A Study on the Recognition Analysis of Participants in Urban Regeneration Project Using Text Network Analysis Technique (NetMiner): Focused on the Urban Regeneration Leading Area in Suncheon-City

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Abstract

The purpose of this study is to analyze the issues related to urban regeneration project at the present time through surveys and interviews of participants in the urban regeneration leading project of   Suncheon city. Most of the comments were related to business fragmentation and things that should be improved in the future. The text network technique is applied to the subject analysis using unstructured text data. As a result of the frequency of appearance and analysis of page rank centrality between words, words of 'parking', 'need', 'lack', 'region' and 'resident' appeared at the top, and the result of analyzing the mediation centrality of key words showed 'culture' , 'Need', 'region', 'inflow' and 'lack' appeared at the top. In the network analysis, the most central words appeared, and many words appeared in the important position in the sentence. Text network analysis has provided timely results in terms of sustainability after completion of the Suncheon City Regeneration Leading Project..

Keyword : Text Network Analysis, Urban Regeneration Project, Participant, Survey and Interview, NetMiner Suncheon City

1. INTRODUCTION

1.1 Background and purpose of the study

Suncheon-City Regeneration Project has ecological and cultural-oriented urban design characteristics based on the Suncheon Bay Conservation Policy. It started in 2014 with the selection of Hyang-dong and Jungang-dong as the Urban Renewal Leading Area of the Ministry of Land, Infrastructure and Transport, and was completed in 2018. Suncheon City has been carrying out various projects such as town development and cultural street development for about 10 years before urban regeneration. Related projects were naturally linked to urban regeneration projects, and are considered to be an active example of a well-balanced combination of public facilities and commercial spaces. This study collected opinions by conducting a questionnaire survey on cultural artists and merchants who are residents of the urban renewal leading region in order to analyze the

perception of the participants and future tasks in the process of evaluating the project after completion of the Suncheon urban regeneration leading project. . Since the completion of the Suncheon Urban Regeneration Leading Project, most of the opinions on the project were about the inconvenience and improvement of the project. Therefore, it can be used as basic data for preparation for future projects, such as evaluating projects and preparing improvement plans for project continuity.

The purpose of this study is to identify the issues from the survey data at the moment the end of the urban regeneration projects and analyze the social interactions that involve the recognition of further participation subject to the improvements provided.

1.2 Scope and method of research

The spatial scope of this study is for Hyang-dong and Jungang-dong, Suncheon-City, where the urban regeneration initiative was completed. The temporal scope is from 2014 when the urban regeneration leading project began and from August 2019 after the completion of the project. More dynamic range is the main keyword between the relationship between the issue of the active region and to evaluate the participating entities collect feedback data to the surveys and interviews after utilizing text network analysis Suncheon Oldtown urban regeneration leading business in urban regeneration projects To identify and draw implications.

2. REVIEW OF THEORY AND PREVIOUS RESEARCH

2.1 Text Network Analysis

Text network analysis is one of various ways of analyzing text, which is qualitative material composed of language. The most widely used methods of text analysis are content analysis and discovering the theory hidden in the language by the coding method. The purpose of this study is to analyze the meaning and inherent contents of the text by applying scientific rigor. The basic assumptions of text network analysis assume that the language and knowledge inherent in text can be modeled as a network of words and their relationships [1]. The location and connection patterns of concepts in a text network can help you understand the meaning of text or important topics. It placed based on natural language processing technology to extract useful information from unstructured, semi-structured text language and reality, and for the purpose of processing, it is possible to obtain a result of identifying the link between information and locate the category. That the words used in the study text are mutually How often used together, and how that in combination with a variety of words, how words are indirectly leading to and whether to use leads to continuous or in other words to the intermediary, and what sub-topics the group recognized Identify and show key themes and semantic structures in the discourse. Means structure is visualized in the network sosiohgeuraem (sociogram) for the simultaneous occurrence relationship to a point (node) of the word (keyword), between the word line (link) can understand the findings intuitively [1].

2.2 Research Using Text Network Analyzer

In the network analysis research using text, various attempts such as analyzing news reports, social network services, or analyzing academic research trends are increasing around 2010. Take advantage of the presidential speech to the network and the density or study analyzed the connection centrality, etc. [2] [3], utilizing the policy issues of the news and a study analyzing the network through ball frequency of words [4], Newspapers There was also a study analyzing connection-centeredness with frequent words using editorials [5]. Studies analyzing the structure of the heart between the words emerged through key words appear in the legal provisions and also [6], there was a thesis analyzes the core structure through the keyword on the green social enterprises [7].

