Characteristics and Changes in Japanese Public Administration Research: Statistical Content Analyses of Article Titles in *Public Administration Review Quarterly*(1978–2019)

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Research Article

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Abstract

The objective of this study is to understand features of Japan's public administration research and the changes it has undergone by using statistical content analyses. To this end, this study quantitatively explains research trends in postwar administrative studies in Japan by statistically analyzing article titles from the *Public Administration Review Quarterly* over the course of nearly 40 years. Co-occurrence network and correspondence analyses revealed the changes in research interests. There was substantially more research on administrative reforms through the postwar Showa and Heisei eras. The configuration of the correspondence analysis indicates that the first dimension is concerned with administrative reforms, the second with historical events or administrative systems, and the third with evaluations and kaizen (improvement). Co-occurrence network analysis showed that two extracted compound words, the United States and the United Kingdom, were very common in studies during the Showa era (1978–1988). This suggests that Japan's public administration was strongly influenced by the Western world during this period. Japan's own policies and institutions became a feature of these studies during the Heisei era (1989–2018). Compared with the results of the analysis of the author's previous studies on another Japanese administrative studies journal, there are both parts of the results that are similar. One commonality of the results of the analysis is that the dimension related to administrative reform was found in the correspondence analysis. In the present study, the first principal component was administrative reform, and Moteki's (2020) correspondence analysis also found "reform," "policy evaluation" and "governance" as characteristic extracted terms related to the 2000s. After World War II, Japanese public administration studies were strongly influenced by their American counterparts, which confirmed the managerial approach in the form of the rise of research on administrative reform. In this connection, the configuration figure of the second and third dimensions of the correspondence analysis in this study reveals "policy evaluation" and "improvement" (kaizen). This quantitative analysis also confirmed changes in the characteristics of Japanese public administration. Featured words like governance, local government, and policy evaluation in the figure of the Heisei era reaffirmed the changes in the direction of administrative studies.

Introduction

The concept of "governance" has become key in the world of public administration, aptly expressing the current characteristics of the public sector, and is required to manage administrative organizations by introducing private sector management methods instead of the bureaucratic style directed by various governments. This word also describes the current situation in the public sector, which requires the management of public organizations by replacing bureaucratic governance systems with private sector management methods. The concept of governance has attracted considerable attention in recent decades. The first issue of the journal *Governance: An International Journal of Policy, Administration, and Institutions* (1988) contained several articles on the changing relationship between politics and public administration, the subject of an ongoing debate in American public administration research, such as in Campbell and Peters (1988). Subsequent research on public administration has been divided into two major categories: (1) the use of governance as an abstract concept representing a change in the way public offices are governed, and (2) the use of governance as a concrete concept in the same way as corporate governance, signifying compliance with laws and regulations and proper operational management of organizations. Examples of the former are Compton et al. (2022) and Dickson (2016), while Brunet and Aubry (2016) and Almquist et al. (2013) represent the latter. Governance in the private sector is often used with a specific meaning related to fiscal accountability. While governance in the corporate sector means enacting rules and strengthening the authority of shareholders and boards of directors, governance discussions in the government sector often indicate a retreat or reduction in the oversight and role of government.

Turning to recent changes, a major influence on the world of public administration has been the COVID-19 epidemic and the administrative and public sector responses based on it. In the wake of the global pandemic, the debate about the role of government that has been ongoing since the 1980s is about to change dramatically. Specifically, the introduction of private management methods and the introduction of competitive principles into public services are not currently

considered effective in addressing this public health crisis and the resulting significant impact on the lives of citizens. Hall (2021) also discusses the COVID-19 epidemic and its major impact on public administration research in the opening Editorial of an issue of *Public Administrative Review*, a leading journal in public administration.

The objective of this study is to understand the features of Japan's public administration research and the changes it has undergone by using statistical content analyses. A bibliometric quantitative analysis will be conducted to understand the diachronic changes in administrative reality and administrative theories in Japan. This manuscript quantitatively explains research trends in postwar administrative studies in Japan by statistically analyzing article titles from the *Public Administration Review Quarterly* over the course of nearly 40 years. Bibliometric quantitative analysis is performed through co-occurrence and correspondence analysis, a typical text mining method. Co-occurrence network and correspondence analyses revealed changes in research interests.

