

# The nature of Saemaul Undong as a rural development strategy: Topic modelling and text mining analysis

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## ABSTRACT

**Objective.** This study aims to identify the core characteristics of Saemaul Undong, which was applied as a strategy for rural development in Korea, to analyse the role of government in the implementation process of this policy, and to put forward some implications for the developing countries to be able to apply its principles and the government's roles for their own rural development.

**Design/Methodology/Approach.** The methods applied to the analysis are text mining analysis and topic modelling analysis, which are widely used in the field of social sciences nowadays. The data employed in this study are the guidelines regarding implementing the Saemaul Undong policy, which was drawn up by former president Park Chung Hee.

**Results/Discussion.** As a result of the analysis, it may be said that the core characteristics of Saemaul Undong policy include: emphasis on the role of Saemaul Undong leaders, financial support from the Government, cooperation of villagers, support from public officials, a spirit of self-help, and movement to promote rural development.

**Conclusions.** In conclusion, it is expected that the principles and implementation methods of the Saemaul Undong policy implemented in Korea in the 1970s can be applied to developing countries suffering from poverty in the future if they are appropriately modified to suit the conditions of developing countries.

**Originality.** So far, the important principles of Saemaul Undong's policy have not been studied through topic modeling, so fundamental principles have not been derived. This study has great significance because it systematically derived core principles through the topic modeling method

**Keywords:** topic modelling; rural development strategy; text mining analysis.

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## INTRODUCTION

**S**AEMAUL Undong (New Village Movement) is a significant rural development and modernization movement that began in Korea in the early 1970s. This movement aimed to improve living standards in rural areas and promote economic development throughout the country (Park, 2009; Choi and Choi, 2009; Choi, 2006; Kim, 2000). Saemaul Undong may seem like a social campaign because of its designation as a movement, but in reality, it is a policy and has the meaning of a ‘strategy for solving social problems’ (Lee, 2000; So, 2019; Kim, 2011; Han, 2013). The movement began in 1970 under the leadership of President Park Chung-hee. Its purpose at this time was to alleviate poverty in rural areas and develop a self-reliant economy. Its activities focused mainly on improving basic infrastructure in rural areas (roads, water supply, electricity supply, etc.) and providing education and technical support to improve agricultural productivity (Goh, 2010; Boyer and Ahn, 1991; Goldsmith, 1981).

Why is Saemaul Undong still important today? There are a number of reasons (<https://www.smuf.or.kr/>; <https://www-en.saemaul.or.kr/>; So, 2019; Goldsmith, 1981; Park, 2009):

It made Korea’s economic development possible: indeed, it is evaluated as one of the major factors that made Korea’s economic miracle possible. In addition, increased productivity in rural areas contributed to the country’s overall economic growth.

It helped to catalyse social motivation by encouraging people to develop self-reliant and voluntary communities. The movement emphasized community spirit and cooperation and strengthened social cohesion.

It brought about cultural change. It played an important role in converting people’s traditional ways of thinking into a modern and progressive attitude. This also contributed to instilling pride and patriotism among the people.

It has been applied as an international model for national development in developing countries. Saemaul Undong is considered a successful model for rural development and national modernization in developing countries. As a result, many countries are benchmarking this movement and applying it to their own development strategies.

Against this background, this study seeks to identify the core characteristics of Saemaul Undong, which was applied as a strategy for rural development and the solving of social problems in Korea, to analyse the role of government in the implementation process of this movement, and to put forward some helpful policy implications for the developing countries to be able to apply for their own rural development. Thereby, many developing countries still struggling with poverty can access the information necessary to benchmark Saemaul Undong effectively. Using data for the analysis, we use the guidelines on Saemaul Undong written by President Park Chung-hee, who started and promoted the movement during the promotion process. This guidebook is approximately eight pages long; handwritten by Park Chung-hee, it contains detailed information about the nature of Saemaul Undong and the role of government.

The research methods applied in the analysis of this study are text mining analysis and topic modelling, both of which are widely used in the social science field today. Text mining is finding patterns, trends, and relationships in large-scale unstructured text data. Topic modelling is the process of automatically discovering hidden topic patterns in a set of text documents. This method analyses the distribution of words in a document to find the main topics covered by that document, thus allowing the researcher to obtain hidden meanings and insights from data.

