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Special issues have got something? An overview of research trends in *Telecommunications Policy* special issues

So-Eun Lee¹, Seongcheol Kim², Chulmin Lim³

1. Introduction

What should academic journals do when the media and communication environment changes so rapidly? Apart from the scholarly rigor, academic journals are increasingly required to respond promptly to social needs and provide preemptive agendas for social discussion. Special issues are often remarked as an alternative for this demand. Embracing topics at stake more instantly and flexible, special issues are expected to contribute both to academia and to the society.

No research, however, has focused on the difference between special and general issues. As a result, no discussion has explicitly made on how special issues are special, what distinctive features they have in comparison with general issues, whether criteria people select to use journal papers differently affect special issues from general issues, and so on. Therefore, this study analyzes special issues and their papers to explore these questions. Through a review of the entire articles published in the special issues of *Telecommunications Policy* (TP) over the period of 43 years, this study aims to clarify the characteristics of special issues in terms of their publications, editors, distinctive features compared to general issues, and factors affecting their citation level. In doing so, we intend to address the implications of special issues as well

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as the suggestions for special issue editors and authors.

The article is structured as follows: after this introduction, we will briefly discuss the role of special issues and why TP needs to be scrutinized. Then, we will specify the research questions and explain how we collect and process data. The following section presents the results with interpretation. The further meanings of the results will be discussed in the last section of this study, with suggestions for future research.

2. The role of special issues and the case of TP

The transition of major media leads to fundamental social changes, which is of paramount academic interests. The problem is that the changes in the digital age occur so rapidly that academia can hardly catch up the following circumstances. Since the review process is rigorous and takes a long time, journal articles are likely to be reactive late-followers, rather than proactive fast-leaders. Despite a rigorous investigation is one of the roles of academic journals, they are also under pressure to quickly approach the social trends and develop the related agenda that is worth for social discussion.

Responding to the demand, many journals are publishing special issues. Special issues contain collections of papers on a specific theme based on a proposal of guest editors. Usually, the same criteria of quality, originality, and significance are applied to articles in special issues as to general articles. It is often the theme coverage that is narrowed down. In doing so, special issues are supposed to deal with the timely topics more prominently and to find meaningful subjects that are worthy of in-depth discussion in advance to secular enthusiasm or concerns. Special issues are also expected to promote multidisciplinary collaboration as well as international cooperation. In short, special issues play a role as a pioneer in developing the academic subjects as well as in expanding exchanges among researchers.

Controversy, of course, also exists. There are opinions asking doubtfully about the value of special issues since the proper number of articles or the appropriate period for the review has never been investigated. Nobody knows when is right to publish a special issue and how to balance articles with those of general issues. The evaluation of the audience is also in question.

There is much debate as to whether special issues really contribute to scholarship, for these reasons.

This problem becomes even bigger for field-oriented journals like TP. Unlike other academic journals, TP has salient features in that it has a clear and definite aim of presenting a continuous discussion on telecommunications futures and policy options that contribute to the government and industry as well as academia (Day 1976; Gómez-Barroso et al., 2017, p. 853). To promote state-of-the-art discussion on controversial cases and promote participation not only from researchers but also from industrial practitioners and policymakers, special issues become more necessary and expected to do its proper role in the case of TP.

3. Research Questions

Therefore, this study intends to explore the value of special issues by analyzing the characteristics of special issues of TP. In detail, this study will examine the three aspects; (1) the status of the special issue publications, (2) the characteristics of the articles published in special issues compared to those in general issues, and (3) the factors affecting citation of special and general issue articles.

The status of the special issue publications is to illustrate how many special issues were published, how many articles the issues contained, and by whom and how the articles were edited. In addition, whether a certain research domain and methodology has dominated special issues will be analyzed. Through the approaches, we attempt to identify the general trends of TP's special issue publication as well as the geographical and academic landscape of editors and papers of TP's special issues.

Comparison of special and general issue articles is to examine if special issue papers have got something different from other papers. Properties related to the authors, contents, and formats will be scrutinized in comparison with general issues. Several citation indexes will be used for this comparative analysis as well in order to confirm papers in which issue were more productive in usage.

We will also evaluate if the distinctive features of special issues influence the reputation of articles. If articles in special issues are more cited than general papers based on their distinctive characteristics, it will support the necessity of special issues in terms of their utility. Or, if the factors affecting the citation level are different depending on special and general issues, it can be interpreted that the social expectation or evaluation criteria are different for each issue. Based on the requirements of ‘good’ research papers described above, we will examine the influence of the author, content, and format factors on the degree of citation.

