

Study on Agenda-Setting Structure between SNS and News: Focusing on Application of Network Agenda-Setting

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ABSTRACT

This study applied network agenda-setting theory to analyze the impact of the agenda-setting function of the media on certain issues by focusing on the agenda at the center of controversy, 'Creative Economy'. To this end, the study extracted the data referred to creative economy in the media and SNS from 1 January 2008 to 31 December 2014, and analyzed the data using the network analysis program UCINET and the Korean language analysis program Textom. The results of the present study show that, during the period under former President Lee (2008-2011), the media's creative economy agenda-setting function did not exert a significant impact on the agenda-setting within SNS. However, from 2012 when the government of former President Park Geun-hye had started, the agenda-setting function of the media starts to show increasingly strong influence on the agenda cognition in SNS. The central words and sub-words configuration forming the center of the semantic network moved in the direction of a high correlation, in addition to the gradually increasing correlation based on QAP correlation analysis. In 2014, the semantic networks of the media and SNS bore a close resemblance to each other, while the shape of networks and sub-words structure also had a high level of similarity.

Key words: Network, Agenda-setting, Creative Economy, SNS, Semantic Networks, QAP Analysis.

1. PROBLEM STATEMENT

1.1 General Appearance

The 'creative economy' is the agenda that has been at the center of controversy since the establishment of President Park's government in 2012, after being introduced by developed countries around 21st century. The original concept of creative economy is to develop and restructure the economic paradigm around promotion of creative industries based on imagination and creativity. In Korea, the concept was introduced with the creative class and creative city discussion, and since the start of President Park's government, it has expanded from a socioeconomic concept to the basis of state affairs operations, in combination with science and information

technology, based on which new businesses are being promoted and developed [1], [2]. However, there is a tendency of interpreting creative economy as a political issue due to its strong impression of being the representative state affairs philosophy of President Park's government and its connection with the other operations of the government.

The media, initially only sparsely mentioned the concept after its introduction by the scholars, started to mention creative economy with the launch of President Park's government. As creative economy became a key issue, comments on the concept by the general public. Before 2012, however, the concept was still unfamiliar to many people, who learned of the concept via the announcements by the media and the government. In the process, the media played a gatekeeping role in terms of education related to creative economy, in addition to its role as the messenger of information derived from the government's announcements. And the audience express their opinions on SNS within the conceptual framework of their understanding of the concept.

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Such opinions of the audience expressed on SNS strike as opinions derived from individual values at first glance; in fact, however, they are formed by the influences from the outside world. Especially for creative economy, the concept and understanding of the concept have a very short history, meaning that it is hard to conclude that the understanding was formed based on individual recipient's learning. Thus, the agenda-setting of the media, the quickest and powerful influence on audience education, influenced the audience's understanding of the concept. The media agenda impacted the public agenda within network. The public agenda within network possess the shape of 'self-expression'; however, it is in fact influenced by the media's agenda-setting method.

This study applies network agenda-setting to analyze the agenda-setting of creative economy and to see the influence of the media's agenda-setting function that impacts the societal perception within the rapidly changing society on the modern media users' societal perception. Network agenda-setting theory, evolved from the traditional agenda-setting theory, analyzes the interaction between the media and SNS and their agenda-setting tendencies within network. Network agenda-setting theory allows the comparative visual analysis of the relationships between words and their characteristics that affect agenda-setting.

The present study aims to compare how SNS and the media were conducting agenda-setting on the issue of creative economy that actively appear as the state affairs issue. To this end, it analyzes the influence relationship between SNS and the media in understanding and forming the creative economy agenda by comparing 'the language network of news articles' and 'media network within SNS' relevant to creative economy. The researcher previously presented analysis of the media's agenda-setting semantic networks on creative economy; the present study is a follow-up of the previous research to additionally examine the agenda-setting networks within SNS on the issue, to conduct comparative analysis with the media's agenda-setting networks identified in advance, and to compare the agenda-setting tendencies of SNS and the media. The results of this study are expected to provide meaningful implications on the media's agenda-setting tendency about key national issues and its influence and reinterpretation within SNS.

2. THEORETICAL DISCUSSION

2.1 Network agenda setting

Agenda-setting theory' first appeared in the study by McCombs and Shaw (1972) in the U.S. that examined the news reports and its acceptance during the U.S. presidential election in 1968 and continues to evolve with the development of the media [3]. The theory provides that people have indirect experience with the 'the world outside' over the news and believes that 'the picture in our head' drawn by the news is real [4]. In other words, media agenda importantly identified by the media is recognized as the important public agenda, which influences 'what to think about' and leads the important social issues to a specific direction [5]. Such issue forming by the

news is affected by the frequency, location, and size of major keywords. Issues repeatedly addressed in an important position are recognized as key issues for the society.

Later, this theory focuses on the frequency, handling and location of the main keywords. The theory is called 'second-level agenda-setting' and argues that the way of understanding a specific issue's attributions influences the audience's method of understanding the issue [6], [7]. It is that the media influences what the audience must focus on using the grammar and number of the words in treating the main keywords [8]. The second-level theory focus on the media's recognition of the subjects 'attribute' (Oh, 2010) [9]. Gamson and Lasch (1983) expressed the way in which the media reveals the attributes of their target as "framing" [10]. The media creates the 'frame' of thinking for understanding a specific issue and influences the reality perception of the audience [11], [12]. This frame also affects the social assessment of an issue, in addition to the individual level [13]. The issue culture formed by the media would constitute a social "public knowledge", and thus an individual, who did not learn of the issue through the media, is still influenced by the media based on the society's influence [14]. This theory evolves with the development of the media and online. The media users became the creator and controller of information, which impacted the importance determination of an agenda [15]. Issues that had not been dealt with seriously in the press became important issues by the user online, and conversely the media reported about those issues, the gate-keeping function and agenda-setting function of the traditional media were being challenged. The 'reversed agenda-setting', in which 'public agenda' becomes a 'media agenda', shows that the media's agenda setting in the multimedia society is formed by the interaction with the public and being signified socially.

Recently emerged 'third-level agenda-setting' or 'network agenda-setting' theory also defines the relationship between the media and users in the multimedia environment. Network agenda-setting explains the still-forceful agenda-setting function of the media and analyzes a more evolved influence than the previous first and second levels. Third-level agenda setting pays attention to structural parts. It examines 'what kind of structure' the media's agenda reveals and how such structure makes relationship with the structure of the 'shape' about the agenda in the audience's minds [16]. Network agenda-setting, analyzing the relationship between the issue 'attributions network' formed by the news and the audience's 'attributions network' on issue, helps understand how the news's issue attributions network is transferred to the audience [16].

