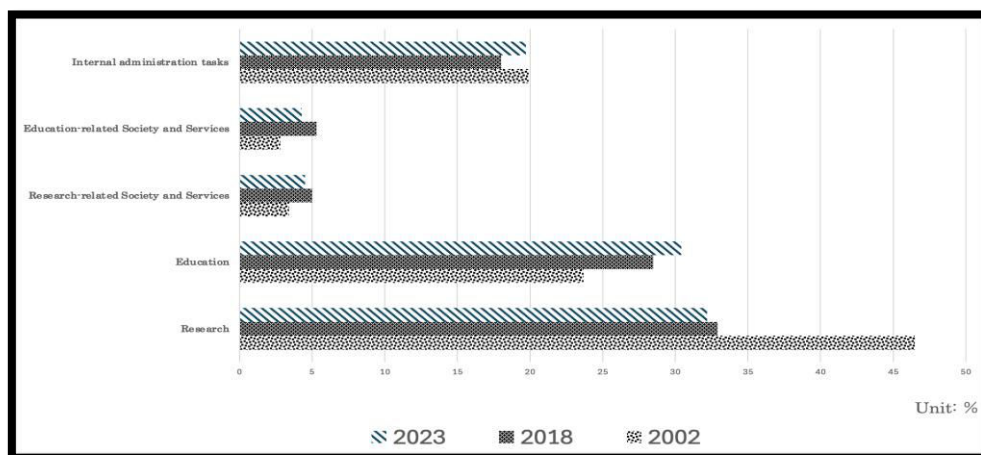
Keywords: Japanese University, Reputation Management, Research Administrators, University Administration, University Rankings, URA.

1 Introduction

Recently, an apparent decline in Japan's research capabilities has attracted growing attention (Kinoshita and Kishimoto, 2023; Miyagawa, 2023). Japan's research capabilities are now being described as "no longer world class" (Ikarashi, 2023), indicating that a reassessment of the country's research strength is needed. Japanese universities have also been criticized for their declining academic productivity and research quality. Nakayama and Low (1997) pointed out that the low level of trust in the research capabilities of Japanese universities is a contributing factor in the sluggish progress of R&D internationalization in Japan. Additionally, Japanese universities are not regarded as central players in the global academic community in terms of either academic productivity (Arimoto, 2015) or advancing the status of higher education (Yonezawa, 2007). Leading researchers in Japan—those whose publications are cited in the top 10% of their respective fields—are predominantly young, and many are affiliated with Japanese universities (Tomizawa et al., 2006). Consequently, enhancing the research capabilities of Japanese universities is imperative to bolster Japan's overall research capacity. However, the overall decline in available positions and the deterioration of research environments at Japanese universities have resulted in a decline in the appeal of research-focused careers. Specifically, reduced research hours represent a significant challenge confronting researchers at Japanese universities (Figure 1). Consequently, in recent years, the role of research and development management personnel, such as university research administrators (URAs), has become a focal point for enhancing research management capabilities in Japanese universities. From 2025, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) launched a new project to address the shortage of research and development management personnel, improve their quality, and promote the establishment of appropriate compensation levels and career paths in Japanese universities.

Japanese universities have traditionally only hired either teaching faculty or administrative staff. However, URAs have recently emerged as a third category of jobs within universities, which involves a variety of tasks, including coordinating expectations between universities and researchers to ensure alignment. MEXT administers an annual survey of URA employment in Japan, focusing on higher education, with the employment figures for 2023 representing the most recent data available as of 2025. The number of URAs in Japan (including industry–academia–government collaboration coordinators) grew from 1,507 in 2019 to 1,821 in 2023, an increase of 314 over five years. However, a 2023 survey revealed that 612 out of 791 universities nationally (excluding Junior colleges)—over 75%—did not employ any URAs at all, suggesting that the URAs remain underutilized for research support. While the positive effects of introducing URAs in Japanese universities—such as increased external funding and collaborative/contract research—are evident, the limited number of universities actually employing URAs poses a challenge in accurately evaluating the impact of employing them. While URAs contribute directly as well as indirectly to university research administration, the exact degree of contribution is difficult to ascertain, and the duties they perform are extremely diverse. Although some universities have not yet introduced URAs, they have managed to successfully obtain sufficient external funding and collaborative research grants. Consequently, researchers remain skeptical about the effectiveness of URAs. In this study, because URAs were introduced to enhance research capabilities, we aim to examine the relationship between the rankings of Japanese universities and the number of URAs employed by the universities, as well as the contributions made by the URAs.

