

A Semantic Network Analysis of 4th Industry Revolution: News Frame for on Drone, AI, Big Data and IoT News

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Abstract

This paper explores the news coverage frames of the ‘Fourth Industrial Revolution’ in news media. Through analyzing the themes like drone, AI (AI), big data and IoT (IoT), the study conducted an analysis to figure out the characteristics and trends of Korean news frame about the Fourth Industrial Revolution. For this purpose, we extracted related contents and keywords in Korean media from Jan 1st, 2012 to Dec 31st, 2016 on a yearly basis. The data was analyzed using Korean language analysis program, Textom, and network analysis program, NodeXL. According to the results, it was found that there were different frame types for the Fourth Industrial Revolution in each year period from 2012 to 2016. In specific, the focus of the keywords ‘drone’ and ‘AI’ shifted from an ‘attack’ frame and ‘leisure’ frame to an ‘industry’ frame, while keywords ‘big data’ and ‘IoT’ had no major changes and consistently maintained one frame. However, entering 2016, a new frame may be trending as new media vocabulary related to ‘big data’ and ‘IoT’ continues to emerge.

Keywords: Drone, AI, Big Data, IoT, Frame, Semantic Network Analysis

1. Introduction

The ‘Fourth Innovation Revolution’ is one of the most talked-about innovations in recent years as real online information and communication technology (ICT) continued to be applied to offline industrial sites. According to the World Economic Forum, the underlying technology of the Fourth Industrial Revolution can be seen in major advances such as AI, machine learning, robots, IoT, 3D printing, and biotechnology. Since the crisis in 2008, many advanced countries including Germany have recognized the importance of manufacturing innovation and have begun the Fourth Industry Revolution by promoting ‘manufacturing smart’ through the combination of manufacturing with information and communication technology (ICT).

The concept of the Fourth Industrial Revolution was discussed and defined at the Davos Forum held in January 2016. As of 2017, along with the rapid development of information and communication technology, the Fourth Industrial Revolution has spread throughout almost all industries. Since the Fourth Industrial Revolution emerged as a global issue from the German ‘Industry 3.0’ project in 2012, there has been an increase in Korean media in the number of references to the Fourth Industrial Revolution (see Figure 1). Especially in January 2016, the Fourth Industrial Revolution term was formally

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discussed and defined in Davos Forum; ever since, news in Korea about the Fourth Industry exploded and continue to pour out every day.

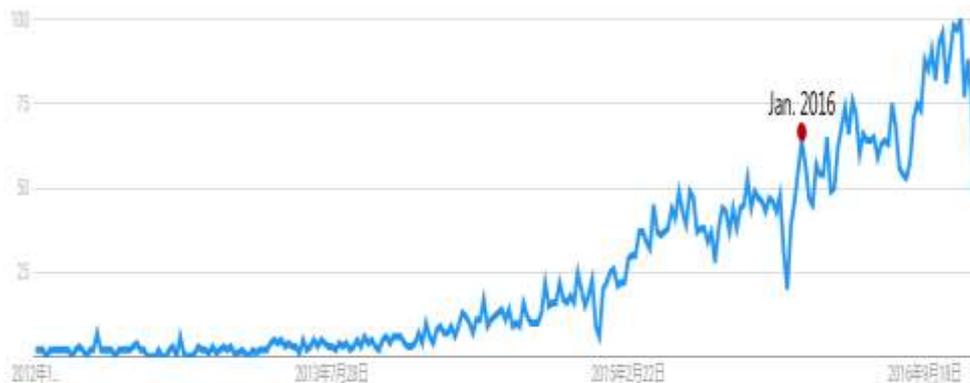


Figure 1. Google Trends on 'Fourth Industry' between 2012 and 2016

In general, the press is an institution that supplies scientific and social knowledge to users. From this point of view, the press provides information related to the Fourth Industry and the consumer learns and criticizes the Fourth Industry through this information. However, in this process, not all issues about Fourth Industry can be covered. They are presented in a specific framework due to the news framing process. This process produces 'social meaning' of the Fourth Industry by interacting with the media (Entman, 1991; Gamson & Lasch, 1983; Tuchman, 1978). So, this study will examine how the Korean society and media understand and framed the Fourth Industry during the January 1, 2012 to December 31, 2016 based on the Framing Theory. The network analysis method will be applied to identify keywords, the relationships between words, and the overall logical structure of relationships.