## UNDERSTANDING THE SIGNIFICANCE OF SAEMAUL UNDONG

### Background to the emergence of Saemaul Undong

Saemaul Undong began in Korea in the 1970s, and understanding the background to its emergence and the situation in Korea at the time is important in understanding the importance of this movement. Three factors in particular should be mentioned (Boganson and Musso, 2006; Lopez, 2000; Choi and Choi, 2009):

1. In Korea at the time, economic poverty was severe. Up until the late 1960s, Korea had had an agriculturally-centred economy and most of the population lived in rural areas.

These regions were economically backward, and poverty was a serious problem.

2. There was a pressing need for industrialization and urbanization. The Korean Government promoted industrialization and urbanization for national modernization and economic growth. To achieve this, developing rural areas and improving agricultural productivity was necessary.
3. Social imbalances were severe. The economic and social imbalance between cities and rural areas was increasing at this time. Urban areas were growing rapidly, but rural areas were relatively underdeveloped.

In addition, numerous distinctive social realities applied at this time (So, 2019; Choi and Choi, 2009; Park and Lee, 1997):

1. The pursuit of political stability was important. Under Park Chung-hee's military government, Korea pursued political stability. This became the basis for economic development and social reform.
2. Economic difficulties in rural areas were serious. Rural areas lacked basic infrastructure, and agricultural technology was outdated. As a result, farmers' quality of life was significantly lower than that of urban residents.
3. The pressure caused by population movement to cities was severe. Much of the rural population was moving to cities for economic opportunities. This resulted in population decline in rural areas and greater economic hardship.
4. International pressure was severe. Internationally, self-reliance through economic development was emphasized, and Korea had to seek its own development without relying on external aid.

It was against this background that Saemaul Undong began. To promote economic and social development in rural areas, the Government focused on improving infrastructure, promoting agricultural technology education, and strengthening community spirit. This movement aimed at self-reliance and modernization in rural areas and is credited with playing an important role in Korea's economic miracle.

### Why Saemaul Undong is still important today

Although Saemaul Undong was promoted in the 1970s, there are several reasons why it remains important to this day (<https://www.smuf.or.kr/>; <https://www-en.saemaul.or.kr/>; Doucette & Muller, 2016 ):

1. It is becoming a model for sustainable development. Saemaul Undong was based on the voluntary participation and cooperation of local residents. It provides an important model for local communities' self-reliant and sustainable development.
2. It is evaluated as a success story in rural development. Saemaul Undong is evaluated as a successful example of driving economic and social development in rural areas. This provides useful lessons for other countries in need of rural development today.
3. It contributes to strengthening a sense of community. The movement emphasized the importance of community spirit and mutual cooperation. These values remain important in solving current social and economic problems.
4. It serves as an example of economic development and social innovation. Saemaul Undong demonstrated that economic development and social innovation are possible despite limited resources and difficult situations.
5. It has become a model for international development cooperation. Korea is providing help to developing countries based on its experience with Saemaul Undong. It plays an important role in international development cooperation, contributing to Korea's sharing of development experience and strengthening global partnerships.
6. It has great educational value. The case of Saemaul Undong can be used as an educational tool to teach current and future generations the importance of self-reliance, cooperation and sustainable development.

Thus, Saemaul Undong does not simply represent a past success story but provides important lessons that emphasize the importance of sustainable development, strengthening community spirit and international cooperation, both now and in the future (Barber, 1999; So, 2019; Lopez, 2000). Therefore, even if Saemaul Undong was

promoted only during the situation applying in the 1970s, it has highly significant implications for us now. For this reason, it is meaningful to re-examine Saemaul Undong. In particular, reviewing the role of government in promoting Saemaul Undong is important, because, in the future, when these policies are promoted in developing countries, it is essential in the sense that it suggests the specific and detailed tasks to be performed.

## ANALYSIS DESIGN

### Analysis target

The subject of analysis in this study is a guidebook on Saemaul Undong written by President Park Chung-hee, who first promoted the movement in 1970. Written in Park Chung-hee's hand, it provides directions on why he advocated Saemaul Undong, the movement's core principles, and how it should be promoted. The guide consists of approximately eight pages of Korean text, which was translated into English for analysis in this study.

### Analysis methods and procedures

In this study, we utilize text mining analysis and topic modelling analysis. Text mining analysis is a technology that plays an important role in the natural language processing (NLP) process. Natural language processing is a technology for processing and understanding text (Choi *et al.*, 2023a; Kenis and Provan, 2009, Blei *et al.*, 2003). It includes tokenization, morphological analysis, and part-of-speech tagging. Text mining analysis also extracts specific information (e.g. name, place, date) from text and includes analysing emotions or attitudes present in the text through Sentiment Analysis.