Figure 1. Changes in the proportion of teaching staffs' working hours dedicated to professional activities at Japanese universities



Source: Created by the authors using content from the Survey on Full- Time Equivalent Data at Japanese Universities.

2 Characteristics and current status of URAs at Japanese universities

Regarding employment of URAs in Japanese universities, national universities employ a higher number of URAs compared to private and public universities (Table 1). This is partially because of the strong representation of national universities in the URA-related projects undertaken by MEXT

Table 1. The number of universities employing 10 or more URAs (excluding Junior colleges)

	National Universities	Private Universities	Public Universities
2021	32	8	3
2022	30	8	2
2023	30	7	2

Unit: University

Source: Created by the authors using content from the Annual Status of Industry–Academic collaboration at Universities report.

URAs in Japan perform three core tasks: research strategy promotion support, pre-award tasks such as project planning and application, and post-award tasks related to project management after project acceptance. URAs also handle specialized tasks, such as industry–academia collaboration, intellectual property management, and matters concerning ethics and compliance (The University of Tokyo, 2013). Focusing on these three core tasks for the period 2021–2023, URAs employed at Japanese universities tended to be involved primarily in pre-award tasks (Table 2).

Table 2. The current status of URA positions within the Japanese university sector (excluding Junior colleges)

	Pre-award	Post-award	Research Strategy Promotion Support	Pre-award Post-award
2021	81	62	61	144
2022	85	70	62	129
2023	97	77	76	127
	Pre-award Research Strategy Promotion Support	Post-award Research Strategy Promotion Support	Pre-award Post-award Research Strategy Promotion Support	
2021	132	13	251	
2022	143	20	259	
2023	144	22	267	

Unit: Person

Source: Created by the authors using content from the Annual Status of Industry–Academic collaboration at Universities report

Table 3 shows the considerable variation in the previous occupations of URAs in Japanese universities, including experience as faculty members, administrative staff, and postdoctoral researchers. Despite these diverse backgrounds, URAs work to apply the research strategies of their respective universities. Notably, since URA positions in Japan are currently offered primarily as temporary employment, establishing uninterrupted career pathways for URAs, including the possibility of permanent employment, is critical.

Table 3. Previous occupations of URAs in Japanese Universities (excluding Junior colleges)

	Faculty	Research and Development Staff	URA	Intellectual Property or Legal Department Professional
2021	163	263	177	136
2022	169	277	187	146
2023	182	316	211	167
	Administrative/ Technical Staff	Postdoctoral Researcher	Student	Other
2021	425	33	43	287
2022	445	30	40	294
2023	468	35	41	310

Unit: Person

Source: Created by the authors using content from the Annual Status of Industry–Academic Collaboration at Universities report.

3 Literature review

3.1 Previous research on URAs

In Japan, URAs play critical roles in diverse areas, including regional revitalization, promoting academic and research collaboration, and developing innovative integrated research fields. Research administrators in other countries also play multiple roles, including securing competitive funds, supporting research projects, promoting industry–academia collaboration, ensuring ethical compliance, and developing university infrastructure (Gemba et al., 2018; Yang-Yoshihara et al., 2015)

The full-scale introduction of URAs into higher educational institutions in Japan only commenced in 2011, led by MEXT. Therefore, URA research in Japan remains undeveloped. Previous research on URAs in Japan has mainly analyzed URAs' contributions to research outputs such as research papers, patents, inventions, and university spin-off startups, as well as the acquisition of external funds (Edamura et al., 2024; Furusawa et al., 2020; Kikuchi and Oe, 2020).

