Analysis of MIS Journal Publication in Taiwan

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Abstract - Research productivity is everything in academia, where scholars look to co-authorship among faculty members to drive success and academic advancement. This paper plans to apply D3.js to examine the impact of collaboration patterns, research productivity patterns, and publication patterns of all Management Information Systems (MIS) faculty members in Taiwan from 1982 to 2015. We will first investigate the evolution of the journal publications in SCIE-indexed journals, SSCI-indexed journals, TSSCI-indexed journals, and other indexed journals, as well as their growing trend in journal publications, particularly from 1982 to 2015. Next, we will analyze the single-authorship and co-authorship patterns. After that, we will investigate the collaboration patterns among different regions in Taiwan. Furthermore, we will study the collaboration and publication patterns from the top 20 universities that had the most contributions on SCIE-indexed journals, SSCI-indexed journals, and TSSCI-indexed journals between 1982 and 2015. Finally, we will determine the most popular journal titles among the SCIE-indexed, SSCI-indexed, TSSCI-indexed journals, or MOST recommended journal list.

Keywords: data visualization, social network analysis, publication and collaboration patterns

1 Introduction

Research productivity is a crucial influence on faculty promotion, tenure decisions, and academic success. For this reason, some scholars have 1) measured the impact of faculty's research output [1]; 2) analyzed the factors that affect the research productivity of production and operational management groups [6]; 3) discussed trends in senior faculty productivity over time [3]; 4) investigated gender differences in research productivity, academic positions, career duration, and funding in Radiation Oncology [8]; and 5) investigated the journal publications of MIS departments in Taiwan from 2001 to 2008 [7]. According to [9], Asian scholars have always devoted more of their efforts to publishing their journal papers in CIE-, SSCI-, TSSCI-, or A&HCI-indexed journals than have their Western colleagues.

However, the focus on pure productivity is not universal; some scholars believe that academic collaboration is another key to success. [13] observes the rising trend of collaboration among faculty members, especially in scientific research, where it tends to result in higher-quality papers. Some scholars examined: 1) beneficial issues of international collaboration in biochemical research [10], and scientific and engineering disciplines [4]; 2) scientific collaboration patterns in tourism research [2], additive manufacturing [13]; 3) collaboration evolution in multi-authored publications in Physical Review journals [12]; 4) scholarly influence, scientific collaboration, antecedents to co-authorship, and effect of co-authorship in five leading Information Systems journals [5]; 5) collaboration experiences across different disciplines [11].

Therefore, this study applies D3.js and social network analysis (SNA) to examine the impact of collaboration patterns, research productivity patterns, and publication patterns on all MIS departments in Taiwan. Our contributions include:

- Analyzing the journal publication patterns of all MIS faculty members in Taiwan from 1982 to 2015.
- Analyzing the research productivity patterns of all MIS faculty members in Taiwan from 1982 to 2015.
- Analyzing the collaboration patterns of all MIS faculty members in Taiwan from 1982 to 2015.
- Understanding and characterizing networking with MIS departments in Taiwan.

2 Methodology

This paper analysed the journal publications of all MIS faculty members in Taiwan from 1982 and 2015. We first crawled all the journal publication records from all the MIS professors listed on the Ministry of Science and Technology of Taiwan (MOST) website. Our crawl date was March 7, 2016. Next, we checked the crawled publication data and authors’ information with the data shown from the Web of Science (WOS) website, Airiti Library website, and Google Scholar, and corrected any misspelled article names if necessary. After that, we conducted data cleaning and data normalization: separating data into appropriate columns, fixing journal title abbreviations, fixing mistyped or misspelled information, de-duping the duplicate data, and finally separating these data into appropriate database tables. We further checked every journal’s impact factor against the information listed in 2015 Journal Citation Report and 2015 TSSCI report. After the data processing and data duplication, we had 1,376 MIS professors left, with a total of 19,404 publications.

After we finished retrieved and processed the data, we next apply the following equations to calculate our data:
1. Power-law degree distribution which adapts the preferential attachment process, and the probability of one node attaching to another node is proportional to the other node’s current connections.

2. Cumulative Distribution Function (CDF), the integral of the probability density function, which completely describes the probability P of the real-valued random variable X.

3. Degree Centrality, which is the easiest means of measuring the most important or central nodes in a network.

4. Closeness Centrality, which offers a means of measuring the average distance from any given node to other nodes.

5. Betweenness Centrality, which measures the number of times that a node lies on the shortest path between other nodes.

Finally, after we finish our data calculation process, we further employ SNA to analyze and visualize the MIS collaborations in Taiwan.

3 Validation and future work

We plan to use SNA to analyse and visualize the MIS collaborations in Taiwan for the following questions:

- What is the evolution of the journal publications and research productivity in SCIE-indexed journals, SSCI-indexed journals, TSSCI-indexed journals, and other indexed journals from 1982 to 2015?
- What are the single-authorship and co-authorship patterns of all MIS faculty members in Taiwan from 1982 to 2015?
- What are the collaboration patterns among different regions in Taiwan?
- What are the collaboration patterns from the top 20 universities that had the most journal publications in SCIE-indexed, SSCI-indexed, and TSSCI-indexed journal publications?
- What are the publication patterns of the top 20 universities that had the most journal publications in SCIE-indexed, SSCI-indexed, and TSSCI-indexed journal publications?
- What are the most popular journal titles among the SCIE-indexed or SSCI-indexed journals?

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5 References


