Analysis of Factors Influencing Successful Implementation of ODA Projects for Rural Development: The Case of Kyrgyzstan**

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Abstract

This paper aims to identify factors that influence the successful implementation of ODA rural development projects for developing countries. To this end, it has analysed the implementation process of a project, 'The Integrated Rural Development Project in Kyrgyz Republic', currently being carried out in Kyrgyzstan via Good Neighbors International (GNI) with support from KOICA (Korean International Cooperation Agency). The analysis method employed in this study is decision tree analysis. By means of a review of previous studies on the implementation of ODA projects, variables that are believed to have an impact on the successful implementation of ODA rural development projects were derived. The values of each variable for thirty villages in Kyrgyzstan were derived and used as independent variables, and decision tree analysis was performed using the overall execution performance score for each village as the dependent variable. As a result, it was found that co-operation between field managers active at the project site and village residents was the most important determining factor of success.

1. Introduction

It is difficult to execute Official Development Assistance (ODA) projects for developing countries successfully without considering the various conditions facing these countries. In order to achieve successful results from ODA projects, the execution process must be carried out smoothly. However, in developing countries, the conditions for successful enforcement are often not met, so unexpected events may occur during the enforcement process. In particular, when promoting rural development projects in developing countries through ODA projects, the various conditions applying in the target villages have a significant impact on the success of the project (1) (2) (3). In these cases, analysis of what conditions must be met to ensure the smooth execution of the project is important, from both an academic and a policy perspective.

However, there is not much existing research on specific business cases operating in the field of rural development projects in developing countries. This is because, when ODA projects are carried out in developing countries, it is difficult to collect related data systematically. Taking the project cost of 10.6 billion won (c. 10 million US dollars) as an example, we aim to determine through analysis what the successful conditions for the project execution process are. In other words, we aim to analyse what factors significantly affect the process of implementing the rural

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development project that Korea is promoting as an ODA project in Kyrgyzstan.

2. General Status of the Project and Theoretical Discussion

2.1. General status of the project

Previous studies investigating the conditions for successful ODA projects in developing countries have been conducted by a number of scholars. In one study strategies for effectively providing support to developing countries are explored at a macro level (4). Others addresses the debate as to whether foreign aid can promote economic growth in developing countries and explores the relationship between the effective use of aid and economic development (5) (6) (7). Another major referent refers to research on how ODA can improve the economic situation of poor people in developing countries, addressing various aspects such as wages, labour markets and education (8) (9) (10) (11) (12). Aiyar et al. studied the interaction between local political and social elites and the effective use of ODA (13). In this study, emphasis is placed on community participation and co-operation in development projects. Another study emphasizes the need for research on the interaction between economic policy and ODA, and examines how improving policies in developing countries can improve the effectiveness of ODA (14). Meanwhile, Burnside and Dollar investigates the relationship between immigration policy and ODA and discusses the economic impact of immigration and support for developing countries through it (15). These preoccupations are expressed in several related studies (16) (17) (18) (19).

The above studies discuss the conditions necessary when ODA projects are implemented in developing countries and the macro-level impacts that occur when such projects are implemented. Meanwhile, it is also necessary to take account of existing literature specifically addressing the conditions for the successful implementation of ODA rural development projects for developing countries. These studies address a distinct range of areas, including: Community Engagement and Management (20) (21) (22); Diversification of the Rural Economy (23) (24); Education and Technology Transfer (25) (26) (27) (28) (29) (30) (31); Rurally Based Organizations and Collaborations (32); and Policy and Institutional Support (33).

Among the conditions that affect the successful execution of ODA rural development projects, especially in the case of rurally based organizations and co-operation, the importance of the role of village leaders is emphasized. Village leaders provide the organizational skills and the co-operation necessary for village development. They are responsible for organizing the community and promoting co-operation among farmers (34) (35) (36). If they possess suitable organizational skills and can collaborate with other stakeholders, they can manage and implement rural development projects effectively. In addition, it is

emphasized that village leaders must have the capabilities necessary for securing and managing the resources necessary for rural development. The studies emphasize that they must also have the ability to identify village problems and find effective solutions, and must play a role in understanding and representing the opinions and demands of farmers (37) (38). This is because farmers' participation and support can valuably be obtained. In addition, it is argued that village leaders must have knowledge of agriculture and the rural economy, and have policy influence. Several studies has shown similar results regarding knowledge management, innovation, regional development and policies (39) (40) (41) (42) (43) (44).

In addition to the conditions presented above, it is pointed out that the relationship between village leaders and field executors (employees or teams that actually execute the project) is very important in rural development projects. Co-operation and communication between these two groups can greatly affect the success and sustainability of a project. The reasons for this may be summarized as follows:

(i) *Information exchange and understanding*. Interaction between village leaders and field executives promotes mutual understanding of project goals and plans. This allows for the exchange of information about what is happening and what support and resources are needed.

(ii) *Utilizing knowledge about the village*. Village leaders understand the special knowledge and culture of the region. Field implementers can better understand the actual situation at the village level, and adjust and customize projects on this basis.

(iii) *Village participation and consent*. Village leaders have a close relationship with rural residents and can gain their trust. Field enforcers can help promote village participation and co-operation and gain buy-in from residents.