Simultaneously, prior studies on URAs in other countries have explored diverse perspectives, including job descriptions, psychological effects, and leadership. For instance, Wilson et al. (2025) examined the impact on research administration of incorporating AI into research management processes.

Therefore, research management leveraging URAs has been the focus of numerous studies from a variety of perspectives at both the domestic and international level.

3.2 Previous studies on research capabilities and university rankings

Previous studies on university research capabilities in Japan have utilized evaluation indicators such as research papers, grants-in-aid for scientific research, competitive research grants, university rankings, industry–academia collaboration, and research strategies. Shimizu (2009) suggested using the number of downloaded journals as a research

evaluation indicator instead of the number of papers and citations. Furthermore, Bando (2012) pointed out that the advent of web-based academic information has prompted the introduction of Altmetrics—a research evaluation metric that utilizes social media to measure research impact at the paper level in real time beyond citation counts. Moreover, Japanese Science and Technology indicators (2021, 2024)—a fundamental resource of Japan’s science and technology activities—are divided into the following five categories: research and development expenditure; research and development personnel; higher education and science and technology personnel; research and development output; and science, technology, and innovation.

Previous studies in other countries have tended to use various research performance evaluation indicators, such as publication outputs, citations, research incomes, quality of work, and reputation of researchers.

Aydin (2017) identified four factors that affect research performance: demographic variables, personal attributes, institutional structure features, and the opportunities offered by the institution. Bornmann and Marx (2011) highlighted the h-index as a reliable metric for evaluating journal output, offering an alternative to the journal impact factor while also acknowledging its limitations. As for the evaluation of research performance, Nederhof et al. (1993) underscored the importance of combining various output and impact indicators for optimal evaluation.

Previous research has used university rankings as a key performance indicator to evaluate university performance (Gasmalla et al., 2025), or as a tool to assess universities’ efforts towards sustainability, identifying areas for improvement and helping promote a degree of competition among institutions to be seen as champions of sustainable practice (Abo-Khalil, 2024). Also, Masron et al. (2012) indicated that governments and higher educational institutions have a growing interest in “university rankings” and “world-class universities.” A similar tendency has been

observed in Japan in recent years, and as shown in Table 4, URAs in Japanese universities engage in various initiatives aimed at improving university rankings and enhancing university reputation.

Table 4. Examples of URA Contributions to University Rankings in Japanese Universities

Collect information regarding university rankings and analyze the strengths and weaknesses of the university.
Analyze information related to university rankings and their current status. Propose improvement plans for their university’s ranking to the university executive and department head meetings.
Provide internal data to university ranking providers.
Improve their university’s ranking by organizing URA initiatives and strengthening cooperation by compiling collaboration proposals with other departments.

Source: Created by the authors from content taken from university websites and URA activity performance reports

Given the accelerating globalization of research initiatives, it is imperative to undertake a more meticulous and context-specific analysis of university rankings. In the context of university rankings, the rankings themselves are not the only significant element; the evaluation metrics that inform these rankings are also of considerable importance. The Japan Revitalization Strategy 2016 focused on university rankings as a key performance indicator for innovation policy, with objectives such as having ten or more Japanese universities ranked in the world’s top 100 universities for ten years. Subsequently, under the Top Global University

Project, the government provided support for Japanese universities with the potential to aim for the world's top 100. Hence, many Japanese universities have recently started to feature their ranking on their website, highlighting the importance placed on this metric of institutional reputation.

4 Research questions and hypotheses

4.1 Research question: We seek to answer the following research question: To what extent does employing more URAs in a university lead to a higher ranking and enhanced reputation?

4.2 Hypotheses development

We propose the following five hypotheses:

H1: The more URAs a Japanese university employs, the more advanced its research management becomes, which in turn has a positive relation to its ranking.

H2: A university's ranking is positively associated with its URA initiatives, such as the amount of collaborative research funds, contract research funds, competitive research funds, and monetary gifts acquired, as well as the number of intellectual property applications.

H3: The number of URAs at ranked Japanese universities positively correlates with URA initiatives, such as the amount of collaborative research funds, contract research funds, competitive research funds, and monetary gifts acquired, as well as the number of intellectual property applications.