This study examines how the main keywords and their concept of the Fourth Industry earn meaning in the Korean society from 2012 to 2016. The keywords used in this study are Drones, AI, Big data, and the IoT. In the frame of the Fourth Industrial Revolution, which fills the void of the literature reviewing the Fourth Industrial Revolution in terms of the current frame of study, and which becomes increasingly vastly competitive in practice, it provides implications for how stakeholders should develop and promote strategies.

2. Theoretical Discussion

2.1. Discussion on 'Fourth Industrial Revolution'

The Fourth Industrial Revolution is the technological revolution led by artificial intelligence, machine learning, robotics, IoT, 3D printing, and biotechnology. While the industrial revolutions of the machine mechanized and automated the human workforce, the Fourth Industrial Revolution is expected to result in a revolutionary change that replaces the human brain itself. Currently, developed countries such as the US, Japan, Germany and Korea and many developing countries, including China, are applying ICT to the manufacturing industry for manufacturing innovation. These countries are pursuing smart factories based on sensors, big data, and robots. Personalized products along with Internet and mobile based services are also increasing, and platform-based businesses are also spreading. The Fourth Industrial Revolution has been spreading to almost all

industries with the rapid development of ICT (Kim, Eun-Kyung & Lee, Seong-Min, 2016).

2.2. Discussion on News Frames

In 1978, Tuchman defined news as "a specific framework that allows users to understand the world." In other words, news can be understood as a framework that constitutes social reality rather than a mere reflection of reality. Among them, the frame is related to such selection and exclusion. For a long time, the term frame has been used in many fields, especially in the field of journalism. The emergence of the concept of frames in the field of journalism is known as the 1970s. Goffman (1974) said that the framework is an interpretive mechanism that allows locating, perceiving, understanding, and explaining events or everyday experiences that arise from individuals. This is the functional aspect of the frame as an interpretive schema of the receiver of reality. Gittlin (1980) defines frame as a specific aspect is selected from a perceived reality, a definition of an event is made, and content is composed accordingly. Gamson and Modigliani (1989) have defined frames as a central idea for identifying events on an issue, and the process is called "the tide of refueling and media use over time." In addition, the frame also described the linking of meanings to specific events and issues, namely, analytical baggage. Entman (1993) defines a frame as a salient selection of a particular aspect of perceived reality and it is salient in text, ending only with the specific issue appearing in front of the public discourse and the rest in the rear but also a framework to provide ideas and methods for the issue. This means creating a news story by defining the nature of the issue in the news, explaining causation, providing solutions, and selecting and representing specific aspects within the process of moral appraisal. Also, according to Ghanem (1997), the frame is associated with specific social issues. Combining the above considerations, the frame is, after all, a consistent pattern, a part of the symbol of particular issues and relationships to society.

Although the concept and definition of frame differ slightly from one scholar to another, it is a common opinion that interpretation and regulation of a reality or a subject from a specific point of view can affect the thought, judgment, and ideology of the user. The existing frame research tendency can be divided into five branches. First, there are sociological and language sociological studies that emphasize the context of interaction between the press and society. Secondly, there are studies focusing on content analysis focusing on the analysis of news texts. Third, there are studies on social movement theory. Fourth, there is psychological research based on predictive theory. Finally, there is also a study of communication effect theory (Lee, 2000). This study will also focus on content analysis focusing on text analysis on the assumption that the news frame on the Fourth Industry in Korea has a certain tendency and it can affect the thought of the audience, based on the opinions of the previous researchers had on the traditional frame.