4. Methods

4.1. Data gathering

For the analysis, we collected all articles from TP published from 1976, when the journal was launched, to 2018 on the Scopus database on November 24, 2018. Among the total of 294 issues, 58 were special issues. Excluding letters, notes, and publisher’s notes, 2,060 articles were analyzed, 429 of them belonged to special issues.

Scopus offers 50 different types of data about papers and authors in the CSV file. Using this function, we first collected basic information such as author profiles, title of papers, keywords, references, pages, and the presence of funding. Based on the author profiles, the number of authors, nationality and affiliation of each author, diversity of author country and affiliation when the article was written by two or more authors were counted. The number of references, the number of words in the title, whether subtitle exists or whether the title is in the interrogative form were also calculated.

Citation information of each paper was crawled from the database using Python 3.7. Scopus provides two types of citation metrics to users; one is Scopus metrics which shows the reputation of a paper in the academic area, the other is PlumX metrics which reflects the ways people interact with research in the online environment.

Three types of Scopus metrics – citation, Field-Weighted Citation Impact (FWCI), and Citation Benchmarking (CB) – were collected. Citation means the total number of times that

an article has been cited in Scopus. FWCI is the ratio of the total citations an article receives and the total citations that would be expected based on the average of the subject field. It shows how much a paper is cited compared to the similar type of documents. For example, if FWCI is more than 1, it means the paper is more cited than expected according to the global average. CB shows article performance comparing it with the average article within the same field or journal. The value indicates the top percentage of a specific field in which an article is included.

PlumX consists of 5 categories of metrics – usages, captures, mentions, social media, and citations.⁴ Usages reflect if anyone reads or uses the research. It includes clicks, downloads, views, or library holdings. Captures consist of bookmarks, code forks, favorites, readers, and watchers. Considering that people make captures when they want to come back to the work, captures can be an indicator of future citations. Mentions are a measurement of activities such as news articles, blog posts, comments, reviews, or Wikipedia references about research. It is often interpreted as how much people are engaging with the research. PlumX index of social media measure buzz or attention about the research made on SNS platforms. Shares, likes, comments, or tweets are counted. PlumX citations contain practical citations as well as traditional citation indexes such as Scopus. Patent citations, clinical citations, or policy citations are often calculated for practical citations.

We also collected indexes that are related to the authors' reputation. There are many measurements for the author reputation, but we used the total number of published articles, the total number of citations, and h-index of each author in this research. The total number of published articles is an index for the author's productivity. Total citations reflect the author's general influence. Since the total citations index is difficult to calculate perfectly and has a risk of overestimation, h-index was also collected. The h-index is a measure that eliminates the possibility of being influenced by a small number of highly cited papers and reflects both the productivity and citation impact of the publications of the author (Hirsch, 2005; Lehmann et al. 2006). The h-index is calculated by counting the number of publications for which an author has been cited by other authors at least that same number of times. For instance, an h-index of 10 means that the scientist has published at least 10 papers that have each been cited at least

⁴ <https://plumanalytics.com/learn/about-metrics/>

10 times. It is true that the h-index can also cause problems due to self-citations, and makes a comparison between the different fields difficult (Cronin & Meho, 2006). However, considering that the analysis domain is limited to TP and the self-citations in the same journal are relatively low, we concluded that the h-index would be useful enough in this research.

Scopus database provides the number of publications and citations of every author by year. By the year before the publication of a paper, which is the basis of our analysis, the total number of published papers and the total citation index of each paper written by the first author and the corresponding author were retrieved. These data were assigned to the h-index functional formula in Python code to calculate the authors' h-index at the year before the paper was published. Through this process, we were able to obtain the h-index of the author and the corresponding author for the year before the paper was published and use this figure as the basis of our analysis.

Other than that, manual coding work was carried out to reveal characteristics of papers on special issues. After making the coding categories based on the consultation among three authors, one of them coded the data. In order to increase the reliability, another author randomly checked the results until no difference was found with the coder. Review speed was calculated from the date of the paper received and accepted. The number of tables, figures, and formulas that a paper contains were counted. Attributes related to the content of a paper such as methodology and research discipline were also manually coded. The details of the coding scheme will be presented along with the results.