Users share their opinion by trading movie, image, and text information in the Social network services. Online social networks also used for emerge of users' information what other wants (Lee, Lim, 2014) [17]. Social network service's effect is huge for spreading information. Previous research analyzed how influential spreaders spread their information by using social network services. Researchers argued that information which highlighted by users is constantly and regularly spread with time goes on [18]. Jungherr (2010), also argued that twitter roles back channel place people can change their ideas and opinion in freely [19]. So it can be that analyzing Social

network services is how people make their agenda and hegemony by using online media, in communication way.

Guo (2012), by applying Social Network Analysis, compared the agenda-setting structure of the media and the agenda recognition structure in network [20]. The results revealed that agenda structure produced by the media is identical to the agenda structure understood by the public. Fig. 1 shows the audience who learned of the agenda through the media express their opinions on SNS, which in turn influence other SNS users through sharing functions. In the process, the opinion structure expressed on SNS by the recipient is identical or very similar to that of the agenda-setting, meaning that the agenda-setting structure of the media influences the audience's reality recognition that forms social and public knowledge, which affects the people's cognitive structure who learned about the agenda through SNS.



Fig. 1. Three level of the agenda-setting structure of the media

But such network agenda setting is slightly different from the traditional agenda-setting method. As shown in Fig. 1, the traditional agenda-setting theory recognizes the audience's issue linearly according to the order of issues determined by the news. Under network agenda-setting, it can be seen that the issues are recognized in the form of 'network'. Instead of recalling the attribute a, then b, followed by c, for issues, attributions b, c, d, and e coincidentally appear with the attribute a. Unlike the audience in the traditional media environment where reading through written articles is usual, the audience in the multimedia environment construct their perception about an issue in a structured way. Thus, the modern media audience is influenced by the media's agenda-setting; however, the attributions form a network-type schema without being linear. This can be regarded as an unaltered transition between attributions, rather than the agenda itself is transferred. Therefore, to understand the recognition of the modern media audience requires access based on the structural form, and for this end, it requires the method of exploring the relationship between the semantic network configured by the media and the semantic network within the recipient's brain.

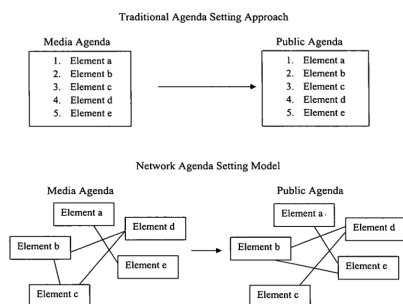


Fig. 2. Traditional agenda setting approach and network agenda setting model

2.2 Research on Semantic Network Analysis and Centrality

Network agenda-setting emphasizes the importance of structural analysis of agenda-setting and comparatively analyzes the audience's and the media's perception networks using semantic network analysis. Semantic network analysis is an analysis method that analyzes how the trees (words) are aligned within the forest called 'agenda' formed under a certain method about a specific issue while using trees (words) for the formation. Network is composed of 'nodes' and 'links' that connect nodes. In semantic network, a node is each keyword and a link represents the relationship between nodes. The structure analyzed as such can understand the structure of words used for a specific agenda. Semantic network analysis conducts the analysis of 'centrality'. Centrality is the calculated 'relative importance' of a node, can be divided into "degree, closeness, eigenvector, and betweenness" centrality, through which each keyword's location and role within the overall network can be learned.

'Degree centrality' measures the level of connectivity of a specific node and its direct connection with another node. It selects the word that appears most often whenever another keyword is presented. A word with high degree centrality is the word that appears most often in agenda-setting and plays the leading role within the network. Closeness centrality calculates the total distance between nodes based on direct and indirect connections between nodes. So, closeness centrality reveals the hidden keywords that actually contribute to agenda-setting. 'Eigenvector centrality', together with degree centrality, sums up the influence on other nodes connected to a specific node and selects a word with the highest level of influence in the overall network. 'Betweenness centrality', unlike other types of centrality, determines the nodes that mediate between nodes, which has a higher possibility of influencing the flow of meaning within network.

Such a research on centrality and semantic network is different from the traditional semantic analysis literature as it can analyze the relationship between keywords, roles of each keyword, in addition to determination of important keywords, in a more detailed and structured way. The present study, utilizing such a method, aims to systematically analyze the interrelationship between the agenda-setting of creative economy discussed on the media and SNS and their agenda-setting structure.

3. RESEARCH QUESTIONS AND METHODS

This study comparatively analyzes the creative economy semantic network in the media and SNS in order to understand how the concept of creative economy, introduced around 21st century, as it develops into the national agenda, is discussed by the media and is transferred to the audience. As such, the following research questions have been defined and are analyzed:

Research Question 1. How the words covered with importance for the setting of 'creative economy' agenda by the media and SNS differ for each period?

Research Question 2. For the ‘creative economy’ agenda setting, how the media and SNS construct semantic networks differently in each period?

Research Question 3. What is the interrelationship between ‘creative economy’ semantic networks of the media and SNS?

To analyze the above research questions, this study extracted and collected data that involve creative economy in the media and SNS. For the media agenda-setting semantic networks, the data from "Analysis of the Media’s Agenda-Setting Semantic Network on ‘Creative Economy’", a research published in 2015 by the present researcher, was utilized, while additional semantic networks on SNS were researched to be comparatively analyzed. Articles containing titles and subtitles that include "creative economy" have been selected for the analysis from comprehensive national daily newspapers [21]. In terms of the SNS data, Textom, an analysis and collection program for social media data, was used, and the data from Facebook, twitter, Daum blogs and cafes, and Google’s blogs was utilized. Textom is used as a tool for Social Network Analysis and Social big-data analysis in recent researches [22]-[27].