2.3. Discussion on Semantic Network Analysis and Centrality Research

The semantic network analysis is an analysis using social network analysis of social science. The network consists of an object called 'node' and 'link' between them, in which the node is 'person' and the connection relation is 'relationship between individuals'. However, in the semantic network analysis using the network analysis, 'keyword' is important in the media of each node, and the link represents 'connection relation between keywords'. The semantic network analysis analyzes not only the overall structure of the frame but also the position and role of specific keywords in the whole structure, so that the frame structure of the media can be understood in detail. In other words, the position of each node and its role in the overall structure are analyzed. At this time, a method of analyzing the role of the node and the relationship between the nodes is a 'centrality' study.

The centrality is an indicator of the relative importance of vertices or nodes in the social network, as measured by Bavelas (1997) (Freeman, 1979). He tried to identify the role of each node in the network. Through the process of revealing the roles, the overall structure of the network and how each keyword contributes to the structure construction (Wigand, 1988). The centrality index is divided into degree centrality, closeness centrality, betweenness centrality, and eigenvector centrality depending on the calculation method. Analyze which role you play.

3. Research Problems and Methods

In order to capture how the 'Fourth Industrial Revolution' was understood and viewed in Korea from the beginning of 2012 to the end of 2016, the following items were selected as the main keywords of the Fourth Industrial Revolution: artificial intelligence (AI), big data, drones, and Internet of things (IoT). With these keywords, the following three research questions were set:

RQ1: How do the words that the media associate as important with the keywords (big data, AI, drones, and IoT) differ in each period?

RQ2: How do important words related to big data, AI, drones, and IoT constitute different meaning networks for each period?

RQ3: What are the media trends to big data, AI, drones, and IoT in each period?

In order to investigate the research problem, this study uses the Big Data Analysis Solution Textom to analyze the data which was collected from news search category on the portal site: Naver.com. The collection period is January 1, 2012 to December 31, 2016. The concrete process is to take the collected basic data through a series of work processes and extract the word frequency and 'word * word matrix' matrix. In order to visualize the extracted matrix data through the network, we analyzed it using a network analysis program named NodeXL. NodeXL can calculate Degree, Centrality, Density, Clustering coefficient, which are the main indicators of social network analysis research. It is a program that can express network in various visualization charts.

4. Research Results

4.1. Keyword Comparison Analysis by Report Period

In order to find out the research problem 1, this research has examined the frequency and ranking of key words about four themes (Drone, AI, IoT and Big Data).

First, in the case of drones (see Table1), the most frequently mentioned words from 2012 to 2013 are 'America' and 'attack', and in the top 20, 'Pakistan', 'Iran', 'Israel' 'And' war 'appeared in the Korean media, which shows that the drones appear in the article as one of the major military means of terror. From 2014 onwards, the top 20 books on drones included the words 'shooting', 'video', 'camera' and so on. This means that the Korean media is aware that the drones are becoming a new broadcasting technology. In 2015, the first word on the frequency of the drones was 'racing', and in the top 20 books, 'competition' and 'central plaza' were mentioned. For this year, the Korean media reported that the focus on the drones tilted to a lifestyle. In 2016, we can see that the major dearidon related words in the Korean media include 'China', 'Navy', 'South China Sea', and 'Trump'