Text network analysis research related to urban regeneration business were lack of Korea through a network analysis of the Research and Knowledge Structure of urban regeneration areas and the country important study of urban regeneration related policies and projects [8] and the national policy-makers There was also a study analyzing discourses and comparing them with the results of international research trends [9]. After the urban regeneration project was completed, this study investigated the perception of the project and future tasks. This study is different from other previous studies in that it analyzes textual information related to local issues.

3. SET UP THE FRAMEWORK

3.1 Study Site Characteristics

Hyangdong and Jungang-dong, Suncheon wondosim one urban regeneration projects undertaken has been to a variety of leading projects including town from 2003 to 2013, the urban regeneration project was implemented from 2014 until 2018. Drawings were made using QGIS 2.18 to investigate the site. Creating basic data, see "Old Downtown in Suncheon-City Unused Resources survey report" was completed by rewriting the drawings through field investigation in May 2019 after leading urban regeneration project has been completed.

Suncheon City's original urban regeneration leading area created 6 small cultural hubs by using empty houses and empty shops as public roads, and as shown in <Figure 1>, empty houses and empty shops were formed as spaces of cultural art workshops and restaurants cafes were formed around the bases. Has been reduced and the region is being evaluated as an active example. Among the established cultural hubs, Creative Art Village No. 1, Kim Hye-soon Hanbok Workshop and Jo Kang-Hoon Art Studio are spaces using star artists from the region, and Jangan Creative Madang is a space that allows various creative activities to be made using local artists. Living cultural space Yeongdong house #1 is a community-oriented cultural space where local artists and residents participate. Suncheonbueupsung Fortress West Gate Information Center, located inside Suncheonbuesung Ruins, is a space where residents, including libraries, multipurpose rooms, village information centers, and village broadcasting stations participate in the activities. to be. All of the small bases lead various activities as community spaces of local residents.
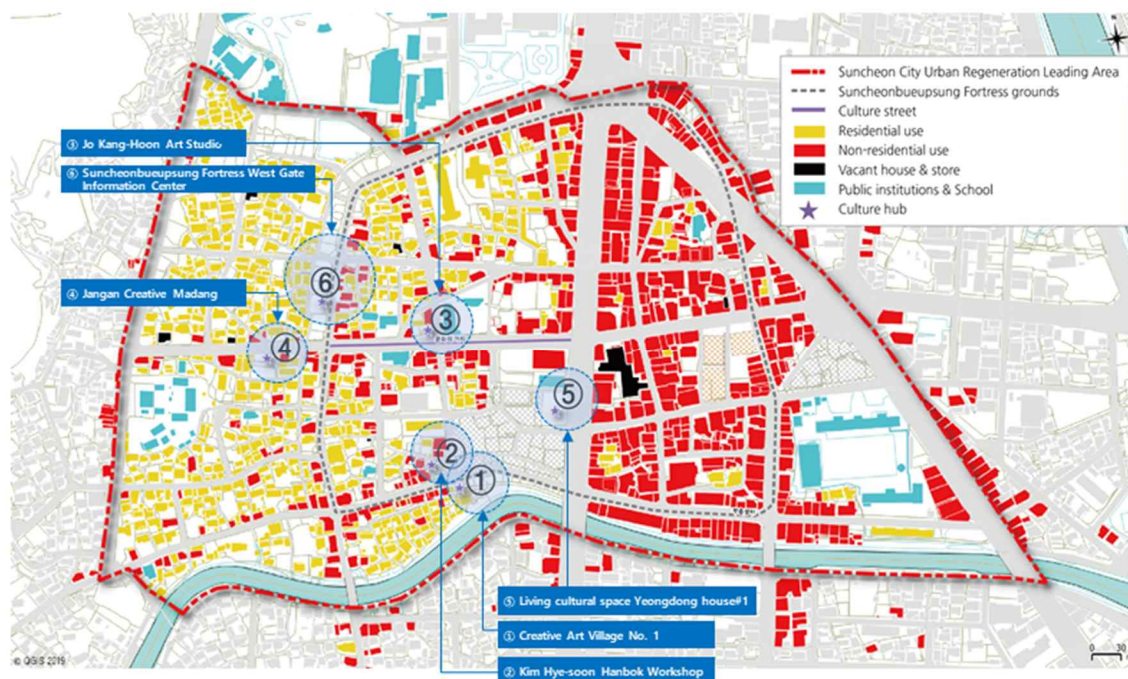