Specifically, the characteristics of Japanese public administration that we wish to clarify are those inherited from American public administration, namely, the widespread application of business administration methods and the fact that these inherited characteristics have changed over time. The study of public administration in the United States, as a leading textbook in the field points out, began with Woodrow Wilson's article in the *Political Science Quarterly* titled "The Study of Administration." In that same paper, Wilson argued for separating public administration from political phenomena and political science, stating that "The field of administration is a field of business" (p. 219). American public administration as a discipline has since developed because of professional graduate schools that train public administration professionals for "public administration," which is basically a parallel to "business administration," a major in corporate management. Japanese public administration, like other modern social sciences, has been influenced academically by the United States, which assumed power after World War II. In the current scenario of administrative studies in Japan, some scholars like Nishio recognize administration as one of the three pillars of the discipline, as I will address later, while others like Muramatsu emphasize a political science perspective in conducting their administrative studies. What the quantitative content analysis in this paper attempts to reveal is that the characteristics of American public administration, which in Wilson's terminology is "administration," or in other words, management-oriented methods, remain strong in current Japanese public administration.

Quantitatively analyzing and understanding trends in administrative research in Japan up to 2019 has two implications. First, by analyzing studies up to 2019 in the present study, it will be possible to identify the characteristics of administrative research before the impact of COVID-19, which is having a significant impact on the administrative world in the short term, and when its impact subsides in the future. Thus pandemics impact on administrative research trends can be compared for the two periods. In Japan, the impact of COVID-19 only began to increase from 2020, and in 2019 there were not yet as many empirical administrative studies on it. Additionally, Japan has the most ageing population of any developed country and is, the most developed country in terms of challenges. This is called, in Japanese, *Kadai Senshin Koku*. Since trends and features of administrative research largely reflect the trends and features of actual public administration, understanding them in the administrative research sphere in Japan, which has under-gone economic recovery through rapid economic growth after World War II and is now facing the challenges of an ageing society due to economic and social maturity, will be helpful to administrative practitioners and researchers in other countries that are facing similar issues. For these two purposes, this study used the text mining technique, which enables the quantitative analysis of qualitative information. One of its advantages is that other researchers can perform additional tests or reproduce similar studies based on the evidence.

With the rise of online journals and mega-journals with open access, an increasing number of research papers are being published, predominantly in English, the main language used in the academic world. Research that was previously published in local languages is now written in English and published in English journals. Since 2019, the COVID-19 pandemic has generated a large body of academic literature on the disease and how to respond to it. This includes the status of infections in countries worldwide, success or failure of relevant policies, and effective medical treatment

strategies. Much of the literature on COVID-19 has also been subjected to biblio-metric analysis, a frequent practice in other fields since the 1990s (Akintunde et al. 2021; Tantengco 2021). Drago et al. (2021) made a bibliometric analysis of 285 studies, published in 2019–2020, on the development of telemedicine, which has expanded with the spread of COVID-19. Ranjbari et al. (2022) conducted bibliometric and text-mining analyses of studies on waste disposal in the context of the COVID-19 pandemic. Utkarsh (2021) performed a biblio-metric analysis of the rich literature on the impact of the pandemic on the travel industry.

In the field of public administration and the management of public organizations, Di Vaio et al. (2022) is a recent example, focusing on bibliometric analysis. They analyzed 161 articles published, from 2017 to 2021, on how data intelligence and analytics can improve the effectiveness of public sector decision-making. Among studies that have focused only on articles published in specific journals for specific periods of time, Liu et al. (2022) presented a bibliometric analysis of articles published in the *Journal of Dental Sciences* from 2009 to 2020. Wei and Lei (2018) focused on the *New England Journal of Medicine*, to examine the difference between normalized citations of Harvard-based versus non-Harvard-based articles, and found it to be small. Chaudhry et al. (2021) analyzed bibliographic data over 12 years, for 1,264 articles, in the *Journal of Oral and Maxillofacial Surgery*, to measure levels of evidence for each reference, and discuss changes in their percentages over time. In the field of pedagogy, Marchand-Martella et al. (2021) conducted a bibliometric analysis of 1,671 references on active learning from the Web of Science Core Collection published between 2014 and 2019, and analyzed the characteristics of the journals by field, including distribution by countries and regions. Thus, an increasing number of studies are analyzing changes in research trends and characteristics over a specific period of time by conducting bibliometric analyses or systematic reviews of the growing literature in various fields. The increase in bibliometric analysis of COVID-19 studies, as discussed here, demonstrates the importance of analyzing research trends apart from the accumulation of individual, original studies, and this may also apply to administrative studies.