Table 1. Top Words Related to 'Drone' Covered in Naver News by Year

2012년		2013년		2014년		2015년		2016년	
단어	빈도								
드론	1382	드론	1407	드론	1858	드론	1554	드론	1565
미국	553	미국	633	부인항공	521	레이싱	173	미국	351
공격	356	부인	356	이용	284	부인	115	항공촬영	289
부인	219	공격	326	미국	236	대회	107	중국	243
저글링	204	배송	272	초미니	214	산업	105	빅배	216
알파당	150	이용	227	배송	157	배송	100	전론가	180
SK	145	파키스탄	181	공격	134	촬영	88	아마존	129
파키스탄	142	아마존	163	개발	125	촬영	69	수중	104
이란	136	부인항공	155	촬영	110	개최	62	해군	91
예멘	117	오바	98	아마존	89	내년	61	산업	86
스포츠타	98	개발	84	상업	78	중앙광장	61	반환	83
본인	93	세계	81	최근	77	미국	60	남중국해	78
이스라엘	90	사랑	72	영상	75	시법사업	60	나프	77
알카	90	소셜	69	촬영	72	시장	57	부인	69
이계동	89	최근	69	공개	67	국내	57	촬영	68
김영호	86	비행	61	비행	62	영상	55	트럼프	63
전략	84	로봇	61	기자	62	공개	51	내년	60
상대	81	예멘	58	뉴스	59	아마존	51	관련	59
김영호	78	전쟁	57	소셜	57	서울	50	이용	59
지역	77	정부	56	카메라	55	이용	49	지역	58

Next, the most commonly mentioned word from 2012 to 2013, except for the same word 'AI' (see Table 2), is 'game', ranking 129th and 189 total words, respectively. So, during this period, artificial intelligence appeared in the Korean media as a game of major oil price method. From 2014 to 2016, however, the media focus on artificial intelligence has changed significantly. Specifically, in 2014, when the word "research" came to second place in the total of 215 words, it was suggested that artificial intelligence began to be used in scientific research. Although the specific word selection changes from 2015 to 2016, words such as 'development' and 'research', such as 'research', are in the top position. In addition, in 2015, words representing company names such as 'Google', 'Apple' and 'Facebook' were found in 20 words. Companies named in Ian can reasonably reason that it is the leading artificial intelligence development agency. From 2016, 'reporter' and 'translation' appeared in the top word in relation to artificial intelligence, and it became clear that the announcement of this announcement ability started to be used in other fields as well.

Table 2. Top Words Related to 'AI' Covered in Naver News by Year

2012년		2013년		2014년		2015년		2016년	
단어	빈도	단어	빈도	단어	빈도	단어	빈도	단어	빈도
인공지능	644	인공지능	833	인공지능	773	인공지능	1322	인공지능	1543
게임	129	게임	189	연구	215	기술	306	기술	219
기술	118	로봇	141	로봇	202	로봇	303	서비스	157
모드	102	개발	114	기술	171	개발	207	개발	152
로봇	95	기술	108	분석	154	구글	149	기반	132
기능	93	컴퓨터	106	개발	124	애플	130	왓슨	126
온라인	86	시스템	103	인간	121	미국	118	활용	117
시스템	83	기능	97	컴퓨터	83	미래	115	구글	113
개발	73	인간	77	게임	80	페이스북	105	미국	89
유저	72	자동차	71	구글	74	인간	101	내년	82
자동차	71	출시	68	사람	69	서비스	100	국내	78
컴퓨터	64	사람	65	시스템	66	세계	88	시대	73
서비스	62	모드	64	활용	62	빅데이터	79	김병원	71
기능	58	분야	52	분야	58	사람	78	기자	71
테스트	55	교수	50	기업	58	연구	75	번역	70
출시	53	자동차	49	산업	56	컴퓨터	73	적용	68
인간	51	미국	47	등장	54	최근	70	분야	68
휴대폰	51	서비스	45	영화	53	투자	68	빅데이터	64
미래	49	유저	45	미래	52	일본	60	도입	64
국내	48	구글	43	서비스	52	시대	59	세계	62

In the case of big data (see Table 3), the top two words covered by the Korean media from 2012 to 2016 were 'analysis' and 'utilization' invariably. Through this, it can be seen that the Korean media emphasized Big Data as one analysis tool for five years. As a whole, the focus of the Korean media on the Big Data has not changed much, and in 2015 and 2016, words such as 'pin tech' and 'brand' have appeared, and big data has begun to be used in the fields of finance and advertising I announced.