Figure 1. Status after Completion of Suncheon Urban Regeneration Leading Project

3.2 Data Collection and Analysis Method

The data collection was conducted three times from April 2019 through interviews and surveys. We were separated involved in urban regeneration projects subject to the general and professional, were surveyed for each civil servant and intermediate support organization that includes urban regeneration and support coordinators, local residents and merchants of cultural artists, general public, etc. The analysis method of this study was semantic network analysis using NetMiner4.4.3. One of the network text analysis of the semantic network analysis techniques can be recalled and unstructured text data automatically extract the words in a document, a paragraph, a sentence, and easily configure the network between the words based on the proximity between the extracted words. Nodes in the semantic network are words, links are adjacency relationships between words, and network data can be generated through natural language processing.

In semantic network analysis, co-occurrence due to co-appearance between key words is important from the social network point of view. The advantage of semantic network analysis is that you can visualize aspects of the communication process by extracting structured forms of information from unstandardized textual data. The frequency and analysis results by extracting the key words are derived from keyword clustering, which interprets an important keyword and one keyword cluster into one topic. In other words, analysis results at the keyword level can be obtained. This method is suitable for extracting important keywords and detailed topics on a network by organizing text into a network. Method for measuring the frequency (Frequency) to measure the importance of word appeared within and between documents document frequency, and can be measured by various methods such as the total appearance frequency of each of the eigenvalues are calculated for each word. Modeling based on co-occurrence is a measure of similarity. The length and format of the entire document, the units containing the subject, and the analysis should be taken into account. Co-expression units can be divided into sentences, paragraphs, and documents and measured separately. And a method for converting the words and sentences, words and paragraphs, words and documents, and another two-mode network data having a relationship between the nodes of the other two types in the first mode the similarity network consisting of one node data and the one-link data, Links are formed between words that represent similar topics. TF-IDF (Term Frequency-Inverse Document Frequency) has there been utilized much in the way of measuring the "any document the importance of the particular word in the 'higher word frequency in a particular document, the document is the word of the entire article that appeared The smaller the value, the higher the TF-IDF value. That is, TF-IDF is a weight of words per document, and a word having a high TF-IDF value has a high probability of containing a key message in the document. The TF-IDF value is closer to zero for all documents and higher for fewer documents. If you exclude words with a low TF-IDF, you can exclude words that are commonly used in most documents. The wordcloud visually identifies important words [1].

3.3 Data Modeling

In order to analyze the data collected through the surveys and interviews, the text was converted into the primary Excel file. Next, netminers were used to extract words with high frequency of nouns, and then preprocessed words to be analyzed through dictionary synonyms and compound words. A total of 171 people were asked to analyze key words and topics. There were 134 opinions answered. 218 sentences, 527 noun words, 1030 word-paragraph networks, and 939 word-paragraph networks based on TF-IDF were extracted. The keyword 'Suncheon Urban Regeneration Project' and 'Suncheon City', 'Urban Regeneration Project', 'Urban Regeneration', and 'Project' which were frequently mentioned in the interviews were excluded from the analysis. The top 500 words were first extracted based on the total number of occurrences of words by synthesizing the data for key keyword visualization. Generating a network of words between words in the most stringent criteria, Sentences

Visualization of key words through a word cloud map is a visualization method of varying the size of appeared words according to frequency or importance. The frequency of appearance of words is measured and

the top 100 words are extracted to finish data preprocessing.

4. TEXT NETWORK ANALYSIS

4.1 Frequency of word-to-word appearance

According to word cloud analysis based on the frequency of word appearance, the most common words are 'parking', followed by 'need', 'resident', 'tribe' and 'region'. With the urban regeneration project and the revitalization of the streets, parking was the biggest issue. Commercial spaces were experiencing inconvenience due to the lack of parking lot and the issue of parking enforcement, and the inconvenience of visitors as the place used as a parking lot was converted to a different use and the distance from the parking lot became far when approaching a studio or shop. He mentioned the urgent need for back parking problems.

The biggest issue with the second most common word, 'need', is parking. It can be inferred that securing the parking lot represents the most urgent problem. There were many opinions that the long-term neglect issue of the 'Golden Department Store' in the Jung-dong area had a bad effect on the surroundings, so it was necessary to resolve it quickly. In addition, it was necessary to secure shelter for visitors and to promote public relations between culture and business, and because most of the residents did not know the information on the public offering projects, many were dissatisfied with the situation of monopolizing the business.