Meanwhile, topic modelling analysis utilizes the Latent Dirichlet Allocation (LDA) method. LDA's key components include (Choi, 2023):

1. Topic Distribution in Documents: Each document  $d$  has a topic distribution  $\theta_d$ , generated from a Dirichlet distribution with parameter  $\alpha$ .  
 $\theta_d \sim \text{Dir}(\alpha)$
2. Word Distribution in Topics: Each topic  $k$  has a word distribution  $\beta_k$ , also generated from a Dirichlet distribution with parameter  $\eta$ .  
 $\beta_k \sim \text{Dir}(\eta)$

3. Word Generation in Documents: Words in a document are generated by selecting a topic from  $\theta_d$ , and then a word from  $\beta_k$ .

$$z \sim \text{Multinomial}(\theta_d)$$

$$w \sim \text{Multinomial}(\beta_z)$$

This, the most widely used topic modelling method, extracts topics from a set of documents and estimates the distribution of the topics covered by each document. Additionally, topic modelling is an unsupervised learning method that processes unlabelled text data and is used to find topics in scientific documents, social media data, etc. The difference between these two methods is that text mining focuses on extracting various patterns and information across text data. At the same time, topic modelling specializes in finding topics or topics within a set of documents. While text mining encompasses a broader range of techniques and applications, topic modelling can be viewed as a branch of text mining.

In this study, we use both methods together. Therefore, we first seek to understand the overall contents of Park Chung-hee's guidelines through text mining. Then we perform topic modelling analysis and clustering analysis to understand in depth how Saemaul Undong is defined in these guidelines. In other words, the frequency of words appearing after analysis of the overall word cloud is determined. Next, topic modelling analysis is performed using this network. A coherence test is performed to determine the appropriate number of topics, and in this process, the standards of U Mass coherence and CV coherence are used. Next, clustering analysis is performed again to correct the overlap between topics by looking at the results of the topic modelling analysis. Utilizing this process, the nature of Saemaul Undong can be clearly identified.

## ANALYSIS RESULTS

### Word cloud analysis results

The following results were obtained by performing a word cloud analysis on Park Chung-hee's guidelines. Figure 1 identifies keywords relating to Park Chung-hee's thoughts on Saemaul Undong and why he chose to implement this policy. The extracted words were



not limited to nouns; other words were also analysed, including adjectives. (NB. Although ‘SAEMAUL UNDOONG’ is two words, it was designated one word and treated as a proper noun.)

Table 1 presents words that appeared in the text mining analysis in order of frequency. The word ‘project’ appears the most, occurring 23 times in total, followed by ‘good’, which appears 21 times.

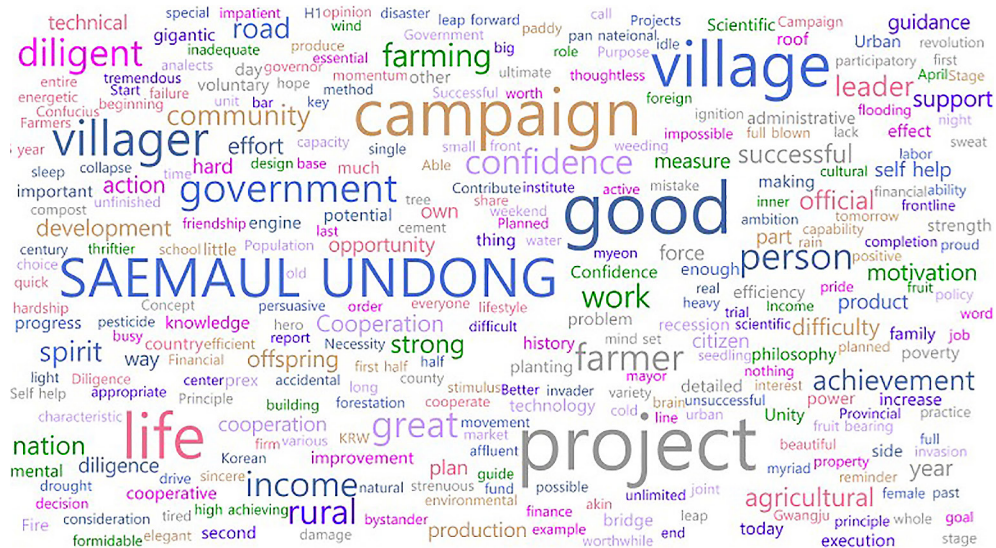


Figure 1. Word cloud analysis results.