Table 3. Top Words Related to 'Big Data' Covered in Naver News by Year

2012년		2013년		2014년		2015년		2016년	
단어	빈도								
빅데이터	1981	빅데이터	1792	빅데이터	1566	빅데이터	1645	빅데이터	1765
분석	327	분석	293	분석	294	분석	332	분석	464
활용	187	활용	230	활용	259	활용	278	활용	225
클라우드	154	기술	102	기반	106	기반	153	MSI	160
시장	153	사업	98	기업	105	서비스	137	브랜드	142
솔루션	151	서비스	88	기술	87	기술	106	기반	117
기업	123	시장	88	사업	78	클라우드	96	공통	96
기술	117	정보	87	고객	76	플랫폼	91	뉴스	93
서비스	101	솔루션	78	서비스	74	산업	70	이날	91
출시	81	관련	64	개발	71	제공	66	인공지능	82
국내	70	기업	62	구축	71	기업	65	12월	76
시대	68	정부	62	클라우드	68	개혁	65	서비스	74
플랫폼	66	미래	61	정보	66	사업	55	강력	74
발표	63	클라우드	60	시장	62	최근	53	구축	74
정보	58	기반	56	국내	59	이번	51	2016	69
최근	56	센터	55	개혁	57	시스템	50	제공	62
기반	54	발표	55	신한카드	55	모바일	48	코스콤	62
고객	53	개혁	54	관련	54	구축	48	시스템	57
전망	51	구축	54	경기도	54	원테크	47	주요	54
제공	50	전문가	53	제공	52	관련	47	오전	54

Lastly, the IoT (see Table 4) has seen an explosive increase in the total number of frequencies handled in Korean media since 2014, but the concrete flow was in the same context as Big Data. The two words that appeared at the top of the frequency were consistently 'connected' and 'technical'. What we can grasp through this is that the Korean media is only focusing on the functional aspect of the Internet of things in terms of reporting on the Internet. However, one important point is that in the top word of '2016', 'Samsung' and 'Platform' are placed 175 times, 139 times in 3rd place and 5th place in the top word. It means that the company has conveyed a lot of messages from the press that started to make more efforts to develop the Internet platform of things. has seen an explosive increase in the total number of frequencies handled in Korean media since 2014, but the concrete flow was in the same context as Big Data. The two words that appeared at the top of the frequency were consistently 'connected' and 'technical'. What we can grasp through this is that the Korean media is only focusing on the functional aspect of the IoT in terms of reporting on the Internet. However, one important point is that in the top word of '2016', 'Samsung' and 'Platform' are appeared which means that the companies started to develop the platform of IoT.

Table 4. Top Words Related to " Covered in Naver News by Year

2012년		2013년		2014년		2015년		2016년	
단어	빈도	단어	빈도	단어	빈도	단어	빈도	단어	빈도
사물인터넷	334	사물인터넷	1073	사물인터넷	1504	사물인터넷	1330	사물인터넷	1251
연결	52	기술	130	시장	195	기술	270	기술	225
서비스	46	연결	116	기술	188	전문가	245	삼성	175
기술	43	시장	96	삼성	141	서비스	153	산업	142
스마트	40	대년	85	글로벌	121	기반	147	플랫폼	139
클라우드	39	빠빠	82	산업	115	개발	137	서비스	137
미래	34	미래	74	기업	111	글로벌	133	스마트	136
모바일	28	모바일	72	서비스	107	산업혁명	131	시장	118
네트워크	24	한국	70	시대	105	산업	131	기업	112
시대	23	빅데이터	69	개발	105	인공지능	128	보안	107
글로벌	23	번호	69	관련	99	LG유플러스	127	미래	103
자동차	20	시대	66	미래	97	스마트	121	글로벌	100
기업	19	산업	64	기반	96	4차	121	연결	95
산업	19	전망	63	플랫폼	94	빅데이터	119	기반	88
세상	18	발표	62	사업	91	시장	106	스마트홈	88
발표	17	클라우드	57	전망	80	활용	97	활용	80
표준	17	기업	54	연결	73	기업	91	빅데이터	79
방송위	17	스마트	54	스마트	69	미래	88	LG전자	76
분류뉴스	17	정보	54	투자	63	분야	85	사업	75
생태계	16	활용	53	정부	63	제품	81	가전	69

4.2. Analysis of Semantic Network and Centrality

To understand the RQ 2 and 3, we visualized the semantic network structure of the main words we looked at in RQ 1 and examined the centrality of the words used.