Research on public administration in Japan is increasingly being published in English, particularly research conducted by young researchers. For example, Kaihara (2008) discussed the characteristics and significance of the Koizumi reforms (2001–2006) to Japan's political and economic system in English. Similarly, Lee and Kim (2019) examined the differences in the use of welfare personnel other than civil servants, such as civic advocacy groups, in the context of welfare system reform in Japan and Korea. Rothacher (2010) provided an overview of the reflation policies adopted during the so-called lost decade (1992–2002), as well as their impact and characteristics, from an international perspective. A commonality between these studies is that they were conducted using literature predominantly published in English, which is currently the main academic language. However, when read in isolation, the context and practical implications of many of these studies are difficult to understand. Therefore, this study aims to understand features of Japanese public administration studies as a whole, using a bibliometric approach.

Therefore, this study analyzed the titles of articles from Japan's *Public Administration Review Quarterly* from the first (1978) to the 165th issue (2019) to quantitatively assess the research trends in postwar public administration. Published by the Institute of Administrative Management in Japan, this journal is one of the most renowned in its field. The institution is closely tied to the Ministry of Internal Affairs and Communications. For another leading journal, the *Annals of the Japanese Society for Public Administration*, a similar bibliometric analysis has already been performed and published in Japanese (Moteki 2020). By comparing the content analysis of two separate and influential journals of Japanese administrative research, the features commonly found in the results of the analysis may be followed up with different data and considered to be plausible and reliable findings. The target period is 42 years and comprises the postwar Showa and Heisei eras. The Showa era spans from 1926 to 1989 in the Western calendar. After Japan's defeat in World War II (WWII), in 1945, during the Showa era, various policies were established to democratize and demilitarize the nation, laying the foundations for the current Japanese political system. Public administration studies in Japan after WWII were strongly influenced by public administration in the United States because the initial democratic reforms were carried out under U.S.-centered Supreme Commander of the Allied Powers (called "General Headquarters" in Japan, GHQ) rule. Initially, the focus

was on the introduction of American theories, but later as a result of the accumulated research in Japan, there was an increase in studies that seek solutions to the country's administrative issues.

1.1 Qualitative Analysis of Research Trends in Japan's Public Administration

Leading public administration scholars, in their textbooks, present the characteristics of research trends in public administration based on their experiences and insights, and by looking at the arguments presented in two leading Japanese public administration textbooks, we will first consider them as a reference to compare and contrast the results of the quantitative analysis that this study will present later. Public administration scholars at the University of Tokyo and Kyoto University have been very influential in the field before, during and after World War II to the present day. This is because modern administrative science in Japan started in 1921, according to Nishio 2001, (p. 43) before WWII, when university departments in public administration were established at Tokyo Imperial University and Kyoto Imperial University (the predecessors of the aforementioned two universities). For this reason, many bureaucrats have been recruited from these two universities which have also been a major force in the center of public administration as an academic discipline. This is the reason why textbooks on public administration written by public administration scholars from these two universities are widely used in Japanese universities. One of the currently most popular textbooks in the field was published by a professor at the University of Tokyo (Nishio 2001). He considered institutions, administration, and policies as important aspects of public administration in Japan (Nishio 2001, pp. 50–51). Administration, according to Nishio (2001) means management theories and methods. Professors in Japanese universities, who use Nishio's textbook, also consider these three aspects important and teach their students the same in their lectures on public administration. The textbook is also widely used by college students preparing for civil service examinations, at the national and local levels. Nishio (2001) considered institutions, administration, and policies as key aspects of public administration in Japan, and these three dimensions were also observed in my correspondence analysis. Furthermore, Muramatsu (2001), a textbook by a professor of Kyoto University, exhibited the idea that public administration belonged to the political sciences (the subtitle of the textbook in Japanese is *Political Analysis of Modern Public Administration*). Muramatsu formulated a four-quadrant matrix of relevant studies, which includes foreign countries, Japan, theories, and practices (1983, p. 49). He highlighted a lack of necessary research in two quadrants: Japanese theories and practice in foreign countries; that is, according to him, public administration research in Japan at that time focused on foreign theories and Japanese practice.