		1	2	3	4
		Part of Speech(POS)	Frequency	Word length	Name Type
1	project	"Common Noun"	23.0	7.0	"_."
2	good	"Adjective"	21.0	4.0	"_."
3	campaign	"Common Noun"	19.0	8.0	"_."
4	village	"Common Noun"	18.0	7.0	"_."
5	life	"Common Noun"	18.0	4.0	"_."
6	SAEMAUL UNDOONG	"Proper Noun"	15.0	14.0	"_."
7	villager	"Common Noun"	13.0	8.0	"_."
8	government	"Common Noun"	10.0	10.0	"_."
9	person	"Common Noun"	9.0	6.0	"_."
10	great	"Adjective"	9.0	5.0	"_."
11	farmer	"Common Noun"	9.0	6.0	"_."
12	diligent	"Adjective"	9.0	8.0	"_."
13	rural	"Adjective"	8.0	5.0	"_."
14	income	"Common Noun"	8.0	6.0	"_."
15	confidence	"Common Noun"	8.0	10.0	"_."
16	work	"Common Noun"	7.0	4.0	"_."
17	farming	"Common Noun"	7.0	7.0	"_."
18	spirit	"Common Noun"	6.0	6.0	"_."
19	road	"Common Noun"	6.0	4.0	"_."
20	leader	"Common Noun"	6.0	6.0	"_."
21	community	"Common Noun"	6.0	9.0	"_."
22	achievement	"Common Noun"	6.0	11.0	"_."
23	successful	"Adjective"	5.0	10.0	"_."
24	strong	"Adjective"	5.0	6.0	"_."
25	official	"Common Noun"	5.0	8.0	"_."

Table 1. Frequency of words that appear.

### Topic modelling analysis

A coherence test that could be used in the Netminer 4.5 program was conducted to determine the appropriate number of topics for the above content. When performing a coherence test in topic modelling analysis, the main two indicators used are U Mass (UMass) and C\_V (CV). U Mass coherence is a method of measuring the coexistence of words within a document (Choi *et al.*, 2023b; Blei *et al.*, 2003). This indicator is based on the probability that a specific word appears together with other words. For example, if the words ‘economy’ and ‘market’ frequently appear together, topics containing these two words will have a high U Mass coherence value (Choi *et al.*, 2021). U Mass is calculated using only a specific portion of the document and is usually expressed as a negative value. Higher values (less negative) indicate greater topic consistency.

C\_V coherence considers the similarity between words and the probability distribution of words to measure consistency between topics. This metric is based on the similarity between pairs of words, often using vector space models to analyse the relationships between each word. C\_V is usually expressed as a value between 0 and 1; the closer it is to 1, the higher the topic’s consistency.

U Mass and C\_V measure topic consistency in different ways. U Mass mainly measures the coexistence of words in a document, while C\_V considers both the similarity and the

probability distribution between words. Therefore, it is common to use these two metrics to evaluate a topic model’s quality. This allows the performance of topic modelling to be evaluated more accurately and broadly (Choi, 2023; Choi *et al.*, 2021). Figure 2 shows that it is most appropriate to set the number of topics at seven in this case.

Figures 3 and 4 present the U Mass and CV coherence test results in graph form.

As a result of the coherence test results given above, it can be seen that seven topics is an appropriate number. Therefore, before the analysis, the number of topics is set at seven, alpha is set at 0.02, and beta at 0.01, and the results of the topic modelling analysis are presented (Figure 5). It can be seen that some words in some topics appear to overlap with other topics.

Table 2 explains the words that make up the seven topics and the characteristics of these words. Topic 1 comprises *rural, good, effort, farmer, and campaign*. Looking at this, we see that Saemaul Undong means ‘efforts to support rural farmers’. Topic 2 consists of *rural production, campaign, villager, and product*, which suggests that Saemaul Undong aims to ‘increase the production of rural villagers’. Topic 3 consists of *government, measure, technical, support, and official*, which suggests that ‘technical support from the government’ is important in Saemaul Undong. Topic 4 includes *good, effort, rural, official, and farmer*. This means that ‘public officials’ efforts to support rural areas are crucial to the success of Saemaul Undong.