H4: The university ranking of Japanese national universities is positively related to the ratio of the number of URAs to the number of faculty members.

H5: The number of URAs and the amount of acquired external funds are statistically significant predictors of university rankings.

In the previous sections, we clarified the current situation regarding URAs, focusing on Japanese universities and the contributions of URAs to university administration. Despite a wide range of opinions regarding university rankings, we have indicated that university rankings pertain both to the Japanese government's policy objectives and to university reputation as one of the most significant indicators of research capabilities in Japanese universities. Although the focus is typically on the numerical ranking, evaluating other specific indicators as well as relevant metrics is crucial. At present, since many evaluation indicators relate to "research," highly ranked Japanese universities are more likely to have URAs engaged in promoting research activities, thereby strengthening research capabilities and university management.

5. Materials and Methods

In this study, for ranked Japanese universities, we conducted quantitative analyses of university ranking, number of URAs employed, and several research-related indicators. Specifically, we conducted correlation analyses of the university ranking and number of URAs employed, as well as the following URA initiative indicators that are considered to be related to the university rankings of Japanese universities: the total amount of collaborative research funds, contract research funds, competitive research funds, and monetary gifts, and the number of intellectual property applications.

Currently, national universities in Japan account for a large proportion of the institutions supported by URA-related MEXT projects, and, as of 2023, URAs had been introduced in 71 of the 86 national universities. Moreover, as shown in Table 1, national universities in Japan tend to employ larger numbers of URAs than either private or public universities, and as shown in Table 5, national universities are also ranked more frequently and more highly. Therefore, to measure the relationship between the number of URAs and faculty members with

regard to the university rankings, we also conducted a correlation analysis focused on the university rankings of Japanese national universities and the ratio of the number of URAs employed to the number of faculty members.

For the multiple regression analysis, we used university rankings as the dependent variable, and the number of URAs and the amount of acquired external funds (the sum of collaborative research funds, contract research funds, competitive research funds, and monetary gifts) as explanatory variables (i.e., the analysis indicator).

In contrast to those in Europe and the United States, Japanese universities tend not to be ranked as highly or as frequently in most university rankings. Since a relatively large sample size of Japanese universities recognized in global university rankings was required for our analysis, we used the Center for World University Rankings (CWUR, 2021, 2022, 2023), the largest such global ranking. The CWUR methodology is 40% research-oriented, comprising research output (10%), high-quality publications (10%), number of research articles appearing in highly influential journals (10%), and number of highly cited research articles (10%).

Table 5. Japanese universities ranked in the CWUR

Year	Ranking position	National Universities	Private Universities	Public Universities
2021	1–499	12	2	0
	500–999	13	9	5
	1000–1499	25	21	4
	1500–2000	9	20	3
2022	1–499	12	2	0
	500–999	11	8	4
	1000–1499	22	22	4
	1500–2000	13	15	4

2023	1–499	11	2	0
	500–999	12	6	3
	1000–1499	20	22	4
	1500–2000	15	14	4

Unit: University

Source: Created by the authors using content from CWUR

In addition to data from the CWUR, we extracted data from the Annual Status of Industry–Academic Collaboration at Universities reports pertaining to the years 2021 to 2023. Specifically, the number of URAs refers to the total number of URAs listed in each employment category in each year’s report. For the various external funds, we selected the following URA initiative indicators as being of greatest relevance to the rankings of Japanese universities: the amount of collaborative research funds, contract research funds, competitive research funds, and monetary gifts for each university ranked in the CWUR for the given research period. As for research outputs, we focused on the number of intellectual property applications as one of the critical research outputs for Japanese universities, representing the total number of domestic and international patents, utility models, trademarks, designs, and other intellectual property applications. As for the number of faculty members, we used the data from basic university information provided by the National Institution for Academic Degrees and Quality Enhancement of Higher Education.

Based on the above data from 2021 to 2023, we conducted several quantitative analyses, considering the availability of data for each indicator. Universities were excluded from the analysis if the data required for the analysis was not available.

