

## The Meaning of Economic Activity of Middle-aged Men using Big Data

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### **Abstract**

*In this paper, to analyze the meaning of middle-aged men's economic activities, TEXTOM was used to analyze them. The data collection period is set from 2017 to 2019. Among the collected data, 100 refined words were converted into a matrix in which the degree of social connection was calculated, and the keyword network analysis was performed again with the NetDraw program. According to the study, middle-aged men put more meaning on their current work and family than their future retirement. Also, the related word commonly included in the top five for all three years was 'work'. Related words commonly included in the top 10 were 'old age', 'family', and 'work', and in 2018 and 2019, 'health' was included in the top 10. As a result of this, the middle-aged men living in the modern age are the generation who keep their families through economic activities and are increasingly interested in health and prepare for retirement. Therefore, policy support for stable economic activities is needed to improve the quality of life for middle-aged men. It is necessary to extend the retirement age, expand jobs and provide effective vocational training so that it can handle its role as the head of a family. In addition, measures should be taken to reduce the wage gap between highly skilled and low-skilled workers.*

**Keywords:** *Big Data, Visualize, Middle-aged Men's Economic Activity, Social Welfare*

### **1. Introduction**

Since the definition of middle age varies from scholar to scholar, it is helpful to first look at the scope of youth and old age. According to the Enforcement Decree of the Special Act on the Promotion of Youth Employment (2019), those aged between 15 and 29 are defined as young people. Under the regulations on loans for youth to small and medium enterprises (2019), up to 34 years of age, but up to 39 years of age are defined as young people if they have completed their military service. According to Article 3 of the Basic Pension Act, 65 years of age or older are designated as the elderly. Therefore, based on legal grounds and dictionary definition, we intend to define the age of 40 to 64 as middle-aged [1]. In this paper, we intend to use a mix of middle and middle ages. Middle age is the period after puberty when people experience the most changes economically, socially, and at home, as well as physically and psychologically. It is also called the

second adolescence because it experiences mental changes due to changes in roles at home and in society. It is also a time when physical function is weakened due to aging, and begins to experience negative psychological atrophy, and undergo menopause due to hormonal changes.

Middle-aged people are at the peak of their lives, and they sometimes experience the empty nest syndrome due to their children's independence. The middle age is a time when spending on child rearing, elderly parent support, retirement preparation and social relations increases. At work, it's a time to show off one's experiences and abilities to the fullest and to be active, but on the one hand, it's a stage to think about the retirement period and prepare for retirement. However, due to the flexibility of the labor market, rapid retirement and insufficient preparation for retirement, there is a lot of anxiety about the future. Economic activities mean doing the work of earning income by making goods and providing services [Naver statistical standard terms], having a job, get a job and working for economic income [2].

According to the OECD's 2017 employment trend, Korea's annual average working hours per capita in 2016 were higher than the average working hours of 35 OECD member countries and ranked second [3]. According to data from Statistics Korea, the employment rate of people in their 40s was the only decline (79.5% -->78.4%) among all age groups in November 2019 [4]. Most middle-aged men spend much of their daily lives on economic activities, and economic activities mean more than just income activities. Middle-aged men are a group of people who value work and family, who are the heads of one family, and who are interested in reemployment due to retirement [5]. Economic activity of middle-aged men is correlated with family relationship satisfaction and affects family relationship satisfaction and preparation for economic and physical retirement. [6]. As such, economic activity in the middle age is also a predictor for successful retirement. Through economic activities, one can gain vitality in life, form interpersonal relationships, and have a sense of belonging as a member of society. In addition, they play the role of head of household, contribute to the country and society, and serve as a standard for judging the success of life. As such, economic activity is a very important factor for middle-aged men, but research on it has been sluggish. It would be difficult to grasp the characteristics of middle-aged men's economic activities only with a small number of quantitative studies. Therefore, this study attempts to analyze the meaning of middle-aged men's economic activities by using big data appearing on news and SNS. Since big data analysis targets large volumes of data, new insights and values for middle-aged men's economic activities will be found. Thus, big data analysis will not only be a suitable method of analysis for identifying social phenomena of middle-aged men's economic activities, but will also be able to discover new potential variables.

## **2. Research method**

### **2.1 Research subject**

TEXTOM was used for data collection, and the search term was 'middle-aged male economic activity'. The search channel used Naver and Daum's blogs, cafes, intellectuals, and news, while Google only searched for news. The search period was limited to January 1, 2017 to December 31, 2019. To collect data through search channels and eliminate words of similar meaning, more than three refinement operations were performed. It also extracted 60 words through text mining and conducted semantic network analysis. semantic network analysis allows structural analysis of what words are used on a particular subject and how they are deployed. It has the advantage of being able to visualize the semantic system and pattern of the communication process by extracting stereotyped information from unstructured data. Ucinet 6 and CONCOR Analysis were conducted to visually analyze changes in middle-aged men's economic activities in social networks. CONCOR is a method of finding similarity groups by running it over and over until correlations converge. That is, it is

a representative method of finding blocks in a complicated network, and NetDraw was used to visualize the network analysis. The analysis was done in the order of search bulk data collection - data storage - data pretreatment - data analysis - visualization as shown in Figure 1.