4.2. Analysis method

After gathering data, descriptive statistics were extracted to illustrate the status of special issue publications. Then, we conducted t-test and chi-square analysis to detect differences of articles between general and special issues. Multivariate regression was conducted to reveal which factor influenced the performance of papers. In the regression analysis, we used Scopus citation and the sum of five PlumX indexes as dependent variables for the case of general and special issue respectively. Independent variables were composed of author, content, and format factors of each paper. The general reputation of first and corresponding authors, which is

represented by the h-index of each author was also applied. The author factors include the number of authors, diversity of country and affiliation. The content factors include the number of pages and references. The format factors include the number of words in a paper title, whether the title is with subtitle or in the interrogative form, the number of keywords, and the presence of funding. Manually coded data such as the number of tables, figures, formulas, and the review speed were added as independent variables when analyzing special issue papers. SPSS 25.0 was used for the analysis.

5. Results

5.1. The status of the special issue publications

5.1.1. General characteristics

Among the total of 294 issues published between 1976 and 2018, 58 were special issues which reached 19.7 percent. Among them, 11 issues were conference related; one with a biennial conference, four with annual conferences, five with European regional conferences, and one with an Asia-Pacific regional conference. The special issues contained a total of 547 papers including editorials, letter, and note. The number of research articles was 429. While most special issues include editorials, six out of 58 contained no editorials. The average number of papers published in a single special issue was 9.57 (SD=3.956), which was more than 7.78 (SD=4.493) in a general issue.

5.1.2. Editors

The analysis of 54 issues that provide editor information, the total number of editors was 110, and the average number of editors per issue was 1.89 (SD=0.931, Range 1~4). In total, 25 countries appeared in terms of countries where the editors belonged to. The United States appeared the most (20.9%), followed by the United Kingdom (15.5%), Sweden (7.3%), Spain (6.3%), Italy and Denmark (5.5% respectively) (Table 1). This is similar to the ranking of countries contributing to TP described in Gomez-Barroso, Feijóo, Quiles-Casas, and Bohlin (2017). Though there are differences in the specific order, countries within the top 25 ranked

in Gomez-Barroso et al. (2017) appeared as special issue editors. What is interesting is that there were no special issue editors from Canada, Japan, India, Ireland, and Switzerland though they are within the top 25 of TP contributions.

According to the analysis of editor affiliation, it was revealed that the majority of editors belong to the university. TP's special issues were found to be the most actively led by scholars in the field of business and economics (30.0%), followed by technology and engineering (10.9%) as well as media and communication (10.0) (Table 2). Editors whose specialty is in humanities or medical and health sciences were not found.

Considering that TP is an inter-disciplinary journal, the diversity of editors is expected to contribute to publishing a multidisciplinary issue in terms of the theme or author invitation. Data showed us that more than half of the TP's special issues were edited by two or more editors (Table 3). Regarding the country diversity of editors, 20.7 percent of the total issues were managed by editors in the same country. In contrast, nearly half of the special issues (48.3%) had editors with varied affiliation. These results suggest that special issues are likely to be edited by editors with different affiliation and they have worked together relatively well.

Table 1. Distribution of countries of special issue editors

Countries	N	(%)	Countries	N	(%)
USA	23	(20.9)	China	2	(1.8)
UK	17	(15.5)	Portugal	2	(1.8)
Sweden	8	(7.3)	Ghana	2	(1.8)
Spain	7	(6.4)	Slovenia	2	(1.8)
Italy	6	(5.5)	France	1	(0.9)
Denmark	6	(5.5)	Greece	1	(0.9)
Belgium	5	(4.5)	Finland	1	(0.9)
Germany	4	(3.6)	Singapore	1	(0.9)
Australia	4	(3.6)	Austria	1	(0.9)
South Korea	4	(3.6)	New Zealand	1	(0.9)
Netherlands	4	(3.6)	Mexico	1	(0.9)
South Africa	3	(2.7)	Thailand	1	(0.9)
Taiwan	3	(2.7)	Total	110	(100.0)

Table 2. Distribution of affiliation of special issue editors

	Affiliation	N	(%)
University	Business & economics	33	(30.0)
	Media & communication	11	(10.0)
	Law & policy	3	(2.7)
	Other social sciences	4	(3.6)
	Natural sciences	2	(1.8)
	Technology & engineering	12	(10.9)
	Others	22	(20.0)
Research Institute		14	(12.7)
Company		1	(0.9)
Others		8	(7.8)
Total		110	(100.0)

Table 3. Distribution of special issues based on diversity of editors' country and affiliation

Single editor		Two or more editors				Total
		Diversity of country		Diversity of affiliation		
		Same	Varied	Same	Varied	
N	25	12	21	5	28	58
(%)	(43.1)	(20.7)	(36.2)	(8.6)	(48.3)	(100.0)

5.1.3. Articles

In the special issues of TP, a total of 429 articles were published. To examine the field trends of special issues, we manually classified 429 papers according to the academic discipline that the paper was based on. The result showed that more than one-third of the articles covered topics in the field of business and economics (33.6%), followed by law and policy (29.4%) and multidisciplinary approaches (18.2%) (Table 4).