Coherence Result

Index	Topic (k)	alpha	beta	u_mass	c_v
1	5.000	0.010	0.010	-11.889	0.415
2	5.000	0.010	0.020	-12.332	0.320
3	5.000	0.020	0.010	-12.803	0.327
4	5.000	0.020	0.020	-12.556	0.251
5	6.000	0.010	0.010	-11.051	0.395
6	6.000	0.010	0.020	-10.623	0.404
7	6.000	0.020	0.010	-11.649	0.399
8	6.000	0.020	0.020	-9.330	0.479
9	7.000	0.010	0.010	-11.942	0.330
10	7.000	0.010	0.020	-11.889	0.305
11	7.000	0.020	0.010	-7.845	0.485
12	7.000	0.020	0.020	-9.053	0.421
13	8.000	0.010	0.010	-9.982	0.388
14	8.000	0.010	0.020	-8.224	0.481
15	8.000	0.020	0.010	-7.959	0.470
16	8.000	0.020	0.020	-10.827	0.376
17	9.000	0.010	0.010	-11.170	0.420
18	9.000	0.010	0.020	-11.140	0.364
19	9.000	0.020	0.010	-10.199	0.458
20	9.000	0.020	0.020	-9.504	0.421
21	10.000	0.010	0.010	-10.688	0.373
22	10.000	0.010	0.020	-9.955	0.439
23	10.000	0.020	0.010	-10.278	0.428
24	10.000	0.020	0.020	-9.352	0.462

Figure 2. Coherence test results.

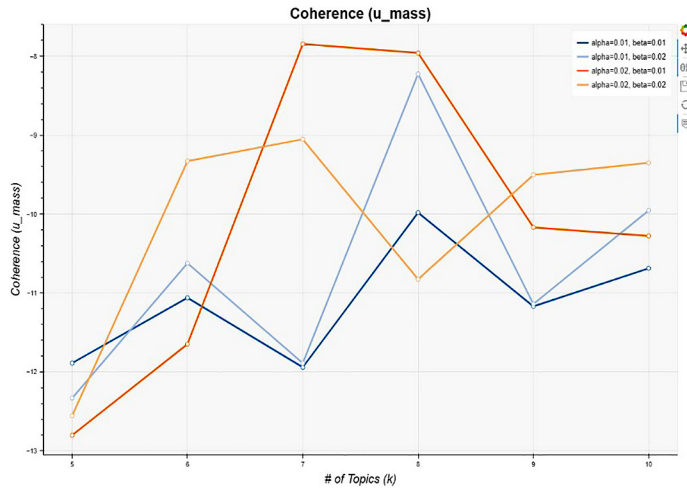


Figure 3. U Mass coherence result.

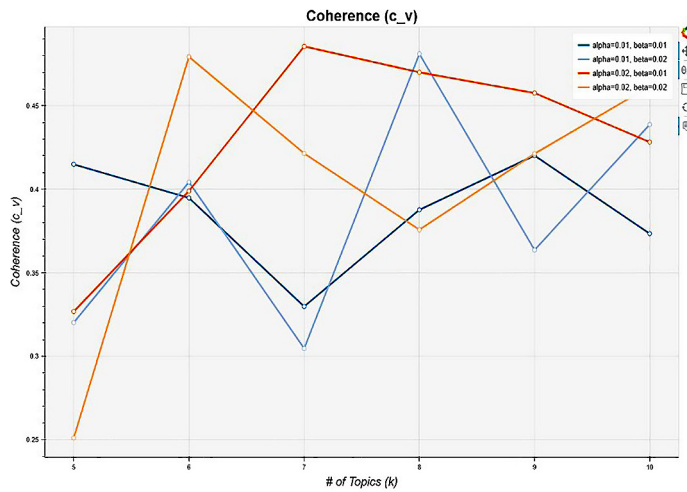


Figure 4. CV coherence result.