The period for analysis is from 2008, when active discussion on creative economy by developed countries and its influence on Korea existed, and the yearly data was collected. Through this process, as shown in Table 1, SNS data and news mentioning creative economy from 1 January 2008 to 31 December 2014 was extracted. For the news data, because the researcher’s previous study covered the data up to 31 August 2014 only, additional data for the second half of 2014 was newly researched to derive new semantic networks. However, as presented in Table 1, in the case of 2011 from 2008, active discussion on creative economy did not exist, which supported the conclusion that it would be difficult to determine the agenda-setting tendency and its influence. Accordingly, the period from 2008 to 2011 was tied together as one period. During this period, the creative economy concept had been introduced but not expanded as a national agenda. As such, the perception of the media and the audience prior to President Park’s government on creative economy can be inferred and understood. From 2012, semantic networks on creative economy were comparatively analyzed for each year. This research compares and

- (1) 2008 - 2011: Prior to the expansion of creative economy as national agenda
- (2) 2012: Presidential election campaign period
- (3) 2013: Park’s government first year
- (4) 2014: Park’s government second year

The data collected as such was proceeded with an automated provisional clearing process that eliminates propositions, word endings, and punctuation marks using Textom, and again cleared by the researcher. Then, the word frequencies were extracted using Textom, and only the nouns from the extracted words were used to obtain ‘word x word matrix’ data. ‘Word x word matrix’ data represents the

frequency of words that appear together in similar context and helps understand the relationship between words within context.

Table 1. Number of Data Used for Analysis per Period (unit: piece)

Year	News		SNS	
	Number of data	Number of words	Number of data	Number of words
2008	7	48	2549	166930
2009	5	33	3052	213360
2010	4	17	3070	212096
2011	4	26	3086	218437
2012	13	103	3411	238119
2013	1072	7483	4664	329191
2014	1211	9540	4595	323040
Total	2316	17250	24427	1701173

In order of each word’s location and role within the networks. Furthermore, cluster analysis with Faction method was conducted to analyze the relationship between words. Faction method is an analysis method that clusters words with a high level of interconnectivity, through which increased understanding on network structure can be obtained based on the understanding of mutual relations between in-network nodes.

Afterwards, in order to study the correlation between the media and SNS networks, 'QAP (Quadratic Assignment Procedure) analysis', a method frequently used in the relationship analysis between networks, was utilized to conduct 'QAP correlation analysis' and 'QAP regression analyses. 'QAP analysis' is a way of finding a statistical significance by analyzing the relationship between two networks' matrixes after converting them into two long columns. In the process, the correlation of two networks is examined after randomly rearranging one of the matrixes, which is repeated for numerous times to reduce errors before finding the final value that is statistically significant. This study repeated the method for 5,000 times, which is considered significant in the general QAP, to obtain statistical values [28].

4. RESULTS

4.1 Comparative analysis of keywords in news reports and SNS on creative economy per period

Research Question 1 is to study, per each period, which words were treated importantly by the media and SNS for the agenda-setting of creative economy. To this end, as shown in Table 2, keywords that appear most frequently, their frequency of occurrence, and their ranks in sentences mentioning creative economy in the media and SNS were examined.

In terms of the news data from 2008 to 2011, the number of words repeatedly mentioned is low because fewer journalists wrote about creative economy. The mentioned words show that the news from this period was agenda-setting creative economy as one of the solutions for future economy because the words

were arranged with economic developments in the future [21]. On the other hand, in terms of the SNS data from 2008 to 2011, the words with more social characteristics are highly ranked, such as "creative economy (4269 times)", "creation (3705 times)", "economy (2677 times)", "people (1,053 times)", "era (1001 times)", and "society (668 times)." Although words such as "enterprise", "development", and "free economic zone" that are related to economy appear, words like "knowledge", "world" and "culture" are treated with importance continuously, which suggests that creative economy agenda on SNS is more related to the social paradigm shift.

In 2012, the year of presidential campaign, President Park's election, and the transition team's work were proceeded with, articles mentioning 'creative economy' and related SNS data were slightly increased. In terms of news data, still a small number of articles dealt with 'creative economy'; however, the peripheral words for explaining agenda showed the tendency of becoming more diverse and focused [21]. In both the news and SNS, 'creative' and 'Park Geunhye' were the words most frequently mentioned. The words that follow the two words, however, show some difference in the news and SNS. In the news, the following words were 'economy', 'announcement', and 'growth', while the words such as 'job' and 'policy' followed the top ranked words on SNS. While the media focused on introducing 'creative economy' as the new economic paradigm announced by the transition committee, SNS focused on 'creative economy' more as a 'policy for job creation', rather than the parts that deal with economic development. In addition, in 2012, keywords commonly mentioned in both SNS and the media were found, although some differences in their ranks (policy, creation, create, start-ups).

In 2013, President Park's government embarked on its tasks and the articles and SNS comments on creative economy grew exponentially. By both the media and SNS, 'creative economy' was mentioned with the highest frequency, in addition to keywords selected include 'Park Geunhye', 'government', 'Republic of Korea', 'industry', 'start-up', and 'core', based on which it can be inferred that both avenues were actively discussing the shape of the future and the new government's policy direction. In particular, words related to economy were frequently mentioned by both, while creative economy had been dealt with from the economic viewpoint by both the media and SNS. However, the words related to economy covered in the media and SNS are slightly different. In the media, words that are somewhat macro-economic appear (industry, business, and growth) [21], while on SNS, words that are associated with entrepreneurship and realization were treated more importantly (idea, entrepreneurship, realization, jobs).

Entering the year of 2014, words surrounding and related to creative economy appear more actively. In both the media and SNS, 'creative economy' appeared most frequently, while common keywords being treated with importance are 'Park Geunhye', 'economy', 'enterprise', 'Creative Economy Innovation Center', 'government', and 'support', 'creative economy town'. On SNS, on the other hand, the actual government-run policy programs by Park's government such as 'Creative Economy Fair', 'Creative Economy Innovation

Center', and 'Creative Economy Town' were mentioned more frequently than in the news. In both areas, words related to 'support' and 'policy' were treated with great importance, which means that the interest of the media and SNS increased in relation to how the new government's practice of the national agenda was actually realized as direct support for the citizens.

4.2 General Appearance

4.2.1 Comparative analysis of semantic networks and centrality of 'creative economy' keywords in 2008

Research Question 2 asks how the issue of creative economy forms semantic networks in the media and SNS, and how they differ from each other based on comparative analysis. To do so, the semantic networks of the keywords identified under Research Question 1 were visualized and analyzed, while the keywords' centrality to identify and analyze each word's role in the network.