Related Studies

Content analysis research started in earnest from Krippendorff (1980), although Wald (1973) attempted to quantitatively assess research trends in public administration in the United States, using the Delphi method. Content analyses are often called bibliometric analyses, and are important research evaluation instruments. Ni et al. (2017) used the bibliometric method to examine research trends in American studies on public administration, using PDF files (3,934 articles) of *Public Administration Review* from 1940 through 2013. Their analysis focused on the characteristics of authorship, including the most productive authors, authors' institutions, gender distribution, and the authors' professions as scholars or practitioners. In addition to authorship, word analysis was conducted to identify the 50 most-frequent title words to explain differences between the periods 1940–1964, 1965–1989, and 1990–2013. The article referred to previous quantitative research, using bibliometric data from the *Public Administrative Review* (p. 505). As explained in the introduction, Ni et al. (2017) conducted a bibliometric analysis of research published over the course of 75 years, and their article introduced studies of Gooden (2015), Groeneveld et al. (2015), Jones and Doss (1977), and Perry and Kraemer (1986). Gooden (2015) found that the percentage of articles on social equity published in *Public Administration Review* fell below 5% from 1940 to 2013, and that those published focused on personnel and public policy areas. An example of a recent bibliometric analysis is the one conducted by Agrifoglio et al. (2021), based on a systematic literature review of knowledge management in public organizations, using the Scopus and Web of Science databases. Cuccurullo et al. (2016) conducted

a bibliometric analysis of research trends on performance management, in both business and public administrations, using 25 years of data. The analysis of text-mining or bibliometric methods on research journals in the field of public administration, which is closely related to the analysis in this manuscript, is summarized in a list of methods, variables analyzed, names of journals analyzed, periods covered and what was found in the analysis (Table 1). The table shows that the analysis method can be seen as focusing on the title of the article.

Among research using text mining techniques in the social sciences, Amado et al. (2018) and White et al. (2016) applied this approach to management studies. Similarly, Kwon (2022) examined the research debate on transparency in the social sciences through bibliometric analysis. He used historiography and co-occurrence analyses to analyze and visually clarify the changing academic interest in transparency and relationships between themes. Following him, a co-occurrence analysis was also used in this current study. Furthermore, Hung (2012) used refereed journal articles and proceedings obtained from the Science Citation Index and Social Science Citation Index from 2000 to 2008. In the field of public administration, however, we found no literature using this technique in English journals. Moteki also examined articles from another major academic journal on Japanese public administration (The Annals of the Japanese Society for Public Administration), using the text mining method (2020).

Among Japanese academics, Saito (2011) used the same method to survey studies in the social and natural sciences, and Sakushima et al. (2012) employed it for titles published in the academic journal Clinical Neurology, obtaining text data from the Citation Information by the National Institute of Informatics (CiNii) database. Their research included a correspondence analysis. Although the research areas are different, this study refers to the methods employed by Sakushima et al. (2012). The only study that has conducted a bibliometric analysis of research trends in Japanese public administration, including text mining methods, is by Moteki (2020), in Japanese; it analyzed articles from the Annals of the Japanese Society for Public Administration. There are no studies in either Japanese or English that have analyzed *Public Administration Review Quarterly*, the subject of this study.

Materials And Methods

3.1 Material Collection

To grasp postwar research trends in Japan's public administration, the titles of the *Public Administration Review Quarterly* were gathered as target data. First, the keyword Kikan Gyosei Kanri Kenkyu (the Japanese title) was used to search the CiNii article database organized by the NII. Second, the search results were displayed in a tab separated values (TSV) format and saved. Finally, the TSV files were converted into a Microsoft Excel spreadsheet. As issues 1–4 was not included in the CiNii database, the hard copied were used and the data were entered into the Excel dataset. To enable reproducibility studies, machine translation from Japanese to English using Google Translate was conducted. The results were read through to confirm the appropriate-ness of the translation. Thereafter, the titles of the articles were treated in English.

For the dataset file, the following modifications were made: (1) titles (cases) indicating “book reviews” were deleted; (2) titles related to special articles on academic association conferences were excluded; (3) non-papers, such as lectures and forewords, were deleted. Furthermore, issues 1–4 were added, as mentioned, to the original 1,356 cases. As a result of these modifications, 842 titles of papers remained in the dataset. The advantage of using the title of the article as the object of analysis is that the theme of the article is most condensed and expressed in the title of the article, and the small amount of data handled makes it less likely that differences in procedures will arise when conducting replication studies. As shown in Table 1, representative studies in public administration and related fields have also shown certain results from analyses using only the title of the article. Another reason for using the title of the article as the subject of the research is the need to align the units of the research subject in order to compare it with the author's previous research of Moteki (2020).

3.2 Methods

To examine this text data, the KH Coder (version 3.Alpha.17k) developed by Dr. Higuchi Koichi, of Ritsumeikan University, was used. This free software was developed using a Grant-in-Aid for Scientific Research from Japan's Ministry of Education, Culture, Sports, Science and Technology (Higuchi 2016). The Stanford POS Tagger software was used for a morphological analysis of the sentences.