**Figure 1. Big data analysis process**

## 2.2 Research subject

### 2.2.1 Keyword analysis

Table 1 shows, as a result of data collection under the keyword "middle-aged male economic activity," a total of 7,865 keywords-related related words were searched, with 2,390 in 2017, 2,537 in 2018 and 2,939 in 2019. The closer the recent year, the more related words there were.

**Table 1. Comparison of annual collections**

	NAVER (Blog)	NAVER (News)	NAVER (Cafe)	Daum (Blog)	Daum (News)	Daum (Cafe)	Google (News)	Sum
2017	406	88	109	741	20	1004	22	2390
2018	758	86	145	833	26	656	33	2537
2019	930	76	137	998	20	605	172	2938

### 2.2.2 Analysis on the frequency of keywords related words

Table 2 shows, 2017 ranked first in retirement, but 2018 ranked sixth and 2019 seventh. As it went up recently, middle-aged men gave priority to work and family rather than old age in the near future. The result is that middle-aged men are busily living reality without time to think about their old age. After retirement in 2017, retirement, family, workers, and work took the top five places, while 2018 ranked the top five in workers, jobs, family, life and work, and 2019 ranked fifth in retirement, workers, work, health and work. Health was ranked 16th in 2017, but 8th in 2018 and 4th in 2019. As recently, middle-aged men considered health as important. It has also been found that old age, family, and work are all important factors for middle-aged men because they are all in the top 10 for three years.

**Table 2. Keyword correlation frequency**

	2017	frequency number	2018	frequency number	2019	frequency number
1	old age	188	worker	156	Retirement	247
2	Retirement	172	job	154	worker	185
3	Family	159	Family	134	Work	167
4	worker	144	Work	133	Health	155
5	Work	123	Life	102	job	153
6	upbringing	117	old age	95	Stress	108
7	job	114	Staff	76	old age	88

8	Unemployment	114	Health	69	a sense of presence	80
9	Children	107	Poverty	66	Money	79
10	Money	89	Labor	62	High blood pressure	75
11	a monthly salary	80	reemployment	61	Vacation	74
12	Life	78	Marriage	56	Life	73
13	workplace	77	abdominal obesity	53	Depression	62
14	social activities	74	Exercise	51	Family	55
15	Labor	72	Wages	50	workplace	55
16	Health	71	Disease	48	Life	54
17	High blood pressure	56	Retirement	48	Children	53
18	a sense of presence	55	Future	45	Age	53
19	Stroke	51	Employment Support Fund	45	Fun	50
20	metabolic syndrome	51	special extension pay	45	abdominal obesity	47

### 2.2.3 Keyword Connection Network Analysis

Figures in 2, 3 and 4 shows, connection-centric network analysis is to divide all the associated words into clusters of similar meanings. All three-year data were clustered into economic activity, home and health in relation to middle-aged male economic activities, and the size was all formed in the order of economic activity-home-health. Economic activity had the largest number of connections with families, and the more recent years came, the more connections between families and health. These results show that middle-aged men at a time when social activities are at their most active level are most concerned about economic activities and value their families and health.