4.2.1. Drones and IoT Semantic Network and Centrality between 2012-2016

The results of the study related to drone is as follows(Table5): First of all, 'drone' is the main word and occupies the central position of all networks. In each year, semantic network shows a somewhat different appearance. In 2012, there are roughly five clusters. First, 'attack' and 'USA' showed strong connection with 'drone'. In addition, the two words 'reconnaissance' and 'unmanned' also form another community with close connection with the drones. The other industrial clusters, including 'construction' and 'juggling', and 'Pakistan' and 'Iran' And population only. In 2013, it can be divided into four clusters. In other words, a cluster composed of 'Usage', 'USA', 'Unmanned', 'Shipped', 'Unmanned Aerial', and 'Attack', and a second cluster including ' There is a fourth community consisting of 'Flight', 'Good luck', 'Over', 'Amazon', 'Third' about 'Death', 'Pakistan', and 'War'. In 2014, five clusters were formed in the same context as in 2012, and in particular, 'Selka' was a single cluster of words. In 2015, the structure of the network has undergone major changes. In addition to the new word 'racing', the 'central manager' and the drones

created two new communities. Finally, 2016 was largely implemented in four clusters. 'China' and 'aerial photography' showed the strongest connection with the drones with thick lines, followed by a cluster of 'aerial photography' as a sole community, 'China', 'Amazon', 'courier' It was made up of one community. The rest of the words 'Navy' and 'South China Sea' constituted a political cluster.