Processing compound words for technical terms by using the program alone was not sufficient, because not all of the compound words can be grasped that way. Therefore, all the words listed in the index compiled by Nishio (2001) in the standard textbook for public administration in Japan were used. As a result, the number of compound words based on this index amounted to 815. Following this process, the extracted words were checked. Important concepts that had not been extracted, such as governance and United Kingdom, were added manually to the list of special designated words and compound words.

Text mining analysis is essentially an exploratory method that focuses on the frequency of extracted words and co-occurrence relationships, and attempts to quantitatively understand the content of the text by presenting the relationships between extracted words using statistical tests such as the χ^2 test and visualization techniques such as correspondence analysis and co-occurrence network analysis. The analysis methods used next in this manuscript are co-occurrence network analysis and correspondence analysis. Lebowitz et al. (2020) use co-occurrence network analysis in text mining analysis, where the size of the circle surrounding the extracted words represents the frequency of the extracted words, and a straight line between the circles indicates that the co-occurrence relationship between the extracted words is above a certain strength. The same meaning of dots and lines in the co-occurrence network analysis is also used in the analysis in this manuscript, with lines showing the relationship between the nominalized variable of the publication date of each data article in the analysis. This is known as multiple correspondence analysis. Correspondence analysis in text mining analysis is often used to illustrate the relationships between extracted words and between extracted words and variables not related to extracted words. Liu et al. (2023) propose a new method for correspondence analysis for text mining analysis, but also include a mathematical explanation of conventional correspondence analysis as a prerequisite for discussion.

Results

To examine the relationships between the extracted words, correspondence and co-occurrence network analyses were performed. Using 10-year time periods as external variables in deriving relationships between the extracted words led to an understanding of the transition and characteristics of each period in the target studies.

4.1 Co-occurrence Network Analysis

Co-occurrence network analysis was performed to understand how the focus changed from the first period (the *Showa* era, 1978–1988) to the second one (the *Heisei* era, 1989–2018). In Japanese local governments, public officers use the Japanese periods (*Wareki*), which are named according to the reign of each emperor (*Tennou*). To compare the differences between the first decade and those that followed, these Japanese periods were used. In the co-occurrence network analysis shown in Figure 1, the *Showa* and *Heisei* eras were selected as external variables to draw the figures. To filter up to 60 edges (nodes), the Jaccard index was used as the selection criteria (for a mathematical explanation of the Jaccard Index, see McCormick et al. (1992)).

Regarding words closely connected to the *Showa* era (on the right side of the figure), we see examples in article titles from the United States and the United Kingdom. Also evident are some of the specific themes of these papers that introduce

each country's administrative practices and institutions. In titles from the United Kingdom, we found mentions of the civil service system, political appointment system of officials, and industrial policy of the country. In titles from the United States, we found mentions of the parliamentary system, Office of Management and Budget, and approval process for new medications. After its defeat in WWII, and specifically as a result of the American occupation, Japan witnessed an evolution of the social sciences, taking the United States and the United Kingdom as exemplars.

In contrast, the word *Japan* is located on the left side of the figure (related with the *Heisei* era). Here, *Japan* emerged as a popular topic in administrative research in the *Heisei* era because the Great East Japan Earthquake of 2011 had a significant impact on the government, and the journal analyzed in this study featured policies and systems related to the earthquake and the crisis it caused. This indicates that research trends shifted from studies involving cases of foreign countries to those on domestic cases and solutions, partly because of the economic, human, and environmental problems caused by the earthquake. In addition, we see *governance*, *local government*, and *policy evaluation* on the left side of the figure (the *Heisei* era). These words indicate research features regarding the respective time periods. At the center of the figure, we see the extracted words such as *reform*, *administrative reform*, *management*, *theory*, and *administration*. These are common words across both time periods.

4.2 Correspondence Analysis

A correspondence analysis, which is a typical technique for graphically displaying category data, was also conducted. To grasp the changes and periodical characteristics of research trends in public administration in Japan, a 10-year time period was used as an external variable, creating five time periods.

Figure 2 shows the result of the correspondence analysis. The extracted words located near the origin, where two dimensions intersect, do not have distinctive features. Dimension 1 is an axis from left to right. We see the word *Rincho* at the far left of the configuration map. *Rincho* represents the abbreviations of government commissions for the administrative reforms from 1961–1964 (the *Ikeda* administration) and 1981–1983 (the *Suzuki* and *Nakasone* administrations). On the far right of the figure, we see the *Great East Japan Earthquake* and *Governance*. These extracted words differ from those related to the administrative reforms. Here, dimension 1 was interpreted as an axis of administrative reforms.