Table 2. Top-ranked keywords on 'creative economy' covered in the media and SNS per year

2008-2011			
News Release		SNS	
word	frequency	Word	frequency
Creative	8	Creative Economy	4269
economy	7	Creation	3705
Creative Economy	3	Economy	2677
Destruction	3	Person	1053
One person	2	era	1001
Future	2	Social	668
Growth	2	Enterprise	659
Era	2	center	575
Crisis	2	knowledge	545
Creation	2	World	521
Creating Company	2	Development	501
Development	1	Future	492
Special Economic Zones	1	Culture	490
Employ	1	Creative Korea	463
Rescue	1	FEZ	454

2012			
News Release		SNS	
word	frequency	word	frequency
Creative Economy	10	Creative Economy	3587
Park, Geun-Hye	7	Park, Geun-Hye	1481
Economy	5	Job	965
Announcement	3	Policy	754
Growth	3	Candidate	747
Policy	3	Innovation	649
IT	2	Economy	619

Base	2	Commitment	510
Brand	2	Creation	485
Job	2	Government	392
Creation	2	Creation	369
Creation	2	Economic democratization	356
Blueprint	2	Elections	346
Innovation	1	Founded	323
Founded	1	education	311

Industry	58	Policy	288
Innovation	56	government	276
Korea	52	support	272
Business	46	Park,Geun-hye government	254
Small Business	45	Economy	247
Market	42	Enterprise	240
Hold	37	Creation	234

2013			
News Release		SNS	
Word	frequency	word	frequency
Creative Economy	1054	Creative Economy	9334
Park, Geun-Hye	137	Industry	843
Korean	63	Park, Geun-Hye	842
Government	62	Idea	596
Road to Success	59	Start-up	532
Go to site	53	Government	514
Economy	51	Park Geun-hye government	496
Republic of Korea	50	Republic of Korea	434
Industry	46	Policy	376
Future wealth	45	Fair	362
main point	39	present	357
Start-up	38	Creative Economy Innovation Center	348
Spearhead is company	38	Creative Economy Town	344
Enterprise	36	main point	337
Growth	33	Job	317

2014			
News Release		SNS	
word	frequency	word	frequency
Creative Economy	524	Creative Economy	6534
Park, Geun-Hye	139	Creative Economy Expo	1137
Economy	86	Creative Economy Innovation Center	973
Future	83	Creative Economy Town	810
Enterprise	74	Start-up	692
Creative Economy Innovation Center	63	Park, Geun-Hye	663
Government	59	idea	634
Support	59	hold	367

The results of the research, as shown in Fig. 3, represent somewhat different creative economy keyword semantic networks for the media and for SNS in 2008-2011. For the news, even though there was the word 'creation' appeared only twice, it occupies a central position in the whole network [21]. In contrast, on SNS, 'creative economy' had positioned itself at the center of the entire network with strong relationships with thicker lines with 'creation' and 'economy'. 'Creative economy' have complex connections with a wide variety of words, meaning that the concept is being interpreted based on a variety of dimensions other than the economic point of view. In terms of 'Cluster 2', the candidate Moon, Kook-hyun, who were not importantly treated by the media, and words from his comments on creative economy debate are included.

Next, the semantic networks were analyzed in-detail by examining the centrality that measures each word's influence and role in the overall semantic network. After researching degree centrality that calculates the direct connections with the highest number of nodes, 'economy (113.000)' had connections with the highest number of words in the news [21], while 'creative economy (13103.000)' was ranked as the number one on SNS. In terms of closeness centrality, words such as 'creation', 'economy' and 'creative' were playing the central role in the network[21]; on SNS, on the other hand, 'creative economy', 'creation', 'economy', 'person', 'era', 'world', 'improvement', 'production', 'Korea', 'work', and 'representation' had the same value, showing that various words were treated with the same amount of importance. The news gave the highest value for 'creation' in terms of both eigenvector centrality and betweenness centrality [21], while SNS gave the number one spot to 'economy' in eigenvector centrality and to 'creative economy' in terms of betweenness centrality [21].

4.2.2 Comparative Analysis of Centrality and Semantic Networks of Keywords in the News Reports and SNS related to Creative Economy in 2012

In 2012, the semantic networks of both the news and SNS show more complex patterns than the previous period. As depicted in Fig. 4, the creative economy semantic network in the news in 2012 has 'economy' at the center, in addition to strong connections with 'creation', 'creative economy', and 'Park, Geunhye' [21]. The cluster A centering around 'economy' has a variety of words below, showing the appearance of words related to the concept of creative economy emphasized by Park's government such as 'science', 'IT', and 'technology'. As the 'creative economy' semantic network of SNS suddenly became complex, the connection strength was increased to 100 for succinct research results. As such, for cluster A, words

related to President Park, Park’s government’, and ‘creative economy’ form a semantic network, while having ‘economy’, ‘job’, ‘policy’, ‘pledge’, ‘paradigm’, ‘promote’, ‘strategy’, and ‘growth’ as lower ranked words below ‘Park, Geunhye’, policy. On SNS, it shows that ‘creative economy’ is strongly recognized as the concept introduced by President Park, and especially as a concept that is related to economic policy. In particular, the words such as ‘IT’, ‘fusion’, and ‘Ministry of Science, ICT and Future Planning’ that are related to the IT and fusion emphasized by Park’s government are located at lower ranks, showing the significantly strong connection of the related words with the perception of creative economy.

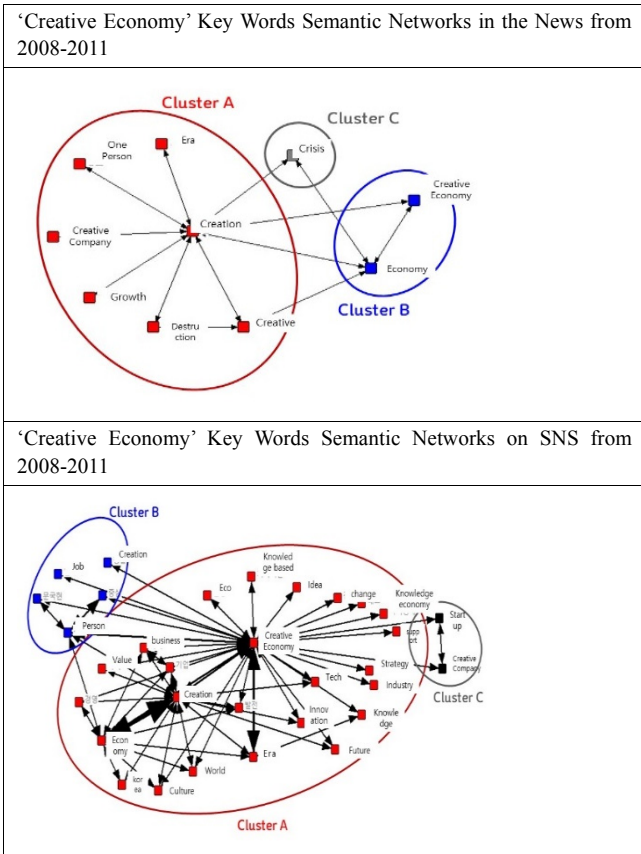


Table 3. Comparative Analysis of Centrality Values of Top-Ranked Keywords Related to Creative Economy from 2008 to 2011