Analysis of the methodology revealed that 59.9 percent of the total studies involved illustrative, discursive, or descriptive approaches, followed by secondary data analysis (11.2%) and mixed methodology (10.0%) (Table 5). More than half of the studies focused on the status depiction or description of cases, rather than applying a quantitative or qualitative methodology. Experiment, text analysis, and content analysis were very few.

Meanwhile, the average review speed of special issue articles was 3.81 weeks (SD=3.049, Range=1~16).⁵ Review speed was counted as the number of weeks taken from manuscript submission (the date of reception) to the final editorial decision (the date of acceptance). Elsevier provides review speed statistics of TP articles published from 2014 to 2018 on its homepage.⁶ According to this, the average review speed is 15.78 weeks. Although not all papers are statistically compared, it can be interpreted that the review speed of special issue articles is much faster than the general tendency.

TP has announced that its concern is with the impact of digitalization in the economy and society.⁷ Considering this point and that TP intends to contribute to society through policy implications, it is not surprising to see that articles in the field of business and economics are top ranked, followed by law and policy. The journal also states that it is multidisciplinary that encompasses various methodology. This property is confirmed in both the research domain and the methodology of special issue articles. The production process of special issues can be positively evaluated as they tend to reflect the fast-moving research areas with a short period for review. Nonetheless, TP needs to encourage more advanced empirical methodology to enhance its robustness. Articles in the field of social sciences, including media and communication, are also necessary to be more invited in order to better represent the social interests in the state-of-the-art media.

Table 4. Distribution of special issue articles by research discipline

c	N	(%)
Business & economics	144	(33.6)
Law & policy	126	(29.4)
Multidisciplinary	78	(18.2)
Media & communication	36	(8.4)
Other social sciences	20	(4.7)

⁵ 195 articles (42.1%) had no information about the date of received and accepted, so they were excluded in this analysis.

⁶ https://journalinsights.elsevier.com/journals/0308-5961/review_speed

⁷ <https://www.journals.elsevier.com/telecommunications-policy>

Technology & engineering	12	(2.8)
Humanities	11	(2.6)
Others	2	(0.5)
Total	300	(100.0)

Table 5. Distribution of special issue articles by research methodology

Methodology	N	(%)
Illustrative / discursive / descriptive	257	(59.9)
Secondary data analysis	48	(11.2)
Mixed methodology	43	(10.0)
Survey	29	(6.8)
Case study	28	(6.5)
Theoretical and conceptual	11	(2.6)
Interview	5	(1.2)
Scenario	3	(0.7)
Others	2	(0.5)
Experiment	1	(0.2)
Text analysis	1	(0.2)
Content analysis	1	(0.2)
Total	429	(100.0)

5.2. Comparison of special issue and general issue articles

Table 7 shows the differences in various properties between special and general issue articles. We can find statistically significant differences in terms of authors, contents, formats, and citations. Only a few variables such as the title in the interrogative form, Scopus CB metrics, or PlumX mentions showed no significant difference. Although TP does not represent all kinds of journals, the results may provide implications for similar types of journals.

5.2.1. Authors

Regarding properties related to authors, the number of authors per article was higher for special issues than general issues. Articles in the special issues were written by 2.06 authors on

average, while those in the general issues were written by 1.66 authors. The difference was statistically significant ($t=7.563$, $p<.001$). When there were two or more authors, the percentage of collaborating with authors from varied countries or affiliation was also higher in the case of special issue articles. The results indicate that special issues have accepted more collaborative, multinational, and multidisciplinary research than general issues.

The authors' reputation was also found to be higher for all the special issues, regardless of whether they are first or corresponding authors. The number of cumulative published articles up to the previous year of the TP paper publication was 13.96 and the number of cumulative citations was 107.41 for the first authors of the special issue papers while the numbers for the first authors of the general issues were 8.15 and 49.07 respectively ($t=-2.937$, $p<.01$; $t=-3.231$, $p<.01$). The number of cumulative published articles was 15.236 and the number of cumulative citations was 114.68 for the corresponding authors of the special issues while those in the case of general issues were 9.08 and 62.31 ($t=-3.025$, $p<.01$; $t=-2.791$, $p<.01$). This is probably because leading scholars tend to edit the special issues, and more competent and prepared authors are likely to submit their papers to the special issues.