Regarding dimension 2, we see *Information disclosure*, *Gyokakushin*, and *Policy evaluation* in the lower part of the figure. The Act on Access to Information Held by Administrative Organs enacted in 1999 established a mechanism for government agencies to disclose information. *Gyokakushin* (an abbreviation of *Rinji Gyosei Kaikaku Suishin Shingikai* [Extraordinary Administrative Reform Promotion Council]) started in July 1983 during the era of the *Nakasone* Administration. The Government Policy Evaluations Act (Act No. 86 of June 29, 2001) introduced policy evaluations at the national government level. In the upper part of the figure, we see *Great East Japan Earthquake*, *History*, and *Development*. Considering the foregoing, dimension 2 was interpreted as an axis of historical events or administrative systems.

Figure 3 is a configuration map of dimensions 2 and 3. We see *Gyokakushin* and *Case study* at the top of the figure. In the lower part of the figure, we see *Policy evaluation* and *improvement (Kaizen)*. Based on these extracted words, dimension 3 was interpreted as an axis of evaluations and *Kaizen*.

Discussion

5.1 Comparison with discussions of research trends based on qualitative findings present-ed in textbooks by individual key researchers

In this section, the results of text mining are discussed with reference to the factors pointed out by Nishio (2001) and Muramatsu (1983). The correspondence analysis showed three dimensions: administrative reforms, historical events or

administrative systems, and evaluations and kaizen. The first dimension implies that problems related to administrative matters, which Nishio (2001) highlighted as an important perspective on administration, referring to management aspects, are actually a strong feature of public administration research trends in Japan and the Quantitative text mining methods also confirmed this. Many scholars, like Muramatsu (1983), emphasized the need to study policy practices in foreign countries and create theories based on them for Japan. They also, conversely, insisted on strengthening research in the field of Japanese empirics, and on putting forward Japanese-born theories. Co-occurrence network analysis, which focused on differences between the Showa and Heisei eras, reveals that studies during the Showa era (1978–1988) could be partly characterized by the frequent occurrence of two extracted compound words: United States and United Kingdom. Japan, as a keyword, started occurring more often in studies on public administration during the Heisei era (1989–2018). This result indicates that studies on public administration during the Heisei era shifted from importing theories from the United States and the United Kingdom, to conducting research on practices in Japan. The result of these text-mining analyses is that the shift in emphasis in empirical studies from Western countries to Japan, as argued by scholars including Muramatsu, can be observed quantitatively.

5.2 Comparison with the results of Moteki (2020), which analyzed the Annals of the Japanese Society for Public Administration

Moteki (2020) analyzed the Annals of the Japanese Society for Public Administration, with conducting Co-occurrence network analysis, cluster analysis, and correspondence analysis to grasp features of Japanese administrative studies' trends. This previous study was written in Japanese and analyzed for textual data from a different journal than this manuscript. The characteristics identified in each of these analyses, such as the fact that there were more administrative studies on reform, evaluation and policy evaluation mainly in the 2000s were commonly identified. The correspondence analysis of extracted words using the decade-by-decade chronological classification of the western calendar as an external variable revealed the characteristic words of each decade. Namely, (1) the 1970s papers are characterized by "public participation," "administrative planning," "publicness," "policy-making," and "decision-making." (2) "Reform," "policy evaluation" and "governance" are found as characteristic terms of the 2000s. This may be related to the introduction of the policy evaluation system based on the Hashimoto Reform and Policy Evaluation Law and the administrative evaluation system in local governments (the pioneering policy evaluation system in Mie Prefecture was the first such system) in the 2000s. (3) Since 2010, the following extracted terms have been positioned: "Great East Japan Earthquake," "chief executive," "Okinawa," and "international comparison." (4) The Great East Japan Earthquake occurred in 2011, and in terms of time period, it can be said that it was a disaster that significantly characterized administrative studies research after 2010. The fact that the research on administrative reform and evaluation and policy evaluation in the 2000s and 2010s has changed considerably. The results of correspondence analysis showed that the first component was time; the second component is "evaluation and reform;" the third component was "policy process." These second and third components are the major pillars of post-war public administration studies in Japan. As with the cluster analysis "identity of public administration," "management, institutions, and policies" and "reform and local government," the centers of research on post-war public administration in Japan were extracted from the quantitative analysis of this previous study.