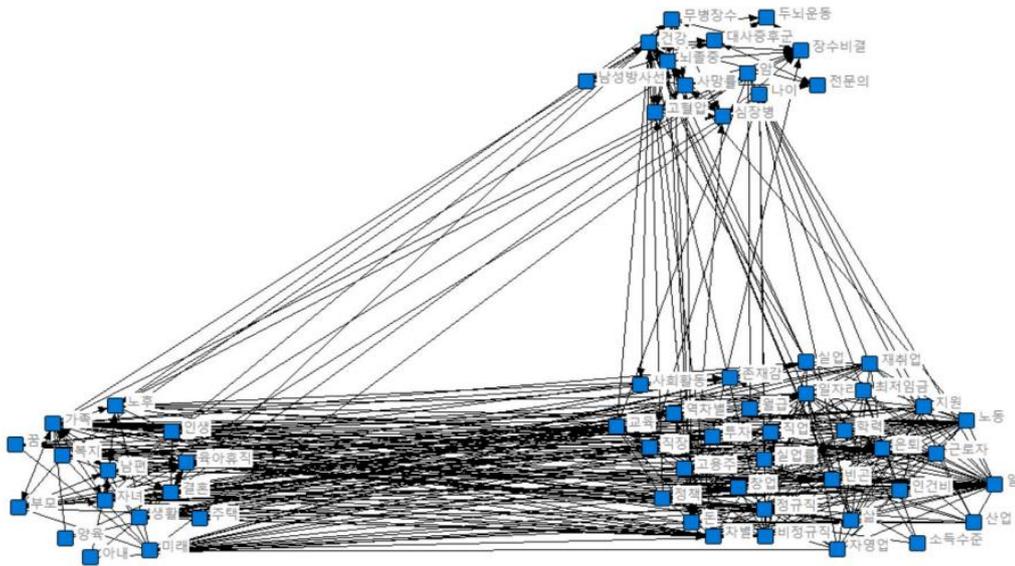


Figure 2. CONCOR analysis for 2017

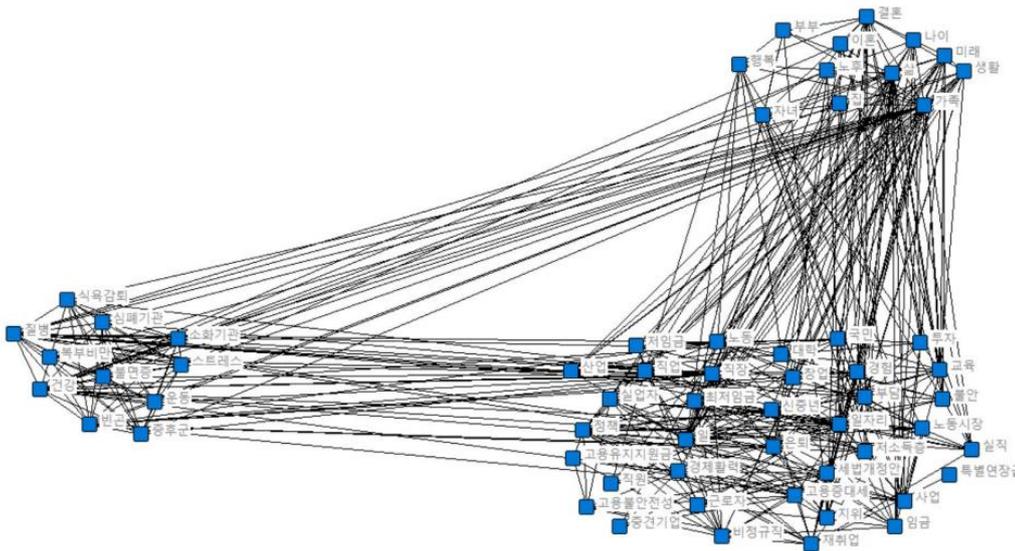


Figure 3. CONCOR analysis for 2018

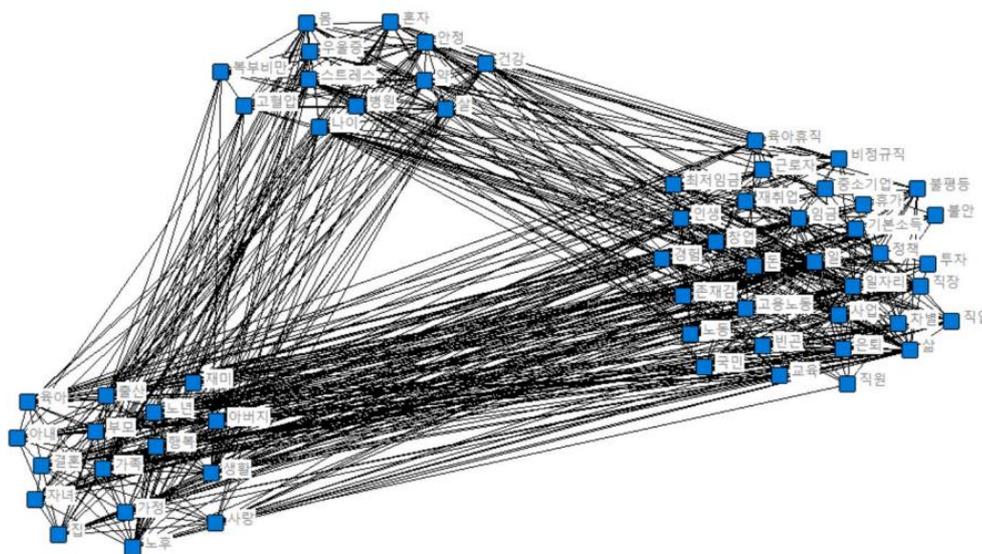


Figure 4. CONCOR analysis for 2019

### 3. Conclusion and Suggestions

The social perception of 'the economic activity of middle-aged men' was analyzed using big data and social network analysis method. As a result of the analysis, middle-aged men have more meaning in their current work and family than in their future retirement. As a result, middle-aged men seem to be living in the present, unable to afford to think about the future. The related word commonly included in the top five for all three years was 'work', which shows that economic activity is the support of life for middle-aged men. Also common in the top 10 were "old age," "family" and "work," while "health" was included in the top 10 in 2018 and 2019. As a result, middle-aged men living in modern times are the generation who are preparing for their retirement by protecting their families through economic activities, becoming more and more interested in health. Therefore, policy support for stable economic activities is needed to improve the quality of life for middle-aged men. Extension of the retirement age, expansion of jobs, and effective vocational training are necessary in order to be able to fulfill the role as head of a family. In addition, measures should be taken to reduce the wage gap between highly skilled and low-skilled workers.

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