5.2.2. Content

The number of pages and references were higher in the case of special issue articles than general issue articles. The average number of special issue paper pages was 13.73 while it was 12.19 for the general issues ($t=-6.013$, $p<.001$). Also, the special issue papers included more references ($M=41.38$) than the general issues ($M=31.06$) ($t=-6.532$, $p<.001$). Although we did not conduct the content analysis, the results show that the special issue articles are likely to have more abundant content than the general issue articles.

Table 6 shows the trends associated with the top 30 keywords appeared in the general and special issue articles. While there are many common words in general, differences in frequency are found. For example, the word 'network(s)' ranked on the top in the case of special issues while the rank of 'telecommunication(s)' went down one level. Several words such as 'spectrum', 'access', 'investment', 'universal', and 'public' rose in rank compared to the case of general issues. It is also noteworthy that some words such as 'generation', 'China',

‘infrastructure’, ‘innovation’, ‘social’, ‘governance’, ‘radio’, ‘regulatory’, and ‘wireless’ newly entered the top 30 for special issues. Considering that those are related to telecommunications issues, especially in terms of network building and management, the special issues seem to have covered prominent telecom technologies and related social issues relatively well.

Table 6. Top 30 keywords of general and special issue articles

General issues		Special issues	
telecommunication(s)	235	network(s)	109
mobile	161	telecommunication(s)	94
policy	121	mobile	86
regulation	105	spectrum	85
internet	103	policy	78
broadband	102	regulation	77
network(s)	98	broadband	70
service(s)	96	internet	64
competition	85	access	61
analysis	76	service(s)	59
technology	62	competition	38
spectrum	59	ict	30
access	59	investment	29
ict	55	generation	29
digital	53	market	29
information	49	digital	29
market	47	analysis	28
communications	47	universal	27
data	44	information	26
diffusion	42	public	25
model	39	China	25
economic	38	next	25
investment	37	infrastructure	24
development	34	innovation	23
divide	33	social	22
public	33	governance	22
universal	28	data	22
growth	27	radio	18
rural	27	regulatory	17
industry	26	wireless	17

5.2.3. Format

TP's Special issue and general issue articles also differed in terms of the format of each paper. First, the average number of title words was 11.05 for special issues and 9.62 for general issues ($t=-6.773$, $p<.001$). The proportion of papers with subtitle was higher in special issue articles ($\chi^2=58.264$, $p<.001$). While the special issue articles presented 4.31 keywords on average, the general issue papers included 2.11 keywords ($t=-14.779$, $p<.001$). The proportion of papers with financial support was also higher for the articles in special issues ($\chi^2=14.34$, $p<.001$). Whether a paper has a title in the interrogative form was the only variable that showed no statistical difference in terms of the format. Since the title and keywords are the factors that determine the first impression of the paper, the special issue articles may enjoy the higher searchability and more citations.

5.2.4. Citation

As a result of analyzing the cumulative citations divided by the number of years of publication period, except for FWCI and CB, special issue articles were found to have higher citations in almost all indexes. Only the Scopus CB and PlumX mentions showed no difference, and the other indexes confirmed higher citation of special issue papers.

In detail, papers in special issues were cited an average of 1.42 times a year in other academic papers since its publication while 0.59 times in the case of general issues ($t=-4.928$, $p<.001$). FWCI of special issue articles was 1.05 on average while it was 0.59 for general issues ($t=-6.971$, $p<.001$). It means that special issue articles were more cited than the global average in the same field, while general issue articles were not.

Regarding PlumX indexes that reflect population in the online environment, special issue articles showed better performance in terms of usages ($t=-4.606$, $p<.001$), captures($t=-8.22$, $p<.001$), social media($t=-3.898$, $p<.001$), and citations($t=-5.519$, $p<.001$). It indicates that special issue articles have been more widely read, downloaded, bookmarked, shared, and cited online. Since no statistical difference was found in terms of mentions, it is hard to interpret that special issue articles are more engaged with people in the format of blog posts or Wikipedia references.

In short, special issue papers have been more widely used both in academia and in the online spaces. Special issues resulted in more productive performance according to the analysis. The fact that conference attendees can consequently be engaged with special issues would be one of the reasons for this productivity.