6 Analysis and results

First, we conducted a correlation analysis between the CWUR ranking and the number of URAs at each CWUR-ranked Japanese university. As shown in Table 6, the correlation coefficients were all moderately significant, with a moderate negative trend. This trend was consistent across all three years, indicating that Japanese universities with a higher number of URAs tend to have a higher ranking (i.e., numerically lower), confirming H1.

Table 6. Correlation analysis between CWUR ranking and the number of URAs

Name of variable	Name of variable	Correlation coefficient	t value	Significance level
CWUR ranking in 2021	Number of URAs ($n=123$)	-0.642	-9.219	$p<0.001$
CWUR ranking in 2022	Number of URAs ($n=115$)	-0.632	-8.680	$p<0.001$
CWUR ranking in 2023	Number of URAs ($n=113$)	-0.642	-8.828	$p<0.001$

Note: All correlation coefficients and t values are reported to three decimal places

Table 7 shows the results of correlation analysis between the CWUR ranking of Japanese universities and URA initiative indicators such as the amount of collaborative research funds, contract research funds, competitive research funds, and monetary gifts acquired, and the number of intellectual property applications at each CWUR-ranked Japanese

university. All correlation coefficients were statistically significant, with a moderate negative correlation trend. Hence, this result indicates that URA initiatives improve a university's ranking (i.e., a lower numerical value denotes a higher-performing institution). This trend was consistent across all three years, thus confirming H2.

Table 7. Correlation analysis between CWUR ranking, research outputs, and various external funds

Name of variable	Name of variable	Correlation coefficient	t value	Significance level
CWUR ranking in 2021	Number of Intellectual Property applications (n=123)	-0.671	-9.972	p<0.001
	Amount of collaborative research funds (n=123)	-0.573	-7.710	p<0.001
	Amount of contract research funds (n=123)	-0.616	-8.623	p<0.001
	Amount of competitive research funds (n=123)	-0.634	-9.036	p<0.001
	Amount of monetary gifts (n=123)	-0.455	-5.628	p<0.001

CWUR ranking in 2022	Number of intellectual property applications (n=115)	-0.662	-9.406	p<0.001
	Amount of collaborative research funds (n=115)	-0.607	-8.122	p<0.001
	Amount of contract research funds (n=115)	-0.636	-8.771	p<0.001
	Amount of competitive research funds (n=115)	-0.688	-10.084	p<0.001
	Amount of monetary gifts (n=115)	-0.637	-8.790	p<0.001
CWUR ranking in 2023	Number of intellectual property applications (n=113)	-0.672	-9.574	p<0.001
	Amount of collaborative research funds (n=113)	-0.609	-8.090	p<0.001

Amount of contract research funds (<i>n</i> =113)	-0.601	-7.932	<i>p</i> <0.001
Amount of competitive research funds (<i>n</i> =113)	-0.702	-10.409	<i>p</i> <0.001
Amount of monetary gifts (<i>n</i> =113)	-0.640	-8.785	<i>p</i> <0.001

Note: All correlation coefficients and *t* values are reported to three decimal places

Table 8 shows the results of correlation analyses between the number of URAs and URA initiatives, such as the number of intellectual property applications and the amount of various external funds at each CWUR-ranked Japanese university. The number of URAs in ranked universities and URA initiatives exhibited highly positive to moderate positive correlation trends in all three years, confirming H3.

Table 8. Correlation analysis between the number of URAs, research outputs, and various external funds at CWUR-ranked universities

Name of variable	Name of variable	Correlation coefficient	<i>t</i> value	Significance level
Number of URAs in CWUR 2021	Number of Intellectual Property applications (<i>n</i> =123)	0.889	21.362	<i>p</i> <0.001