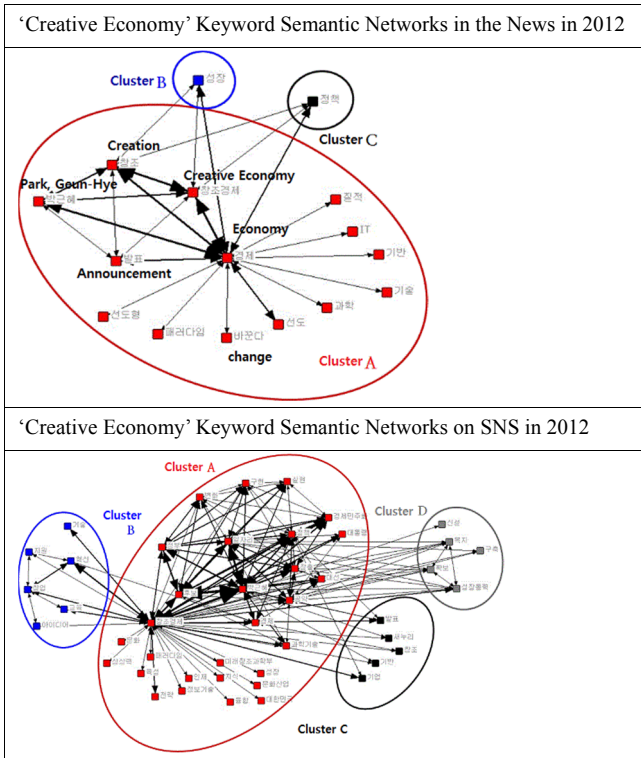
Degree Centrality			
news		SNS	
economy	113.000	Creative Economy	13103.000
Creative	52.000	Creation	9757.000
Creation	51.000	Economy	9252.000
Creative Economy	25.000	Person	3868.000
Era	24.000	Era	3816.000
Danger	21.000	Social	2823.000
Growth	19.000	center	2771.000
World	19.000	Enterprise	2646.000
One person	18.000	knowledge	2488.000
Creative Company	18.000	culture	2404.000
Future	17.000	World	2263.000
Destruction	16.000	Moon Kook-hyun	2176.000

Crisis	15.000	Development	2027.000
Creative Management	14.000	Creation	1851.000
Employ	13.000	Future	1811.000

Closeness Centrality			
News		SNS	
Creation	1.000	Creative Economy	1.000
Economy	.825	Creation	1.000
Creative	.619	economy	1.000
Creative Economy	.550	Person	1.000
World	.547	Era	1.000
Future	.541	World	1.000
growth	.541	Development	1.000
Danger	.541	Creation	1.000
One person	.538	Republic of Korea	1.000
Creative Company	.538	Work	1.000
Creative Management	.535	Representation	1.000
Destruction	.532	Center	.980
Crisis	.532	knowledge	.980
Economies	.532	Korea	.980
Greater	.532	Strategy	.980

Eigenvector			
news		SNS	
Creation	.567	Economy	.445
Economy	.512	Creative Economy	.442
Creative	.281	Creation	.438
Creative Economy	.171	Era	.226
Era	.152	Person	.202
Danger	.137	Social	.173
Growth	.126	Enterprise	.142
Destruction	.105	culture	.139
One person	.104	knowledge	.128
Creative Company	.104	World	.126
Crisis	.093	center	.125
World	.093	Development	.116
Technology	.090	Future	.103
future	.085	Value	.103
employ	.083	Operation	.102

Betweenness Centrality			
news		SNS	
creation	2852.750	Creative Economy	3.157
economy	1227.250	creation	3.157
Creative	215.833	economy	3.157
Creative Economy	24.250	Person	3.157
World	18.667	era	3.157
Creative Management	13.500	World	3.157
future	13.333	Development	3.157
Danger	12.000	Creation	3.157
growth	11.917	Republic of Korea	3.157
Destruction	10.250	Work	3.157
One person	9.000	representation	3.157
Creative Company	9.000	Korea	3.077
Technology	8.750	growth	2.781
Crisis	3.500	Technology	2.642
Development	.000	Development	2.509



4.2.3 Comparative Analysis of Centrality and Semantic Networks of ‘Creative Economy’ Keywords in 2013

In 2013, when creative economy had been fully developed as a policy, the semantic networks of the news and SNS show a high level of complexity. In terms of the semantic network of the news, 'creation', 'economic', and 'creative economy' depict a strong connection at the center of the network, in addition to complex connections with a wide variety of words below the three words [21]. In the semantic network of SNS, 'creative economy' alone occupies the center of the network, while showing a strong connection with ‘Park Geun-hye’, ‘industry’, and ‘Park’s government’. ‘Creation’ and ‘economy’ that occupied a central position in the news semantic network did not have a strong relationship with ‘creative economy’, although they were linked to keywords. In the case of the cluster A, a variety of words were located under creative economy, meaning that creative economy had been discussed at various levels on SNS. For the clusters C and D, contents related to ‘enterprise’ or ‘support’ that were treated importantly by the news semantic networks exist, while ‘job creation’, a topic of importance in 2012, and related contents formed the cluster B.

In the centrality examination, ‘creative economy’ that occupied the center of SNS semantic networks had the highest value in degree centrality, closeness centrality, eigenvectors, and betweenness centrality, followed by the word ‘industry’. In the case of the news, ‘economy’ recorded the highest value in degree centrality and eigenvector centrality, while ‘creative economy’ did as such in closeness centrality and betweenness centrality [21]. On SNS, it can be inferred that words that are more directly related to the citizens’ everyday lives occupy the center of the discussion, rather the macro-policies such as ‘start-up’, ‘idea’, and ‘job’ in the news.