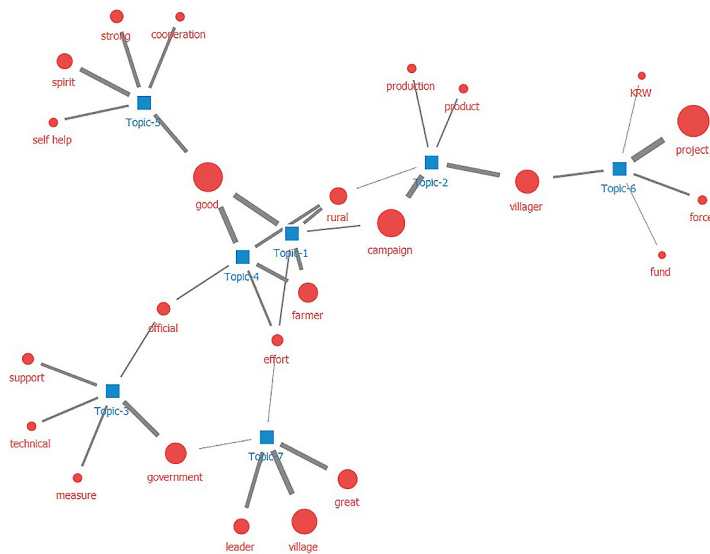
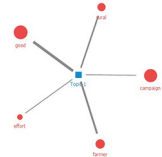
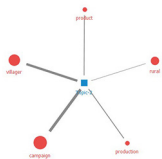
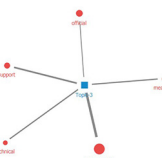
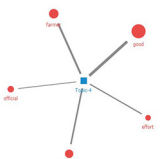
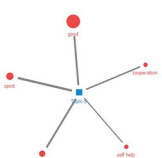
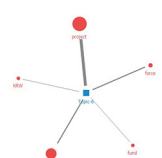
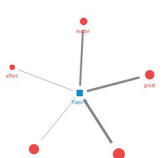


Figure 5. Topic modelling results.

Topic 5 consists of *good, cooperation, self-help, strong, and spirit*, which suggests the importance of ‘cooperation and self-help spirit’ among the driving entities in Saemaul Undong. Topic 6 consists of *project, force, fund, villager*, and *KRW* (KRW is Korea’s internationally

accepted currency code, and means finance). Topic 6 refers to ‘government financial support for villagers’. Topic 7 consists of *leader, village, great, effort* and *government*, which indicates ‘the government’s efforts to support village leaders’.

Topic classification	Topic diagram	Words included in the topic	Features of topic
Topic 1		rural, good, effort, farmer, campaign	Efforts for rural farmers.
Topic 2		rural, production, campaign, villager, product	Increased production rural villagers.
Topic 3		government, measure, technical, support, official	Government technical support.
Topic 4		good, effort, rural, official, farmer	Efforts by public officials to support rural areas.
Topic 5		good, cooperation, self help, strong, spirit	Spirit of cooperation and self-help.
Topic 6		project, force, fund, villager, KRW	Government financial support to villagers.
Topic 7		leader, village, great, effort, government	Government support efforts for village leaders.

**Table 2.** Characteristics of the seven topics.



As Table 2 shows, Saemaul Undong has displayed the following characteristics:

1. Saemaul Undong policy represents a process of effort for rural farmers. Saemaul Undong has focused on improving the quality of life for rural residents rather than urban areas. Since basic living facilities such as roads and houses were in poor condition in rural areas, Saemaul Undong has represented an effort by government to support residents in these areas.
2. Saemaul Undong has focused on increasing the productivity of rural villagers. The focus here has been on increasing residents' income in rural areas. In 1970, rural residents' income was significantly lower than urban residents'.
3. Government technical support is important. It is important that the Government does not support villages directly but rather indirectly through supplying technology.
4. Public officials have made strenuous efforts to support rural areas. In the 1970s, the role and scale of the private sector were small, so

5. Cooperation and a spirit of self-help among participants are important. Above all, Saemaul Undong emphasizes that participants cooperate and have a sense of ownership.
6. Government financial support for villagers has also been used to motivate residents.
7. Government efforts to support village leaders are highly important.

In promoting Saemaul Undong, its leaders – especially leaders among residents who showed a strong commitment to the movement – played a significant role. The fact that the government actively supported these leaders is one of the critical factors that made Saemaul Undong successful.

As already mentioned, seven major topics were derived as a result of the topic modelling analysis. However, it can be seen that some words in these seven topics overlapped with different topics. To solve this problem, clustering analysis was performed again. The results are shown in Figure 6.