Table 7. Comparison of special issue and general issue articles

		Issue Type	M (Frequency)	SD (Percentage)	t (χ^2)	P
Author	Number of authors	0	1.66	0.911	-7.563	<.001
		1	2.06	1.151		
	Papers with authors from varied countries	0	(125)	(7.7%)	(97.744)	<.001
		1	(97)	(22.6%)		
	Papers with authors from varied affiliation	0	(413)	(25.4%)	(59.197)	<.001
		1	(180)	(42.0%)		
First author reputation	Total number of published articles	0	8.15	18.955	-2.937	<0.01
		1	13.96	39.704		
	Total number of citations	0	49.07	197.331	-3.231	<0.01
		1	107.41	359.628		
	H-index	0	1.90	3.255	-4.778	<.001
		1	3.08	4.830		
Corresponding author reputation	Total number of published articles	0	9.08	20.694	-3.025	<0.01
		1	15.26	40.888		
	Total number of citations	0	62.31	259.838	-2.791	<0.01
		1	114.68	364.653		
	H-index	0	2.09	3.534	-4.603	<.001
		1	3.26	4.952		
Content	Number of pages	0	12.19	5.580	-6.013	<.001
		1	13.73	4.458		
	Number of references	0	31.06	29.251	-6.532	<.001
		1	41.38	28.593		
Format	Number of title words	0	9.62	3.853	-6.773	<.001
		1	11.05	3.996		
	Papers with subtitle	0	(513)	(31.5%)	58.264	<.001
		1	(220)	(51.3%)		
	Papers with title in the interrogative form	0	(140)	(8.6%)	0.402	
		1	(41)	(9.6%)		
	Number of keywords	0	2.11	2.651	-14.779	<.001
		1				

		1	4.31	2.775		
	Papers with funding	0	(257)	(15.8%)	14.340	<.001
		1	(101)	(23.5%)		
Citation (Scopus)	Citation per year after publication	0	0.92	1.815	-4.928	<.001
		1	1.42	2.043		
	FWCI	0	0.59	1.135	-6.971	<.001
		1	1.05	1.451		
	CB	0	136.51	503.102	-0.708	
		1	155.17	414.307		
	Usages per year after publication	0	40.27	88.577	-4.606	<.001
		1	70.25	126.939		
Citation (PlumX)	Captures per year after publication	0	4.10	8.679	-8.22	<.001
		1	12.80	21.456		
	Mentions per year after publication	0	0.01	0.102	-1.261	
		1	0.02	0.125		
	Social media per year after publication	0	0.15	1.768	-3.898	<.001
		1	1.15	5.270		
	Citations per year after publication	0	0.71	1.444	-5.519	<.001
		1	1.15	1.591		

※ '0' of issue type means 'general issue', while '1' means 'special issue'.

※ The percentage is within general or special issue respectively.

※ The values of author reputation are based on the year prior to the publication of the paper.

※ The Scopus citation and the five PlumX indexes are average values divided by the period of publication of the paper.

5.3. The factors affecting citations of special and general issue articles

Table 8 and Table 9 presents the results of regression analysis on the two citation indexes for special and general issue articles respectively. The dependent variables were the annual average of Scopus citation value and the annual average of the sum of five PlumX indexes. Multiple regression analysis was performed after log transformation of dependent variables since the dependent variables were right-tailed with skewness of 4.78 (SE=0.054) in the case of Scopus citation and 4.56 (SE=0.054) in the case of the sum of five PlumX indexes. Factors related to the paper author, content, and format were applied as independent variables, although

the specific profiles were different between special and general issue analysis.

Regarding special issues, the number of pages ($\beta=.102$, $p<.05$), references ($\beta=.228$, $p<.001$), and keywords ($\beta=.297$, $p<.001$) were confirmed to be influential to the Scopus citation value. In terms of the PlumX citation, the influence of country diversity of collaborating authors ($\beta=.153$, $p<.05$), h-index of corresponding author ($\beta=.146$, $p<.05$), if the paper is published in the conference-related issue ($\beta=.081$, $p<.05$), the number of references ($\beta=.213$, $p<.001$), and the number of keywords ($\beta=.401$, $p<.001$) turned out to be significant.