Compared to the results of the analysis in this manuscript, there are both parts of the results that are similar and parts of the results that are different, in other words, there are features that only appear in the results of one analysis. One commonality of the results of the analysis is that the dimension related to administrative reform was found in the correspondence analysis. In the present study, the first principal component was administrative reform, and Moteki's (2020) correspondence analysis also found "reform," "policy evaluation" and "governance" as characteristic extracted terms in the 2000s. In this connection, the distribution diagram of the second and third dimensions of the correspondence analysis in this study (Fig. 3) reveals "policy evaluation" and "improvement" (kaizen). These features may have a certain

degree of certainty, as they could be found as features for administrative reform and policy evaluation in the analysis of two text-mining methods on separate public administration research journals.

The fact that the Great East Japan Earthquake was found as a characteristic extract term is also common to the two analyses. The earthquake in 2011 had a significant impact on people's lives and the nature of public administration, and it was confirmed that this was certainly a major feature of the research in the period under study, as highlighted in the text-mining analysis of the two journals. On the Dimension 2 axis of the configuration map (Figure 2), the word Great East Japan Earthquake appears at the top of the figure. This indicates that the 2011 earthquake greatly influenced the theories and practices of public administration in Japan. This historical event has significantly impacted research in this field and has been a major factor influencing the re-search trends.

Conclusion

This study quantitatively examined research trends in postwar administrative studies in Japan by statistically analyzing nearly 40 years of article titles published in the Public Administration Review Quarterly, from its first (1978) to its 165th issue (2019). The two most prominent Japanese public administration journals are the Annals of the Japanese Society for Public Administration and Public Administration Review Quarterly; the former has been analyzed in Moteki (2020), and the latter in the current study. The former is a journal published by an academic society, while the latter is a research journal for practitioners, published by an organization affiliated with the Ministry of Internal Affairs and Communications. After implementing a morphological analysis, using the Stanford POS Tagger, co-occurrence network and correspondence analyses were conducted. The results revealed that research interests had changed over time. Specifically, based on the co-occurrence network, there was substantially more research conducted on administrative reforms during the Showa and Heisei eras, spanning 42 years. These results confirm that administrative (management) theories and methods are one of the three components of public administration in Japan, as pointed out by Nishio (2001). Furthermore, the first dimension of the correspondence analysis implies that the problems related to administrative matters are actually features of public administration in Japan. In the correspondence analysis, both the first and second and the second and third dimensions were selected as axes of configuration, describing the relationships between extracted words. The following interpretations can be derived from each configuration: the first dimension is concerned with administrative reforms, the second with historical events or administrative systems, and the third with evaluations and Kaizen. Policy evaluations are an important element of the three policy aspects suggested by Nishio (2001). The introduction of management methods from the private sector, such as Kaizen, into Japanese governance was also a major feature of the administrative reforms. These methods of improving organizational management are further related to Administration, one of the three public administration perspectives identified by Nishio (2001). It was quantitatively confirmed that the characteristics of American public administration, characterized by managerial methods or, in Wilson's terminology, "administration" methods, remain strong in contemporary Japanese public administration.

The results of the co-occurrence network analysis illustrated the differences in research trends between the Showa and Heisei eras. Traditional Japanese studies on public administration focused on introducing foreign theories from the United States and the United Kingdom to actual Japanese policies. However, the extracted word Japan in the co-occurrence network figure implies a research shift that led to the creation of context specific administrative theories. Featured words like the governance, local government, and policy evaluation on the left side of the figure (the Heisei era) also reaffirm changes in the direction of studies. Muramatsu argued for a change in Japanese public administration studies by focusing on a political science approach. Such a change in emphasis was observed in this quantitative analysis, as evidenced by the presence of Japan in the extracted words in the co-occurrence network analysis. The appearance of extracted words such as reform, administrative reform, management, theory, and administration at the center of the figure, suggest that these words were common occurrences across both time periods.

Based on the above and the results of this study, it can be said that the major pillars of Japanese postwar administrative studies from 1978 to 2019 confirm the directions identified by the qualitative research conducted by Nishio (2001) and Muramatsu (1983). Furthermore, in light of the findings of this study, previous qualitative research, which mostly relied on the analysts' experience and perceptions, can be comprehensively re-examined quantitatively. The qualitative analysis in this study was based on personal experience, but validated by quantitative analysis of the data, strengthening this study's contribution to the research field. Muramatsu's (1983) emphasis on the need for theories based on Japanese practices is demonstrated by the co-occurrence network analysis of this study, which focused on the differences between the Showa and Heisei eras. The changes in Japan's public administration, which Muramatsu (1983) pointed out were necessary, have been quantitatively confirmed by the empirical evidence of the text mining method, which shows changes in the frequency of the terms United States, United Kingdom, and Japan. In Moteki's study, published in Japanese (2020), analyzing the titles of another journal of public administration, the three dimensions of the correspondence analysis were time, evaluation and reform, and policy processes. While similar, the results of the two studies differ slightly. The variation stems from the difference in the journals' target audiences and characteristics. These differences will be further examined in future research.