	Amount of collaborative research funds ($n=123$)	0.856	18.229	$p<0.001$
	Amount of contract research funds ($n=123$)	0.492	6.230	$p<0.001$
	Amount of competitive research funds ($n=123$)	0.765	13.067	$p<0.001$
	Amount of monetary gifts ($n=123$)	0.473	5.907	$p<0.001$
Number of URAs in CWUR 2022	Number of intellectual property applications ($n=115$)	0.886	20.316	$p<0.001$
	Amount of collaborative research funds ($n=115$)	0.859	17.835	$p<0.001$
	Amount of contract research funds ($n=115$)	0.516	6.418	$p<0.001$
	Amount of competitive	0.770	12.839	$p<0.001$

	research funds (<i>n</i> =115)			
	Amount of monetary gifts (<i>n</i> =115)	0.748	11.982	<i>p</i> <0.001
Number of URAs in CWUR 2023	Number of intellectual property applications (<i>n</i> =113)	0.867	18.413	<i>p</i> <0.001
	Amount of collaborative research funds (<i>n</i> =113)	0.832	15.823	<i>p</i> <0.001
	Amount of contract research funds (<i>n</i> =113)	0.433	5.069	<i>p</i> <0.001
	Amount of competitive research funds (<i>n</i> =113)	0.791	13.622	<i>p</i> <0.001
	Amount of monetary gifts (<i>n</i> =113)	0.741	11.647	<i>p</i> <0.001

Note: All correlation coefficients and *t* values are reported to three decimal places

No statistically significant correlations were found in the correlation analysis between the CWUR ranking of Japanese national universities

and the ratio of the number of URAs to faculty members at those same ranked universities (Table 9). Therefore, H4 was rejected.

Table 9. Correlation analysis between CWUR ranking and the ratio of the number of URAs to faculty members

Name of variable	Name of variable	Correlation coefficient	t value	Significance level
CWUR ranking in 2021	Ratio of the number of URAs to faculty members (n=59)	-0.059	-0.446	p>0.5
CWUR ranking in 2022	Ratio of the number of URAs to faculty members (n=58)	-0.046	-0.345	p>0.5
CWUR ranking in 2023	Ratio of the number of URAs to faculty members (n=58)	-0.058	-0.439	p>0.5

Note: All correlation coefficients and t values are reported to three decimal places

Table 10 shows the results of multiple regression analysis using the CWUR ranking as the dependent variable and the amount of acquired external funds and number of URAs at each CWUR-ranked Japanese

university as explanatory variables. The results indicate that the amount of acquired external funds has statistical significance with regards to the CWUR ranking in all three years. Furthermore, the number of URAs is also statistically significant with the CWUR ranking in all three years. Consequently, our analysis identifies the tendency that the number of URAs and the amount of acquired external funds are important factors for the university ranking. Therefore, H5 is confirmed.

Table 10. Multiple regression analysis using CWUR ranking

	Number of URAs		Acquired external funds		Adjusted R2
CWUR ranking in 2021 (n=123)	- 11.09115440 9	****	- 0.000000016	***	0.4467467 75
CWUR ranking in 2022 (n=115)	- 5.763834557	**	- 0.000000030	****	0.4748315 92
CWUR ranking in 2023 (n=113)	- 5.214103245	**	- 0.000000029	****	0.4872452 48

*p<0.10, **p<0.05, ***p<0.01, ****p<0.001

Note: All partial regression coefficients and R2 values are reported to nine decimal places

7 Discussion

Our quantitative analyses were limited owing to our focus only on those Japanese universities ranked by the CWUR between 2021 and 2023. However, four key findings emerged which are presented here.

First, higher-ranked Japanese universities tend to employ a larger number of URAs, fostering more effective research management. Previous research has paid little attention to the correlation between university rankings and the number of URAs. However, according to Watanuki (2016), the acquisition of outstanding URAs, whose work directly contributes to research outcomes for university rankings, is essential, and the development of the URA system will have a significant effect on the rankings. In this study, we demonstrate with the use of data the impact of introducing URAs on university rankings, which is highly significant in Japan, where utilization of URAs is still nascent. University rankings serve as a form of university branding and represent a critical evaluation indicator referred to by talented researchers and students worldwide. Since these evaluation indicators include many research-related sub-indicators, the impact of URAs is an important factor contributing to the improvement of university rankings. In particular, the Report on Research and Analysis for the Independent Operation of Research Administrator Duties (2016) reveals that, despite their relatively short history, the effects of introducing URAs in Japan are steadily becoming apparent. This is evidenced by the increase in external research funds and improvements in the quality and quantity of research results. Our analysis covers multiple years, and given that universities and their rankings tend to change every year, the results clearly demonstrate the positive impact of URAs on university rankings. Given the increasing number of URAs each year, they can clearly play a significant role in strengthening the research capabilities, and thereby the rankings, of Japanese higher education institutions.