In the case of general issues, more variables were found to be influential. The number of authors ($\beta=.074$, $p<.05$), diversity of authors' affiliation ($\beta=.132$, $p<.01$), h-index of first author ($\beta=.072$, $p<.05$) as well as corresponding author ($\beta=.094$, $p<.01$), the number of pages ($\beta=.186$, $p<.001$), references ($\beta=.049$, $p<.05$), and keywords ($\beta=.350$, $p<.001$) positively affected the Scopus citation of papers. If a paper has a subtitle, the possibility of citation in Scopus journals increased ($\beta=.151$, $p<.001$), and it was more likely to be cited when the article is in the back order of the journal ($\beta=-.048$, $p<.05$). PlumX citation value of general issue papers were influenced by diversity of authors' affiliation ($\beta=.084$, $p<.05$), h-index of first ($\beta=.058$, $p<.05$), and corresponding author ($\beta=.061$, $p<.05$), the number of pages ($\beta=.167$, $p<.001$), title words ($\beta=.087$, $p<.001$), and keywords ($\beta=.502$, $p<.001$). Subtitle had a positive influence ($\beta=.179$, $p<.001$) while the order of the article in the issue negatively affected the PlumX value ($\beta=-.044$, $p<.01$).

The regression analysis disclosed that the number of variables influencing the degree of paper citation was smaller in the case of special issues than in general issues. Only the number of references and keywords had a statistically significant impact on both academic citation and online use. In the regression analysis on the composite PlumX index, which refers to online usage, the influence of diversity of authors' countries, the h-index of the corresponding author, and whether or not the issue is related to the conference were additionally confirmed. It implies that social buzz is more likely to be made when a special issue is related to ITS conferences. Also, data shows us that special issue research is more likely to gain public attention when its corresponding author is productive or the research is conducted based on the inter-cultural collaboration. It is possible that 'who's article it is' plays an important role in increasing online popularity regardless of its academic use.

Table 8. Results of multivariate regression analysis of special issue articles

		Log-transformed Scopus citation					Log-transformed PlumX citation (sum of five values)				
		B	SE	β	t	p	B	SE	β	t	p
Author	Number of authors	0.090	0.064	0.090	1.407		-0.046	0.082	-0.031	-0.560	
	Diversity of country (varied =1)	0.195	0.122	0.126	1.591		0.348	0.158	0.153	2.209	<.05
	Diversity of affiliation (varied=1)	-0.011	0.110	-0.008	-0.101		0.129	0.142	0.066	0.908	
	First author's H- index	0.016	0.019	0.068	0.851		-0.009	0.026	-0.024	-0.332	
	Corresponding author's H-index	0.034	0.019	0.142	1.805		0.050	0.025	0.146	2.020	<.05
Content	Conference related (=1)	-0.005	0.009	-0.026	-0.582		0.025	0.012	0.081	2.108	<.05
	Number of pages	0.026	0.013	0.102	2.013	<.05	0.002	0.017	0.005	0.110	
	Number of references	0.010	0.002	0.228	4.491	<.001	0.013	0.003	0.213	4.938	<.001
	Number of tables	-0.002	0.017	-0.005	-0.099		-0.003	0.021	-0.006	-0.143	
	Number of figures	0.005	0.015	0.018	0.366		0.032	0.019	0.073	1.699	
	Number of formulas	-0.003	0.014	-0.009	-0.204		-0.001	0.017	-0.003	-0.084	
Format	Order of the article in the issue	-0.008	0.014	-0.026	-0.576		0.018	0.018	0.039	1.006	
	Number of title words	-0.008	0.014	-0.029	-0.579		0.012	0.018	0.028	0.674	
	Subtitle (=1)	-0.018	0.106	-0.008	-0.170		0.083	0.137	0.024	0.606	
	Title in the interrogative form (=1)	-0.011	0.169	-0.003	-0.068		0.152	0.222	0.026	0.686	
	Number of keywords	0.126	0.020	0.297	6.307	<.001	0.248	0.025	0.401	9.875	<.001
	Funding (=1)	-0.127	0.119	-0.047	-1.069		0.143	0.153	0.035	0.933	
R Square		0.349					0.446				
Adjusted R Square		0.318					0.423				
F		11.332					19.303				

