

Research Collaboration and Leading Role: A Comparative Study on the Academic Communities in Japan and Taiwan

Szu-chia Lo¹, Yuan Sun²

¹*szuchialo@ntu.edu.tw*

Department of Library and Information Science, National Taiwan University (Taiwan)

²*yuan@nii.ac.jp*

Information and Society Research Division, National Institute of Informatics (Japan)

Introduction

Collaboration has long been viewed as a preferred strategy for enhancing knowledge or expanding academic research resources, and collaborative approaches to research are encouraged (Katz & Martin, 1997; Kyvik & Reymert, 2017; Ponomariv & Boardman, 2016). Besides to carry out collaborative activities, these topics involved with research collaboration have attracted researchers to study collaboration scenarios (Ponomariv & Boardman, 2016). However, various factors, political policy, health issues and economic stress, which the academic communities might encounter at some points, such as COVID might transform scholarly activities (Melin & Persson, 1996; Ponomariv & Boardman, 2016), and further influence research collaboration. The authors of this work particularly interested in the research collaboration among the universities affiliates and took this as the main theme of this study. Following up the authors' previous studies, the authors continue to take the co-authorship as a flag to present the research collaboration, holding the position of the first or corresponding author was the leading role in the collaboration, and the journal articles were taken as the outputs of the research collaboration. The works were retrieved and examined to investigate the scenario of research collaboration and the role in the collaboration of the universities that are with different research productive strengths in Japan and Taiwan. Considering the long-term features and trends changes, the data of 2014, 2017, 2020 and 2023 were searched for this study and targeted universities were also screened with the idea of "Bradford Law".

The study tried to target the following research questions,

- Research productivity of the targeted universities of Japan and Taiwan during the observed period
- Research collaborations of the targeted universities of Japan and Taiwan during the observed period
- Role of the authors in the research collaboration of the targeted universities of Japan and Taiwan during the observed period

Method and data

The authors targeted the journal articles included in Web of Science (WoS) (A&HCI, SCI, SSCI) for this study and the data was retrieved by the names of the affiliations, which were the universities of Taiwan and Japan. The list of universities was obtained from NTU (National Taiwan University) Rankings, and the names of those universities were used for the search. To enclose the trends of research collaboration, the authors kept the articles issued in 2014, 2017, 2020 and 2023 for the study. After the first-round search, the author information was extracted from the bibliographic data, and tagged indicate the authorship, type of collaboration, which was tag either domestic or international collaboration, and the roles of the author in the collaboration, leading role means the author was list either as the first or corresponding author, and supportive was tagged if neither status applied. To investigate the similarity or difference of collaboration of the universities that showed different levels or research strengths, the authors applied the ideas of Bradford Law and grouped the universities into three sets based on the research

productivity, and took the universities listed at the first place of each group for further observation. All the calculations were conducted on a university's basis, and the results were viewed from an institutional perspective. The works done by over 100 universities in Japan and 70 universities in Taiwan, and over 540-thousands articles were examined in this study. Table 1 shows the numbers of universities and articles included in this study

Table 1. Statistics of research data.

	Japan		Taiwan	
	Universities	Articles	Universities	Articles
2014	111	83345	77	37610
2017	112	95477	76	36296
2020	93	105948	42	41223
2023	80	97724	35	42724

Results

With the limited space for the poster, the authors present the research results mainly with figures and related statements.

Major gaps in research productivities were shown among the universities in different productive tiers for both Japan and Taiwan. (Figure 1-a, 1-b)

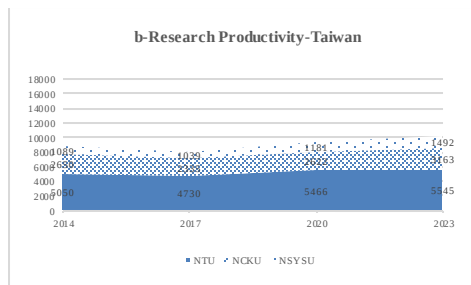
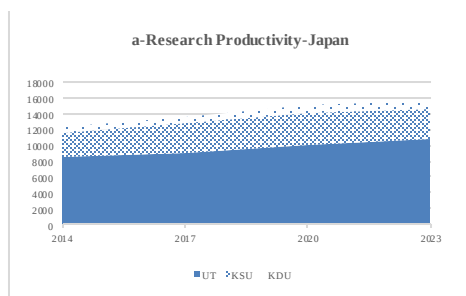


Figure 1. Research productivities of sampled universities: (a) Japan, (b) Taiwan.

The research output relied on highly collaborative efforts, and the dependence continuously increased for both Japan and Taiwan. (Figure 2-a, 2-b) In Japan, the more productive universities gained more chances to collaborate with peers.

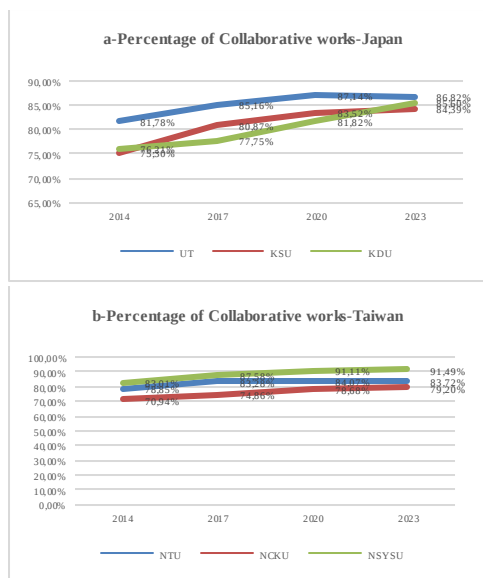


Figure 2. Dependency of research collaboration: (a) Japan, (b) Taiwan.

Domestic collaboration had more advantages during the 2010s, but international collaboration attracted similar efforts after the 2020s.

Sampled universities hold leading roles in close to 50% of the research collaboration with one exception. (Figure 3-a, 3-b). The universities with higher productivity tend to hold the leading position in the collaboration

in Japan, however no major differences are observed in the cases of Taiwan.

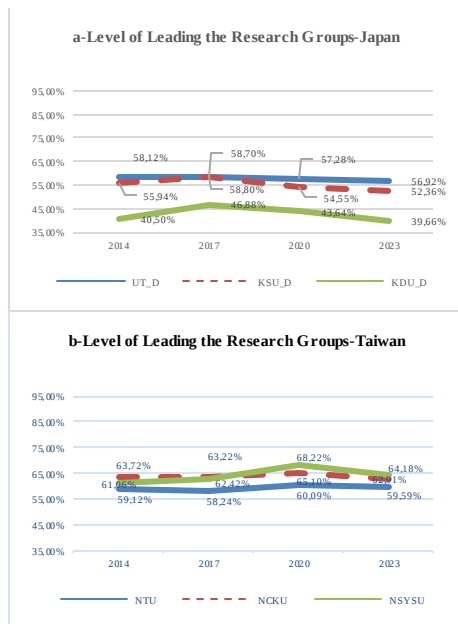


Figure 3. Leading roles in research collaboration: (a) Japan, (b) Taiwan.

Conclusion

The results reflect the trends and the similarities of the strategies taken for the research development of the observed regions. Both domestic and international collaboration gained attention for the sampled universities. The pictures of leading roles in the research collaboration of the academic communities of Japan and Taiwan are a little bit different, the ones with more productive strength had better chances to hold the leading position in the collaboration in Japan, but no strong evidence to show the differences for Taiwan.

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