The biggest issue with the third most common word, "resident," is local. There were many opinions that the urban regeneration business has improved the environment and made it a better place to live. After the city rehabilitation project, the local people wanted to co-exist together, citing the need for support until they became independent with the system for more residents' involvement and independence.

The biggest issue related to the word 'lack', which is the fourth most common word, is public relations. After the urban regeneration project, the streets became active and the number of visitors increased, but there were many opinions that more publicity was needed. In this regard, the issue of lack of sight was mentioned. The environment was improved, but there was not enough content to enjoy when visitors came, so it was not easy to induce a return visit, so it was necessary to develop a variety of programs to attract visitors as well as physical improvement.

The biggest issue associated with the fifth most common word, 'region', is the lack of residents and lack of culture. The urban regeneration business reduced the number of vacant homes and vacant shops, but it wanted to increase the number of resident population more than now, and there were many small cultural centers and cultural and art workshops, but there were many opinions that it would be easier to enjoy culture. Taking photos has become a daily life with the advent of smartphones, and Suncheon City has many photo clubs in the region, and it is said that it would be good to develop it as a local culture because it has the "Southeast History Camera", the first camera in Korea.

Figure 2. Word Cloud Map by Frequency Analysis

4.2 PageRank Centrality Analysis

PageRank centrality is a method of selecting key keywords among the methods of measuring the centrality of nodes in a network. As a result of measuring page rank centrality with data such as frequency analysis, as shown in <Table 1>, ranking results were different from frequency analysis as shown in <Table 1>. Page rank centrality is used to measure words with high centrality of related words that are frequently used with other words. Because.

Table 1. Comparison of Frequency Analysis and Page Rank Centrality Analysis

Rank	Frequency Analysis Words	Rank	PageRank Centrality Words
1	Parking	1	Parking
2	Need	2	Need
3	Citizen	3	Lack
4	Lack	4	Local
5	Local	5	Citizen

As a result of the PageRank centrality analysis, 'Central', 'Need', 'Lack', 'Region', and 'Resident' showed the centrality, and the ranks from 1st to 20th are shown in <Table 2>. The parking-related issue, which showed the highest page rank-centeredness, was indicative of the necessity of the lack of parking lot, and both cultural artists and merchants complained of the inconvenience caused by the parking lot problem.

The second highest page-ranking word, 'need', was the most necessary solution to the parking problem. Next, since most of the urban regeneration projects were implemented in Hyangdong, there were necessity for the project and the inflow of young merchants.

The third highest PageRank Centrality word is 'lack'. Many commented that the greater the inflow of population in the region, the more active the business district. In particular, it wanted to attract the young population.

The fourth highest pagerank-centric word is 'region'. There were many cultural issues related to the area, and there were many opinions on the convenience of internet access in the site due to the increase of social media. There was also a lot about the lack of everyday culture, not the culture of events.

The word that appears in the fifth page rank centrality is 'resident'. A related issue was support for voluntary participation. This is an administrative support that can lead to the use of idle space and continuous participation in the site. It also wanted to ensure autonomy to save local business.

Table 2. PageRank Centrality Analysis Results

Rank	Words	PageRank Centrality	Rank	Words	PageRank Centrality
1	parking	0.045317	11	space	0.022721
2	need	0.039679	12	merchant	0.022551
3	lack	0.033172	13	population	0.020233
4	area	0.030985	14	Problem	0.01945
5	citizen	0.029339	15	Business	0.018572
6	Participation	0.028389	16	Participation	0.022721
7	inflow	0.027006	17	continuing	0.022551
8	promotion	0.025694	18	construct	0.020233
9	culture	0.024432	19	Street	0.01945
10	result	0.02311	20	Positive	0.018572