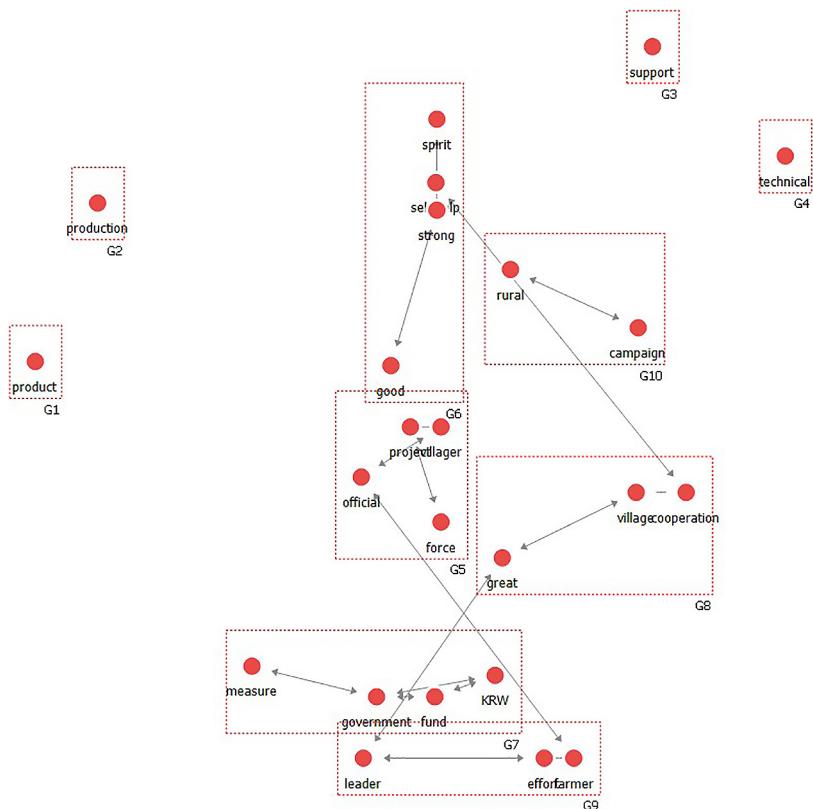


Figure 6. Clustering analysis results.

Looking at the results of the above analysis, we can understand the nature of Saemaul Undong more clearly. Excluding words that did not form a group, six clusters were derived. Their characteristics can be summarized as the role of the Saemaul Undong leader, financial support from the Government, the cooperation of villagers, support from public officials, a spirit of self-help, and a movement to promote rural development.

## CONCLUSION

Saemaul Undong policy began in Korea in 1970 and was promoted intensively until 1979. Nevertheless, it was a successful policy, and many developing countries today can also achieve excellent results if they learn and apply it appropriately. Saemaul Undong is registered as a policy heritage by UNESCO because of its policy significance.

This study has beenis study aims to understand the core characteristics of Saemaul Undong as promoted in Korea in 1970. For this purpose, we analysed the Saemaul Undong guidelines (hand) written by President Park Chung-hee, who personally advocated Saemaul Undong policy. The analysis methods used were text mining and topic modelling, widely utilized in social science today. The characteristics and core principles of Saemaul Undong derived from this analysis can be summarized as follows. Saemaul Undong was a rural modernization movement that focused on rural development, and its main goals were to improve the basic environment of rural residents and increase their income. Its leaders played an important role in achieving this, and the Government indirectly provided financial and technical support. In addition, the spirit of cooperation and self-help was emphasized by those who participated in this policy, and the supporting efforts of public officials were also emphasized.

The policy implications that can be obtained from the analysis of Korea's Saemaul Undong are as follows. First, the role of leaders in rural areas is very important when implementing rural development policies. Second, administrative agencies must support people participating in rural development through indirect support rather than direct intervention. Third, people participating in rural development must, above

all, do so with the spirit of cooperation and self-help. In addition, an active support mindset from public officials involved in rural development is also needed.

In conclusion, even though Saemaul Undong was a policy implemented in Korea in the 1970s in a country with special conditions, it was aimed at escaping poverty for residents in impoverished rural areas and was successfully implemented, so it is of great significance to other developing countries. Therefore, developing countries currently experiencing poverty in rural areas need to pay attention to the core characteristics and principles of Saemaul Undong, which was successfully implemented in Korea, and the implementation process of the policy.

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## Conflict of interest

The authors declare that there is no conflict of interest.

## Contribution statement

Conceptualization, data curation, formal analysis, methodology, and writing: Young-Chool Choi.

Project administration, validation, review, and editing: Younghwa Kee.

## Statement of data consent

The data generated during the development of this study has been included in the manuscript. ●

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