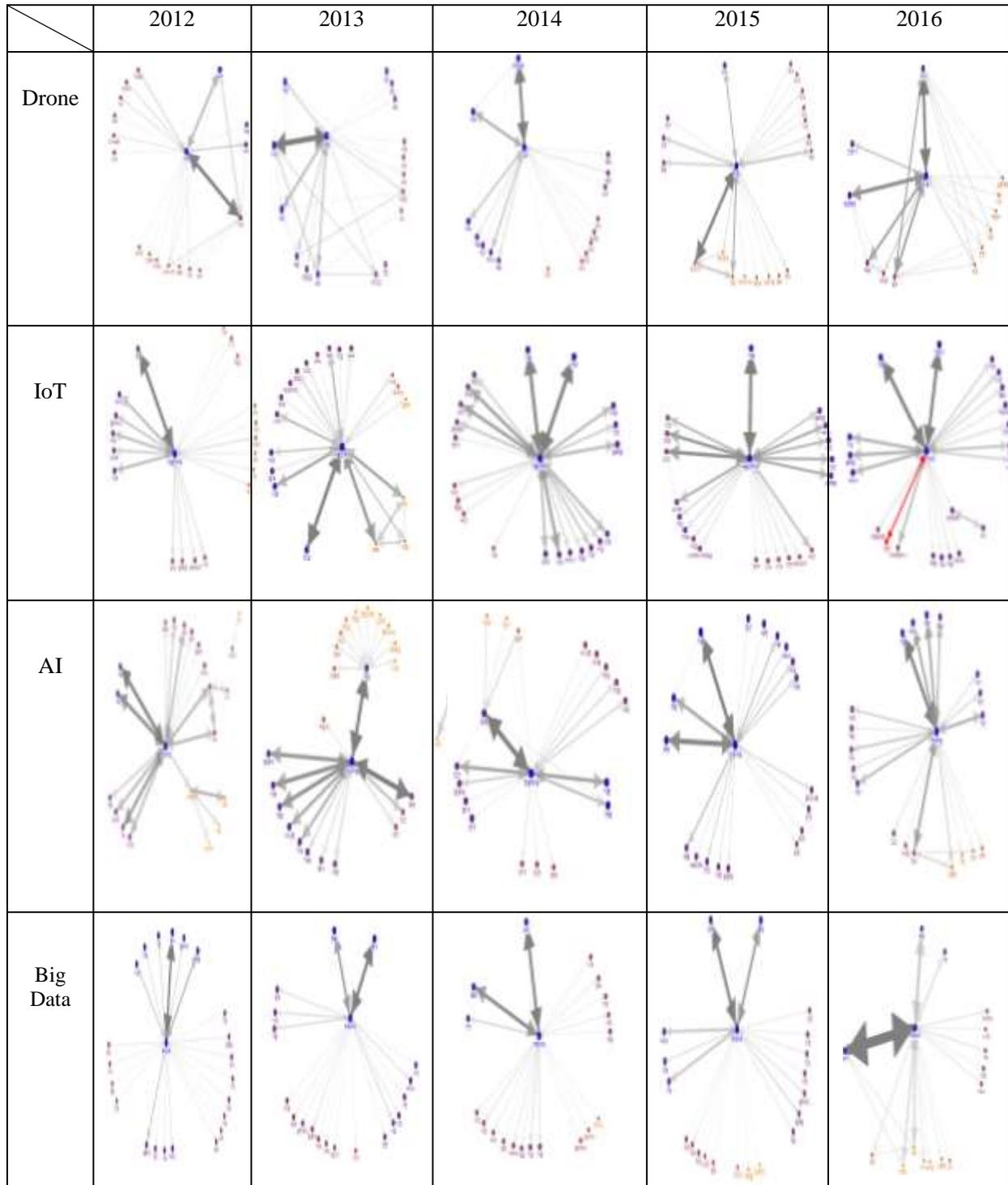
Looking at the whole results of IoT(Table5), 'IoT' is the center of all networks, and there are some differences in each year. In the meantime, if we look at 2012, we can see that the 'connection' is the only one that is independent due to the strong relationship between the IoT. As shown in Figure. The fourth cluster with the words 'second', 'sensor', 'automobile', 'global', 'network' and 'future' 'Smart' and so on. The network of semantic networks from 2013 to 2016 is based on 2012. However, some important points to note are the words 'pager', 'number', 'resurrection' in the network of things in 2013, and 'SK Telecom', 'LG Uplus' As the name of the carrier was raised, it was also known that each carrier was the company that developed the IoT.

4.2.2. AI and Big Data Semantic Network and Centrality between 2012-2016

The research results related to AI are shown as follows(Table5): Overall, the word 'AI' is the center of all networks, and the differences are somewhat different. First, in 2012, five clusters are formed, and the game and technology, which have a strong connection with AI, form the first cluster. Next, the second cluster, including 'development', 'online', 'function', 'system'. The third cluster consists of nine words including 'computer'. The word 'game' has no relation with other nodes and interacts with 'modo' on a day-to-day basis. Finally, the fourth group consists of 'mobile phone', 'men' s cup ', 'betrayal 'and' question 'which have a relatively weak relationship with AI. Among them,' mobile phone ', 'Betrayal', 'question' and so on. Next, the semantic network of 2013 was made up of five clusters. Specifically, 'car' is a cluster and 'mode'. 'Human' and 'Robot' constituted the second cluster. Computer 'and a total of 8 words are placed in the third cluster. All the words 'graphic' and 'novel' in the last 4th group have a meaningful relation with 'AI' through 'game' in relation to 'game'. 2014 had the same meaning as in 2012 and 2013, and at the same time, it included the word "Japan", so we can confirm that there is more investment in "AI" and "robots" in Japan. In the case of 2015 and 2016, four clusters were formed, respectively, and the situation remained almost the same as the previous year.