4.2.4 Comparative Analysis of Semantic Networks and Centrality of 'Creative Economy' Keywords in 2014

Because the researcher’s previous study dealt with data up to August 31, 2014, the present study examined additional data in the second half of 2014 to newly create research data and to conduct comparative analysis. In 2014, both in the news and SNS, ‘creative economy’ is located at the center of the networks, while forming the strongest connection with 'Park Geunhye'. Both the news and SNS located sub-words in radial shape. It can be inferred that, as various words related to finance, science technology, culture, and economy were directly connected to creative economy, creative economy had been discussed in connection with various fields in the news and SNS during this period. However, in the case of the news, business support related words such as 'SMEs', 'venture', and 'start-up' formed a cluster, while 'job' and 'creation' formed a separate cluster and were being emphasized on SNS.

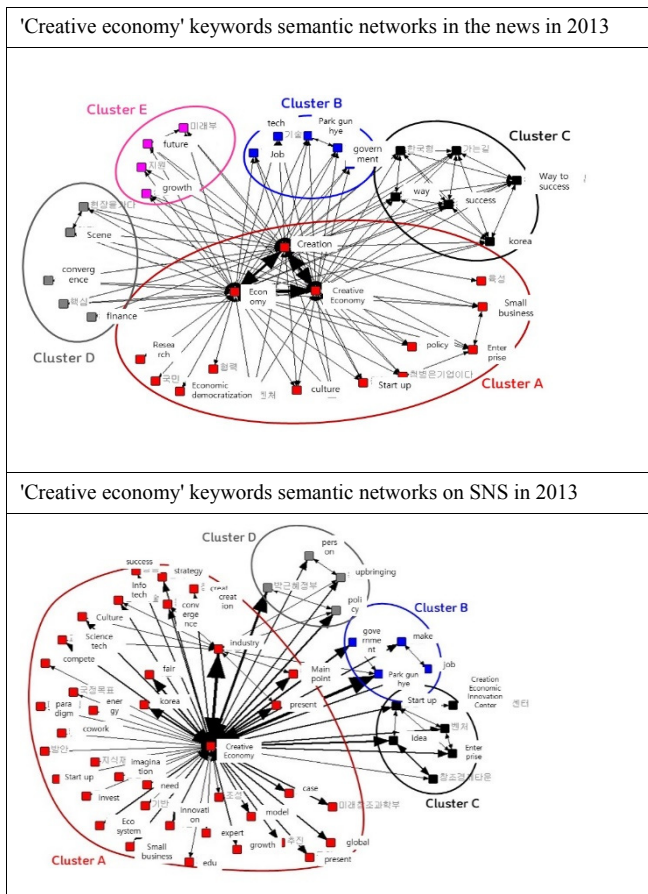


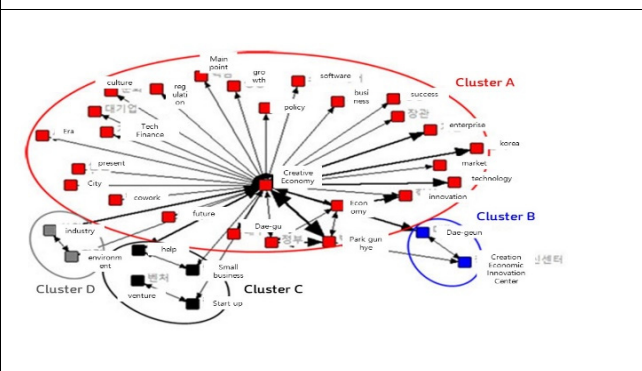
Table 5. Comparative Analysis of ‘Creative Economy’ Top-Ranked Keywords in 2013

Degree Centrality			
news		SNS	
economy	6066.000	Creative Economy	26413.00
creation	5844.000	industry	4627.00
Creative Economy	5665.000	Park, Geun-Hye	3727.00
Korea	1125.000	founded	2837.00
way	876.000	government	2807.00

Enterprise	842.000	idea	2742.00
success	782.000	Park Geun-hye government	2507.00
Get directions	769.000	Republic of Korea	2142.00
Park, Geun-Hye	759.000	present	2107.00
Korean	662.000	main point	2071.00
Success	629.000	Policy	2067.00
Get directions	629.000	Policy	2067.00
industry	442.000	Venture	1873.00
government	431.000	Job	1861.00
future	413.000	Enterprise	1830.00
Scene	388.000	Creation	1707.00
Eigenvectors			
news		SNS	
economy	.562	Creative Economy	.669
creation	.553	industry	.293
Creative Economy	.546	Park, Geun-Hye	.293
Korea	.104	Park Geun-hye government	.201
Park, Geun-Hye	.095	government	.188
Enterprise	.092	Republic of Korea	.157
way	.083	Fair	.152
success	.072	Policy	.143
Get directions	.070	idea	.142
Korean	.056	main point	.142
Success	.052	present	.139
government	.047	founded	.138
industry	.047	Job	.119
Scene	.043	Creation	.108
future	.041	strategy	.103
Closeness Centrality			
news		SNS	
Creative Economy	1.000	Creative Economy	1.000
economy	1.000	Industry	1.000
creation	1.000	Founded	1.000
Korea	.765	Government	1.000
Park, Geun-Hye	.758	Republic of Korea	1.000
Enterprise	.741	main point	1.000
success	.701	Enterprise	1.000
future	.687	Creation	1.000
way	.687	Idea	.981
government	.673	Policy	.981
industry	.671	Present	.981
founded	.650	Job	.981
Korean	.638	Venture	.981
Scene	.635	Strategy	.981
Success	.631	science Technology	.981
Get directions	.631	science Technology	.981
Betweenness Centrality			
news		SNS	
Creative Economy	1410.635	Creative Economy	3.059
creation	1410.635	industry	3.059
economy	1410.635	founded	3.059

Park, Geun-Hye	543.442	government	3.059
Korea	478.962	Republic of Korea	3.059
Enterprise	397.134	main point	3.059
success	284.117	Enterprise	3.059
future	259.443	Creation	3.059
way	223.908	Policy	3.016
industry	212.046	present	2.908
government	208.195	strategy	2.904
founded	147.502	science Technology	2.872
Future wealth	131.437	Furtherance	2.851
growth	129.360	avatar	2.836
Korean	126.955	Job	2.784