4.3 Intermediate Analysis of Key Words

We analyzed the Betweenness Centrality to measure the interrelationship of the major words in the top 20 ranking words in the PageRank Centrality. The mediation-centered analysis aims to find words that are strongly connected between words and to find mediated words that connect core words that are connected with other words. Highly mediated words can have control over the flow of meaning of data.
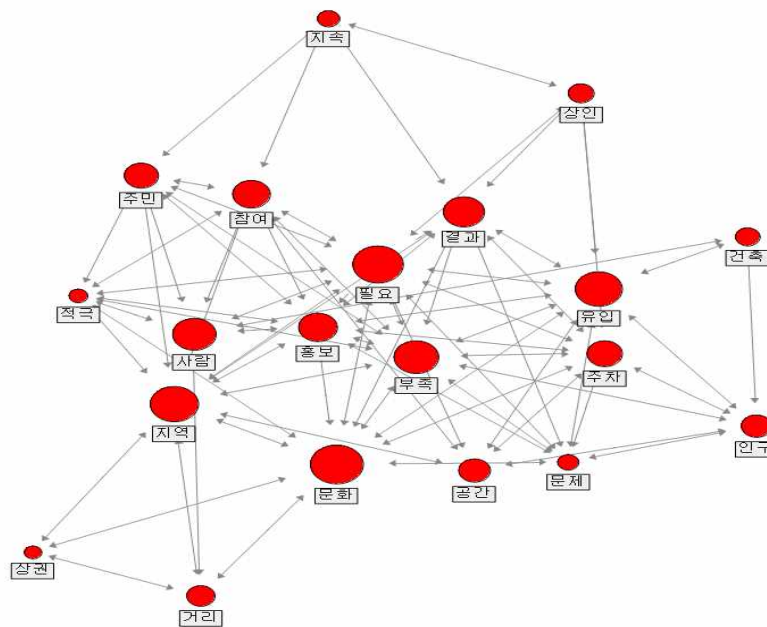

Figure 4. Intermediate Center Analysis Spring Map

As a result of the mediation centrality analysis, the core words have a centrality of 5.846%, which means that there are few words between words and many words have important meanings. Looking at the rankings, 'culture' was at the top, followed by 'need', 'region', 'inflow', and 'lack'. Opinion related to 'culture' can be inferred that Suncheon City Regeneration Leading Project is a culture-based project, a small cultural hub led by the public, and a necessity due to the lack of everyday culture in the region. . There were also many opinions on management in terms of sustainability of cultural bases. In terms of 'inflow', they wanted to attract young people and tourists to revitalize the region, and in regard to 'in shortage', there was a lack of public relations with the lack of parking lots and shelter. In addition, there were opinions that more policy preparation to save local business is needed.

Table 2. Results of mediated centrality analysis

Rank	Words	In-Degree	Rank	Words	In-Degree
1	culture	0.090337	11	citizen	0.021243
2	need	0.085310	12	space	0.015186
3	area	0.084921	13	population	0.014968
4	inflow	0.071169	14	Street	0.011626
5	lack	0.053578	15	merchant	0.010071
6	Person	0.052910	16	construct	0.008633
7	result	0.049717	17	continuing	0.008187

8	promotion	0.039237	18	Problem	0.008015
9	Participation	0.036708	19	Positive	0.006363
10	parking	0.027727	20	Business	0

5. CONCLUSION

This study conducted a survey of project participants in the original urban regeneration Leading Area in Suncheon-City, and collected and analyzed opinions on the project recognition and future tasks after the completion of the project. Since the completion of the Suncheon Urban Regeneration Leading Project, most of the opinions on the project were about the inconvenience and improvement of the project. First, as for the frequency of word-to-word frequency10 analysis, opinions on the inconvenience and necessity related to parking were the most common, and opinions on the independence of local residents and the necessity of local culture. Second, the results of PageRank Centrality Analysis were the most frequently related to 'parking' and 'need'. The opinion of the 'lack' part was slightly different from the frequency analysis. In the frequency analysis, there were many opinions about the lack of publicity and content to be enjoyed. In the page rank-centered analysis, there were many opinions about the lack of resident population in the region. Third, the mediation-centered analysis of key words showed the most opinion on 'culture'. It is a culture-based regeneration business, and it can be inferred that the activation around the small cultural base was showing. In addition, opinions on the necessity of the policy related to the revitalization of trade were mainly related to the issue of the Golden Department Store in the Central East region, which has not yet been resolved in the leading region.

The significance of this study was that the opinions on the needs and inconveniences of the region were derived from the interviews, which can be quantitatively demonstrated by the program. Although the opinions of each analysis were different in detail, most of them were in agreement. Therefore, the analysis results of this study seemed to be considered as matters to be considered for the sustainability of the project at the end of the urban regeneration lead-up project. .

The limitation of this study is that the topic modeling technique, which can perform topic extraction and document classification, cannot be applied. In addition, this study failed to analyze the whole opinions of the urban renewal leading area of Suncheon-City due to the failure to survey all the participants in the site. It is hoped that this study can be used as basic data for the preparation of future projects such as evaluation of future projects and preparation of improvement plans for project continuity.

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