Looking at the whole results of Big Data(Table5), 'big data' is the center of all networks, and every other part is different. First, in 2012 there are a total of four big data related clusters. The first cluster is a cluster that includes an 'analysis' that has a strong connection with the central word big data. The second is a cluster related to the services in which the words 'launch' and 'customer' are arranged, and the third is a cluster related to the use of big data containing words such as 'information' and 'announcement'. Finally, the 4th cluster can present a 'solo', which is reasonably expected to be a big data analysis program. In 2013, 2014 and 2015, new clusters were created including examples of real applications such as 'Shinhan Card' and 'Samsung Card' in addition to the group that explains big data as existing analysis tools. Finally, in 2016, a new community consisting of 'MSI', 'News', 'Brand' and 'Koscom' appeared. Connectivity is relatively weak, but it is understandable that new developments in the big data field are increasing.

Table 5. Semantic Network of Drone, AI, IoT and Big Data between 2012-2016



And finally, the analysis results of centrality about Drone, IoT, AI and Big Data are omitted here because all of them are shown similar results with the semantic networks.

5. Conclusion and Discussion

5.1. Research Results

This study analyzed the frame trends of Korean media on the 'Fourth Industry' and tried to understand how the 'Fourth Industry', which is a major issue in the world, became meaningful in Korean society. For this purpose, this study has been carried out for five years from 2012, when the concept of 'Fourth Industry' was introduced in earnest, to 'D4', 'The Internet of Things', and the semantic network structure and centrality of these related words. As a result of the study, when the 'Fourth Industry' was presented for the first time in Germany and other countries in 2012, there was not much awareness about 'Dron' and 'Artificial Intelligence' War ', 'death 'and so on. However, since the start of the development of ICT in 2013, the Korean media has gradually started to shift the focus of the frame gradually. Specifically, the focus on the 'drones' has shifted from 'war' to 'shooting' and 'delivery', and the media focus on 'artificial intelligence' is 'development' Service 'and so on. In addition, the media focus on 'Big Data' and 'Internet of Things' seems to have not changed much from 2012 to 2016, but when we look at the overall picture, we can see that there are some differences. For example, the focus of the 'Big Data' focuses on 'analysis' and 'utilization' from 2012 to 2016, but in 2016 the words 'MSI' and 'Koscom' It began to appear. For example, the focus of the 'Big Data' focuses on 'analysis' and 'utilization' from 2012 to 2016, but in 2016 the words 'MSI' and 'Koscom' It began to appear. 'Internet' is mainly focused on 'connection', 'technology' and 'service' between 2012 and 2016, but in 2015, Global 'and so on. As a result, the 'Fourth Industry' became a global issue in 2012, and the frame on this subject was delayed one step further in Korea, but it was followed by the development trend of 'Fourth Industry' as a whole. In particular, since the 'Fourth Industry' was recognized as the theme of this year at the Davos Forum in early 2016, Korea has made a great deal of innovation in the development plan of each country. The trend of the new frame mentioned above was born.

5.2. Research Discussion

In this study, we investigate how information is provided in Korean media through the Korean media on the global issue of 'Fourth Industry' in recent years, it is a comprehensive analysis. The results of this study show that the Korean media can provide the kind of information about 'the fourth industry' and provide the opinion on the information. Through this, we can confirm the way of thinking about the issue of society in the form of official knowledge about 'the fourth industry' in Korea. Therefore, this study can be summarized as the whole meaning of the study. In the academic aspect, this study uses the technique of semantic network which can reduce the data of the mass 'Fourth Industry', But it is important to be able to draw a more systematic picture of the future. From a practical point of view, this study can provide implications for constructing a suitable strategy to respond to the public knowledge framework. Nevertheless, this study has some limitations as follows. First, this study collected data on 'Fourth Industry' through Naver TV channel but did not apply how 'Fourth Industry' is meaningful to audience in new media such as blog or SNS. In other words, it is necessary to further verify the tendency of the frame for 'fourth industry' in new media in future research. Second, this study examines the whole media flow of the 'Fourth Industry' in Korea, and only four keywords such as 'Drone ', 'Artificial Intelligence ', 'Big Data '. It is necessary to establish more systematic research by conducting comparative research including all representative keywords of 'Fourth Industry' in future research.

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