'Creative economy' keywords semantic networks in the news in 2014



'Creative economy' keywords semantic networks on SNS in 2014

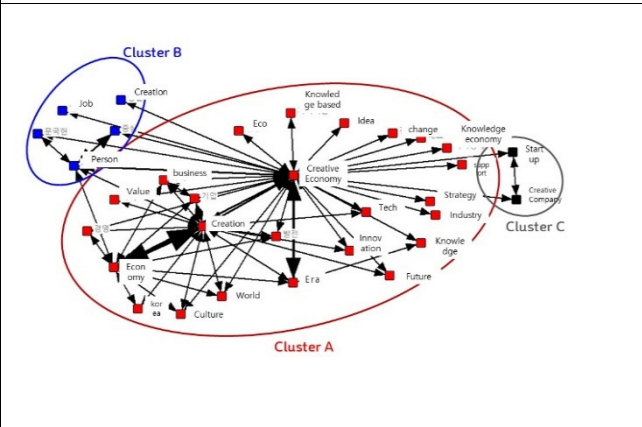


Table 6. Comparative Analysis of 'Creative Economy' High-Ranked Keywords in 2014

Degree Centrality			
news		SNS	
Creative Economy	735.000	Creative Economy	15569.000
economy	170.000	founded	3349.000
Park, Geun-Hye	167.000	Creative Economy Innovation Center	3233.000
Enterprise	148.000	idea	2720.000
Technology	127.000	Park, Geun-Hye	2556.000

support	125.000	Creative Economy Fair	2174.000
innovation	113.000	Creative Economy Fair	1965.000
industry	111.000	hold	1807.000
government	105.000	support	1468.000
loan	99.000	Policy	1371.000
Korea	97.000	government	1325.000
Small Business	96.000	Enterprise	1223.000
Interest rates	96.000	Venture	1157.000
Daejeon	90.000	economy	1133.000
Creative Economy Innovation Center	87.000	Small Business	1059.000
Eigenvectors			
news		SNS	
Creative Economy	606	Creative Economy	.637
Park, Geun-Hye	282	Park, Geun-Hye	.303
economy	217	founded	.267
Enterprise	210	Creative Economy Innovation Center	.223
Technology	208	Creative Economy Fair	.207
support	189	idea	.191
government	180	hold	.161
innovation	164	Policy	.150
Korea	163	Park Geun-hye government	.141
industry	154	government	.135
Daejeon	147	Creative Economy Town	.128
Small Business	141	economy	.120
main point	121	support	.111
hold	110	present	.110
Finance Technology	108	Venture	.108

Closeness Centrality			
news		SNS	
Creative Economy	984	Creative Economy	1.000
economy	.759	Creative Economy Innovation Center	1.000
Enterprise	.741	founded	1.000
industry	.723	economy	1.000
Park, Geun-Hye	.706	Enterprise	1.000
Technology	.706	present	1.000
government	.682	Park, Geun-Hye	.980
business	.682	idea	.980
support	.674	Policy	.980
Small Business	.674	government	.980
Korea	.659	support	.980

invest	.659	future	.980
innovation	.645	global	.980
market	.645	Technology	.980
hold	.645	innovation	.980
Betweenness Centrality			
news		SNS	
Creative Economy	317.235	Creative Economy	2.992
Park, Geun-Hye	97.758	Creative Economy Innovation Center	2.992
Enterprise	62.995	founded	2.992
economy	60.122	economy	2.992
industry	40.214	Enterprise	2.992
government	33.264	present	2.992
Technology	32.693	innovation	2.893
Small Business	30.074	Technology	2.804
business	28.968	hold	2.749
support	28.372	Policy	2.705
expert	28.255	idea	2.694
hold	28.055	global	2.689
Korea	24.662	support	2.657
innovation	24.265	Upbringing	2.593
invest	23.807	Park, Geun-Hye	2.583

In the analysis of centrality, in the news and SNS, the central keyword "creative economy" is ranked at the top in degree centrality, closeness centrality, eigenvectors centrality, and betweenness centrality. Although the lower ranked words have different ranks, 'economy', 'Creative Economy Innovation Center,' 'Park Geunhye', 'start-up', and 'enterprise' show higher values. However, in the news, 'economy', 'enterprise', and 'technology' appear to be ranked higher, while the practical performance and related words are more of interest on SNS such as 'start-up' and 'Creative Economy Innovation Center'

4.3 Analysis of Agenda-Setting Effect of SNS and News Reports on Creative Economy per Period

Research Question 3 investigates whether the creative economy semantic networks of news reports and SNS mutually influence each other, and analyzes whether the news reports influence the agenda-setting on SNS. To do so, the matrixes as results of Research Questions 1 and 2 were examined with QAP correlation analysis and QAP regression analysis in order to examine the relationship between the two semantic networks for each period.

As a result of the QAP correlation analysis that examines the relationship between each period-specific news and SNS semantic networks, from 2008 to 2011, the agenda-setting function of the news and the agenda-setting network on SNS did not show statistically significant results with each other ($r = .197, p = .099$). In other words, until 2008-2011, the agenda-setting function of the news did not have a significant impact on SNS. From 2012, after the presidential election and establishment of President Park's government, however, a

statistically significant correlation between the news's creative economy related agenda-setting function and SNS existed (2012: $r = .380$, $p = .039$, 2013 in: $r = .446$, $p = .021$, 2014 in: $r = .559$, $p = .043$). As shown in Table 7, the correlation coefficient (r) increases steadily from 2012. This means that the creative economy agenda-setting function of the news is increasing its influence on the SNS agenda-setting over time.

Table 7. Analysis of Correlation between Top-Ranked Keywords on 'Creative Economy' in the News and SNS

Year	QAP Correlation		QAP P-Values		Obs Value	Sig.	Std Dev.
	news	SNS	news	SNS			
2008 ~ 2011	news	SNS	news	SNS	1969	.0986	.1481
	1.000	0.197	.000	.099			
2012	news	SNS	news	SNS	3800	.0388	.1802
	1.000	.380	.000	.039			
2013	news	SNS	news	SNS	4459	.0212	.1427
	1.000	.446	.000	.021			
2014	news	SNS	news	SNS	5574	.0432	5
	1.000	.557	.000	.043			

Table 8. Analysis of Regression Relationship between Top-Ranked Keywords on 'Creative Economy' in the News and SNS

Year	Unstdized Coef	Sstdized Coef	P-value	Std Err	R-Square	Adj R-Sqr
2008 ~ 2011	0.00168	0.19685	0.11144	0.00129	0.03875	0.03413
2012	0.00260	0.38001	0.03648	0.00121	0.14441	0.14030
2013	0.14431	0.44587	0.02099	0.04608	0.19880	0.19495
2014	0.02188	0.55740	0.03798	0.00683	0.31069	0.30738

Next, to analyze the influence of the agenda-setting of the news on SNS's agenda-setting, the QAP regression analysis was performed. For each year, news reports were set as an independent variable, and SNS as the dependent variable. From 2008 to 2011, no effect of the agenda-setting of the news for creative economy on SNS was statistically significant ($p = .11144$). But, increasingly different aspects appeared from 2012. As shown in <Table 8>, from 2012, the effect of agenda-setting function of the news on SNS is found to be statistically significant ($\beta = .038001$, $p = .03648$). In 2013, the agenda-setting function of the news on SNS became statistically more significant ($\beta = .44587$, $p = .02099$), and in the 2014, the agenda-setting of the news was affecting SNS ($\beta = .55740$, $p = .03798$). Also, as depicted in <Table 8>, the standardization factor increases steadily from 2012, which means that the creative economy agenda-setting function of the news was steadily increasing its influence on the public opinion formation on SNS. That is, as years went by, the influence of the news on the public opinion on SNS became stronger.