As a scholarly contribution, it should be noted that the results were compared with the author's previous analysis of another journal (Moteki 2020), and both results commonly confirmed that research on administrative reform is a major feature in Japanese public administration studies. Text mining methods are quantitative methods, but compared to multivariate analysis such as ordinary regression analysis, they are exploratory methods and tend to lack some rigor, as the analysis procedure and the objects to be focused on differ from author to author. By comparing the results of the author's two studies in the present study, it seems that the characteristics of Japanese public administration research can be shown with a certain degree of rigor and verifiability.

6.1 Limitations of this Study and Future Agendas

This study has the following limitations: first, the period under analysis is limited to post WWII. Since the *Meiji* era (1868–1912), Japan adopted from the Western theories not only from natural sciences but also social sciences, including public administration, to catch up with Western countries in terms of economic and national power development, and continued to develop research and educational infrastructure at Japanese national universities. For example, courses in public administration were established at Tokyo Imperial University (now the University of Tokyo) and other universities, and education and research in public administration were promoted, on the premise that they would contribute to the development of the nation's governance structure; the subject also became widely studied by students aiming to become national civil servants. The core content of public administration as a discipline did not change much before and after WWII, and in order to create a comprehensive picture of research trends and changes in Japanese public administration, it is necessary to also take into account the research trends manifested since the *Meiji* era. Further, to understand research trends that account for all *Meiji*, *Taisho*, and *Showa* periods, it is necessary to examine data available in books. Since the CiNii Books database contains virtually all books held in university libraries, the aim is to conduct a bibliometric analysis of research trends for books, using this database in the future.

Another limitation of this study derives from the fact that bibliometric analysis is a methodology limited to text mining of study titles. Some bibliometric studies conducted in the United States for the *Public Administration Review*, such as Ni et al.'s (2017), conducted an analysis of authorship attributes. As already mentioned in this paper, the eastern University of Tokyo was the primary center of public administration studies in Japan in the beginning, and in the postwar period, the western Kyoto University also became an important research center. Recently, diversity has become a requirement in the

world of research. In the future, the research in this paper will be expanded upon and a wider range of analytical targets for bibliometric analysis, that is, factors such as authors' gender, university of origin, work experience, mono-authorship/co-authorship, and availability of external funding will be introduced, thereby aiming for a more comprehensive quantitative analysis.

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Table

Table 1 Characteristics of bibliometric/text mining analysis in public administration and related fields

	Target Journal	Target Text File	Software used for morphological analysis/bibliometric	Co-occurrence network analysis	correspondence analysis	Features and Analysis Results.
Sakushima, et al. 2012	Japan Neurological Society, <i>Clinical Neurology</i>	Article Title	MeCab	–	X	Data from the CiNii database. From an analysis of article titles, they found that multiple sclerosis was a recurrent extract in disease names and autopsy was a recurrent extract in medical terms, and from a chronological analysis, they found that extracted words related to antibodies and genes began to appear from the 1980s onwards, and then increased.
Gooden (2015)	<i>Public Administration Review</i>	–	–	–	–	Bibliometric analysis without text data. Number of papers on Social Equity, calculation of the percentage of all papers, and aggregation of the percentage of papers in each individual subject area in the field.
Ni et al. (2017)	<i>Public Administration Review</i>	Article Title	unknown	–	–	In addition to the analysis on the bibliographic data of the literature, a frequency tally is carried out on the words

						contained in the article title. Changes in research trends are analyzed by identifying changes in the words that appear more frequently in each period of about 20 years.
Di Vaio et al. (2022)	the author's keywords for the titles	Article Title and abstract fields	VOSviewer	X (Network visualization map)	–	Analysis in the field of data intelligence and analytics, using both bibliographic and textual data taken from the Web of Science.

Figures

Figure 1

Co-occurrence Network Analysis of Extracted Words (the *Showa* and *Heisei* Time Periods)

Figure 2

Correspondence Analysis (the First and Second Dimensions)

Figure 3

Correspondence Analysis (the Second and Third Dimensions)