Table 9. Results of multivariate regression analysis of general issue articles

	Log-transformed Scopus citation	Log-transformed PlumX citation (sum of five values)
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		B	SE	β	t	p			B	SE	β	t	p
Author	Number of authors	0.126	0.058	0.074	2.158	<.05			0.094	0.082	0.030	1.145	
	Diversity of country (varied=1)	-0.100	0.104	-0.042	-0.966				0.092	0.148	0.020	0.625	
	Diversity of affiliation (varied=1)	0.238	0.080	0.132	2.983	<.01			0.284	0.114	0.084	2.502	<.05
	First author's H-index	0.034	0.016	0.072	2.193	<.05			0.051	0.022	0.058	2.315	<.05
	Corresponding author's H-index	0.041	0.014	0.094	2.818	<.01			0.049	0.020	0.061	2.411	<.05
Content	Number of pages	0.054	0.007	0.186	8.313	<.001			0.089	0.009	0.167	9.488	<.001
	Number of references	0.003	0.001	0.049	2.196	<0.5			0.000	0.002	-0.004	-0.259	
Format	Order of the article in the issue	-0.030	0.012	-0.048	-2.399	<.05			-0.049	0.017	-0.044	-2.881	<.05
	Number of title words	0.006	0.009	0.015	0.675				0.065	0.013	0.087	4.939	<.001
	Subtitle (=1)	0.493	0.071	0.151	6.922	<.001			1.103	0.103	0.179	10.665	<.001
	Title in the interrogative form (=1)	0.130	0.107	0.024	1.209				0.304	0.157	0.030	1.936	
	Number of keywords	0.199	0.014	0.350	14.522	<.001			0.542	0.020	0.502	27.272	<.001
	Funding (=1)	0.118	0.084	0.028	1.396				0.096	0.121	0.012	0.788	
R Square		0.463					0.646						
Adjusted R Square		0.458					0.643						
F		90.529					217.626						

6. Conclusions

6.1. Discussion

We have explored the characteristics of TP's special issues in comparison with its general issues. TP has published nearly 20 percent of its publications as special issues. The special issues contained more articles on average than general issues. Editors from various background have contributed to special issues with the inter-cultural and inter-disciplinary association. Articles in the special issues were mainly about subjects in the field of business, economics, law, and policy, reflecting TP's own orientation.

It was also revealed that special issues are distinguished from general issues in various properties. Authors in the special issue papers were more collaborative, more multidisciplinary when collaborating, and had more reputation in terms of publication and citation. The special issue papers were longer with more pages. They had more references, longer titles, more subtitles, more keywords, more funding. In addition, the special issue papers were more widely used, both in the academic research and the online environment.

According to the regression analysis disclosed that the smaller number of variables affected the degree of paper citation in the case of special issues than general issues. The influence of the number of references and keywords were prominent in special issues while nearly all variables except for authors' affiliation diversity, the number of title words, and subtitles. We could also find different variables affected academic and social citations respectively. What is noteworthy is that the beta value of the number of keywords is the highest in both special and general issues. This may reflect the search environment of research. The more a paper is searchable, the more it is likely to be cited. The influence of subtitles and title words can be interpreted in this context, too. The higher number of words and properties would increase the searchability.

One more interesting result is that the author factor was confirmed only when the h-index of the corresponding author affected the PlumX score in the analysis of special issue articles, even though special issues had more highly reputed first and corresponding authors. In contrast, the influence of the h-indexes of the first and the corresponding author were confirmed both in the regression analysis on the Scopus citation and the PlumX index. In the case of special issues, the number of keywords was the only variable that was influential among the factors that were likely to affect the searchability. Considering this fact, readers of special issues are interpreted to access papers based on the theme of issues or events such as conferences.

6.2. Implications and limitations

According to our research, special issues have their own value, and their contribution has been bigger than general issues in terms of productivity, academic utility, and social popularity. Therefore, TP's editors are recommended to use special issues strategically in the future. They

need to manage factors affecting a paper's performance well, especially when planning a special issue or evaluating proposals. Authors are also recommended to actively consider submitting their works on special issues.

We explored if there are distinctive features in special issues according to an analysis of 429 research articles published in 58 special issues of TP. Understandably, this research does not include all relevant characteristics of special issues. Subjects, perspectives, or concrete domains of research were inevitably omitted as our analysis was based on data scrawling. Although we attempted manual coding for a limited number of special issue articles, it is unavoidably insufficient to articulate properties of special issues, especially in comparison with general issues.

Despite the limitations, this study could be evaluated its own meaning as the first analysis of the special issue. As media environments change rapidly, the importance of special issues will increase. From this point of view, this study can be regarded as the first step to deliberate the role and the direction of the special issue.

We suggest expanding research scope to other journals in the areas of telecommunications as well as popular journals from other research disciplines for future research. This will enable us to examine the characteristics and the role of special issues more clearly, as well as the role of TP in academia. Future research will also need to address public perceptions of special issues. Apart from the properties the special issue accommodates, it is necessary to clarify what users expect for the special issue and whether they are satisfied. Editors can also participate in this research, sharing their orientation more explicitly to the public. Our suggestions are to contribute not only to TP but also to the other academic journals. When special issues do their proper roles in delivering academic insight more prominently, pertinently, and profoundly, journals would be able to fulfill social responsibility.

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