5. CONCLUSIONS AND IMPLICATIONS

This study applied network agenda-setting theory to analyze how the concept at the center of controversy, 'Creative Economy', became signified and was treated by the media and on SNS since the establishment of President Park's government. To this end, the present study additionally extracted the keywords and the structure of semantic networks related to creative economy on SNS as a follow-up study on the media's keywords and semantic networks structure related to creative economy by the researcher. Also, this study comparatively analyzed the relationship between the two networks to identify the influence of the media on the agenda-setting within SNS.

As a result, during the era of President Lee's government, from 2008-2011, the concept of creative economy was somewhat mentioned by the media and on SNS, there was no mutual influence between the two in setting the agenda for creative economy. Even in the selection of keywords, the news set the agenda of creative economy as a way to solve the economic problems, while SNS recognized creative economy in relation to the social paradigm shift. Semantic network analysis also resulted in different structures of semantic networks of the news and SNS without little similarities between the two subjects. The two networks did not show a statistically significant similarity in QAP correlation analysis and QAP regression analysis.

However, since the 2012 presidential campaign and establishment of President Park's government with the beginning of the transition committee, the discussion of creative economy slightly increased. In the case of the news, the surrounding words to describe the key agenda, creative economy, became more diversified with an increased convergence [21]. In both the news and SNS networks, economy related words became the keywords, with 'economy' appeared in the center of the networks. The main sub-concepts of creative economy emphasized by President Park's government such as 'science', 'IT', and 'Information Technology', appeared numerous times, while, for creative economy on SNS, sub-networks of words related to technology and convergence were formed.

In 2013, economy-related words appeared with high frequency in the news and SNS. But in the sense of the semantic network analysis, three words, 'creation', 'economic', and 'creative economy', formed the central axis in the news, while for SNS semantic networks, the center of the network was composed of with 'creative economy' alone [21]. Economy-related sub-words also have somewhat different composition. In the news, words such as 'industry', 'corporate', and 'growth' that are associated with macro-economic growth were found in the news, while on SNS, words that are related to the real world such as 'job', 'start-up', and 'realization' composed the sub-words.

In 2014, the news and SNS networks, with very similar shapes, revealed that there is a deep correlation. In both semantic networks, 'creative economy' occupied the center of the networks, and the words of a very wide range of fields were directly connected with the word in a radial direction. Also, below, words that are related with support and policy were

treated with a high importance. On SNS, heightened interest on actual benefits was revealed as the policies ran by President Park's government such as 'Creative Economy Fair', 'Creative Economy Innovation Center', and 'Creative Economy Town' were mentioned more frequently. A higher frequency revealed showed a high interest in tangible benefits.

In the QAP correlation analysis that compares the correlation of the semantic networks of the news and SNS, the two networks showed a statistically significant correlation since 2012. Also, with the steadily increasing correlation coefficient (r) afterwards, it showed that the agenda-setting function of the news and that of SNS had an increasingly strong correlation. QAP regression analysis revealed that the influence of the agenda-setting function of the news was affecting SNS since 2012, which revealed that, with the standardized coefficient steadily increasing yearly since 2012, the agenda-setting influence of the news on the agenda-setting within SNS was becoming stronger by year.

Thus, the agenda-setting function of the news had an impact on the structure of public awareness about creative economy and thereby influenced the reproduction of creative economy discussion on SNS under the agenda structure produced by the news. The similarities between the two networks appear more similar over time with increasingly similar key agenda, sub-words, and centrality values. The similarity between the semantic networks of the news and SNS was created by the strong influence of the news on the discussion of creative economy, which, in turn, slowly formed our perceptions over time that influenced the self-expression of the audience on SNS, resulting in similar network structures of reproducing and expressing the agenda. The self-expressions on SNS that we consider as our own were, in fact, influenced by the public knowledge on socially formed agenda, resulting in reproduction of meanings via a not so unique method.

However, for the agenda-setting function of the news to influence the public's social perception, it is only possible if full discussion take place through the news regarding the agenda. In case of the creative economy, the news produced from 2012 in high numbers since the establishment of President Park's government influenced the agenda-setting of SNS. When the discussion was rarely taking place in the news before 2012, there was no statistically significant correlation between the semantic networks of the news and SNS. It can be concluded that the media's influence has power over the public knowledge when various discussions occur on the news, and when the level of discussion is weak, the media's influence on SNS is low as well. Thus, it cannot be said that the news influences ever public agenda – only the issue actively discussed on the news has an influence on public agenda-setting.

In addition, the news has a significant impact on the agenda recognized by the recipient, the recipient has shown that the same agenda is accepted at a more personal level. After 2012, in the semantic network analysis for the news and SNS on creative economy, the two networks understood creative economy in the economic dimension, while a somewhat different configuration was shown for the sub-words located below. While the news had words associated with economy in a more micro-economic dimension, on SNS, words that are more micro-level and directly related to public life, or words that are

relevant to implementation constituted the sub-parts. Although the accepted structure is the same, the convergence point for SNS is more personal and practice compared to that in the news.

This study structurally analyzed the influence of the media's agenda-setting via network analysis based on examination of comprehensive daily newspaper articles and SNS data from 2008 to 2014. Based on the analysis, it showed graphs of the media's expression structure of agenda and the structure of the public's understanding on creative economy, which allowed visual and in-detail examination of the mutual correlation of the two. This enabled a more structured examination of the influence of agenda-setting than the results offered by the traditional first-level and second-level agenda-setting theories. Such analysis will allow multidimensional understanding of agenda based on a more rounded analysis of the media's influence and effect in the future.

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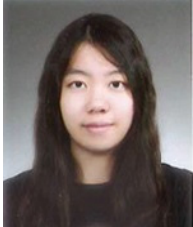
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