Second, the number of URAs employed at ranked Japanese universities is positively and strongly correlated with the number of URA initiatives closely related to university rankings which result in the acquisition of larger amounts of external funds and production of research outputs. We assume that Japanese universities with more effective research management tend to acquire greater amounts of external funds and produce more research outputs, thereby confirming the tendency of ranked Japanese universities to foster more effective research management.

Third, we identified a negative correlation between university rankings and the number of URA initiatives that produce research outputs and acquire external funds. Although the specific amounts of the various external funds acquired are not indicated as evaluation indicators in CWUR methodology, we found negative correlations between the CWUR ranking and these URA initiatives in Japanese universities, indicating that URA initiatives serve to improve a university's ranking.

Fourth, multiple regression analysis using university rankings as the dependent variable indicates statistically significant results for both the number of URAs and the amount of acquired external funds. In concrete terms, both the amount of acquired external funds and the number of URAs exhibit statistically significant results with university rankings for all three years. In the correlation analysis, university rankings and both the number of URAs and the amount of external funds acquired indicate moderate negative correlation trends in each case. In addition, a highly positive to moderate positive correlation trend is observed between the number of URAs and the amount of acquired external funds. Therefore, the correlation analysis indicates a positive relationship between the various external funds acquired and the number of URAs with regard to university rankings. Consequently, we find that the number of URAs, URAs themselves, and URA initiatives can all be regarded as possible contributing factors to improve university rankings.

Considering the above four key findings, we conclude that the number of URAs employed at Japanese universities contributes both directly and indirectly to improvements in university rankings and the indicators of URA initiatives considered to be closely related to university rankings.

Recently, Japanese universities have been placing greater importance on their reputation as indicated by their ranking. Each university tends to assess its position and evaluation indicators in university rankings, and these evaluations are frequently featured on university websites as a form of promotional material. According to Takata et al. (2022), national universities lead the efforts to improve their rankings, followed by private and then public universities. Moreover, they infer that national universities are more active in responding to university rankings because the rankings are often cited in reports on various policies.

Based on our analysis (Tables 1 and 5), the majority of both universities employing 10 or more URAs and the top-ranked Japanese universities tend to be national universities. Given the results of our analysis, we consider the outcome to be reasonable.

Hirose and Kimura (2017) examined global university rankings from different perspectives as a form of reputation management. They found that universities without an international reputation cannot compete for the most talented students or faculty or for external funds. Focusing on university rankings, MEXT's Top Global University project implemented national-level initiatives that took global university rankings into consideration, such as targeting "top Japanese universities that have the potential to rank among the top 100 in the world and conduct world-class education and research". Notably, research-related matters have been used as evaluation indicators for university rankings, and a highly to moderate positive correlation was found between the number of URAs employed and both the various external funds acquired and research outputs. This indicates that URA activities contribute significantly, both directly and indirectly, to improvement in the evaluation indicators used

in university rankings, ultimately improving the rankings of the respective universities.

Thus far, we have emphasized the importance of university rankings with regard to university reputation. It should be acknowledged that there are various perspectives on university rankings, and we should recognize that university rankings are not always an effective indicator. Nevertheless, they represent an important source of reputation in a competitive global education sector. Since rankings are published by various media outlets and attract significant attention from many different stakeholder groups, they cannot be overlooked with regard to research reputation.

Finally, regarding URA activities, the effects of introducing URAs are often not immediately apparent, whether in specific terms of securing external funds or the number of research outputs, for instance, or in general terms of achieving an overall improvement in research management. Therefore, to clarify the impact of the number of URAs, case studies of URA activities and impact must be conducted for each university, incorporating both quantitative and contextual analyses of the actual situation at each university with regard to the introduction of and roles played by URAs.

Despite its contributions, this study has its limitations. In this study, we used only CWUR; however, there are other university rankings besides CWUR. Furthermore, evaluation criteria are not consistent across all university rankings, and new criteria may be introduced. Consequently, even within the same ranking system, a university's ranking may fluctuate significantly from year to year due to changes in the evaluation criteria. Moreover, some universities that do not employ any URAs have been recognized in university rankings. Notably, there are other methods for measuring research outputs besides the number of intellectual property applications. Therefore, our quantitative analyses alone cannot confirm a causal relationship for each evaluation indicator. Thus, the

study remains a trend analysis.

8 Conclusions and future research

In this study, we conducted various quantitative analyses with unique indicators, including the number of URAs employed, CWUR ranking, amount of monetary gifts received and external funds acquired, and research outputs, as well as the ratio of the number of URAs to the number of faculty members, to clarify the relationship between URAs and university rankings. The analysis showed that Japanese universities tend to benefit both directly and indirectly from employing URAs in terms of improving their university ranking positions and evaluation indicators. Additionally, multiple regression analysis demonstrated statistical significance between the number of URAs and the amount of acquired external funds with regard to the university rankings.

The primary purpose of introducing URAs in Japan is to strengthen research management and support research revitalization by enabling researchers to maximize their research performance. Since research strategies vary by university, the scope of the tasks taken on by URAs also tends to differ. However, correlation analysis using the number of URAs, research outputs, and various external funds and monetary gifts acquired showed positive trends. Since a university with more effective research management will tend to acquire more external funds and produce more research outputs, we conclude that the number of URAs contributes to fostering more effective research management. Moreover, higher-ranked Japanese universities tend to employ a larger number of URAs, indicating that their research management is more effective, which in turn results in them acquiring larger amounts of external funds and producing more research outputs.

We conducted the analysis in this study using a comprehensive global university ranking. However, there are several different types of university rankings, and it should be noted that certain universities may not feature in comprehensive university rankings, but may be recognized

in more specialized rankings, such as subject-specific, faculty, or regional rankings. Consequently, given the prospective variance in research strategies and priority research areas across universities, the utilization of specialized rankings in conjunction with comprehensive rankings may facilitate a more comprehensive examination of the contribution of URAs to university rankings.

In the field of university rankings, the metrics most commonly employed include the number of papers, citations, and research evaluations. However, it should be noted that the production of research outputs requires sufficient research funding and a conducive research environment. Recent surveys of research and development management personnel, including URAs, indicate that the scale of externally acquired research funding is given substantial weight in employment evaluations and hiring policies. Thus, it can be anticipated that an increase in the contributions and improvement in the functioning of URAs in the future will result in larger amounts of external funding being secured, and thus more resources being committed to generating research outputs. This in turn will contribute to the enhancement of Japan's research capabilities and the improvement of its university rankings.

Furthermore, introducing research and development management personnel requires securing competitive research grants and corporate funding. As shown in Table 8, the analysis revealed a clear positive correlation between the number of URAs and the amount of research funding received, which indicates that increasing the number of URAs contributes to enhancing a university's ranking position. University ranking evaluation metrics frequently employ research-related indicators, and the scope of URA responsibilities is also remarkably extensive. Consequently, even indicators not formally incorporated within the framework of university ranking evaluation metrics can exert an indirect influence. Hence, further research is needed to identify the most effective methods for establishing shared evaluation metrics to assess the impact

of the number of URAs on university rankings.

Previous studies have indicated the existence of an optimal scale for research promotion personnel, including URAs, when the objective is to secure external funds. For Japanese universities, the optimal number of URAs—and by extension, the optimal effect on the university ranking—is likely determined by several factors, including the university size, number of research faculty members, and designated priority research areas. In Japanese universities, where URAs have been introduced only relatively recently, research on URAs is still in its early stages. Therefore, in future work, we will further analyze the impact of URAs on enhancing research management using various indicators in Japan and other countries.

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