(iv) *Problem solving and co-ordination*. Field executors must solve problems that arise while executing the project, and make necessary adjustments. Good communication with village leaders helps to quickly process and improve this.

(v) *Sustainability*. The success of rural development projects is related to sustainability. Village leaders and field executives must be able to plan and collaborate on the long-term effectiveness and maintenance of the project. Therefore, co-operation between village leaders and field executives is one of the key elements for the success of rural development projects. Strengthening and effectively managing the interactions between them can increase project efficiency and sustainability.

In addition, there are studies that point out that the racial diversity of the residents who make up a village is important. This is because racial and cultural diversity can, it is believed, positively affect communication and integration. In such cases, it is argued that it is necessary to include intercultural exchange and educational

programmes to promote interests and interactions between residents from different cultures and speaking different languages (45) (46) (47) (48) (49) (50). Development projects that take this diversity into consideration can prevent intercultural conflicts and create an inclusive environment (51); (52). In addition, there are studies that show that a village's geographic location and degree of isolation affect successful project execution. That is, if a village is located far from the centre of the region, or is difficult to access, access to infrastructure and resources may be an issue (32) (53) (54). In this situation, it is necessary for co-operation and resource sharing among residents within the community to increase (55) (56). In other words, in isolated areas the resources that local residents can utilize are limited, and so co-operation between residents is inevitable, whether they like it or not.

Above, it is shown that various conditions affect the successful implementation of rural development projects in developing countries. This study also seeks to consider the conditions for successful execution, by means of a comprehensive review of these conditions.

3. Analysis Design

3.1. Analysis variables

In this study, we examine the various conditions raised in theoretical discussions, assuming that the following conditions will affect the successful promotion and execution process of rural development projects. Table 1 presents the variables to be included in the analysis along with their explanations.

Table 1. Analysis variables

	Explanation	Measurement method	Variable type
Village leader competency	Unlike an official local head, a village leader is appointed by village residents. 'Competency' here refers to his or her overall capabilities, including leadership capability.	If the village leader's competency is extremely low, one point is given, and if it is extremely high ten points are given.	independent
Degree of project support	This relates to an official representativ	If the mayor's level of	independent
from the town mayor	e of the township area appointed by a higher administrative agency, and indicates the degree to which the mayor supports the project of interest.	project support is extremely low, one point is given, and if it is extremely high ten points are given.	
Degree of co-operation between village leaders and town mayor	This refers to a co-operative relationship between a town mayor with an official position and a village leader unofficially appointed by residents.	If the level of co-operation between the village leader and the town mayor is extremely low, one point is given, and if it is extremely high ten points are given.	independent
Degree of racial unity of village residents.	This refers to whether the entire population of the village is made up of a single ethnic group or a variety of ethnic groups.	The degree of racial unity of the village residents is given one point if they are entirely homogeneous, and ten points if they are of entirely mixed ethnicity.	independent
IPs' capabilities.	This refers to the capabilities of IPs (implementation partners), that is, local execution managers who are entrusted with specific projects.	IP (implementation partners) are given one point if their capabilities are extremely low and ten points if they are extremely high.	independent
Geographical	This refers to the degree to	If a village has no	independent

isolation of the village.	which a village is isolated from the central area.	isolation and is completely open, it is given one point, and if it is completely geographically isolated it is given ten points.	
Degree of co-operation between on-site FM and village residents.	This refers to a field manager (a person in charge of implementing a specific project at a business site) dealing directly with residents.	If the level of co-operation between the on-site FM (field manager) and village residents is extremely low, one point is given, and if it is extremely high ten points are given.	independent
Overall performance at the execution stage.	This refers to the degree to which the relevant project is being carried out normally.	If the execution level of the project promoted to date is extremely low, one point is given, and if it is extremely high ten points are given.	dependent

3.5. Evaluation table showing the characteristics of the thirty villages

It is the FMs who are directly carrying out the project in the field who possess the information relating to the execution process for the thirty villages targeted by the project. In the case of this project, it is believed that the FMs belonging to Good Neighbors International who have been dispatched to Kyrgyzstan are the most knowledgeable. Therefore, these FMs were given a form enquiring about the characteristics of the villages and asked to give an appropriate score on the form. The FMs also listened to the opinions of other executors (e.g. project action officers) involved in the project execution and gave each village a score. Therefore,

the reliability of the data can be said to be very high, because the scores for each village and variable were not awarded by only one person but reflect the opinions of all the field executives involved in this rural development project.

3.3. Analysis Method

In this study, decision tree analysis is used to determine the conditions for villages that can be evaluated as successful in terms of the implementation process. This analysis method has excellent interpretability and is visually easy to understand. The tree structure allows identification of which variables play the most important role in prediction, and makes it easy to interpret and explain the results. In addition, various data types can be processed. Decision trees can process both categorical and continuous data. This allows the solving of complex problems involving various types of data. It is also an analysis method that helps prevent overfitting. Overfitting of the decision tree can be prevented through appropriate hyperparameter tuning and pruning. Furthermore, this method enables modelling of non-linear relationships. Decision tree analysis can model non-linear data patterns and identify relationships that are difficult to express well with linear models.

However, in this study, the number of cases for analysis is relatively small. Training a decision tree on a small data set can cause the model to become too tailored to the training data, reducing its ability to generalize to new data. Therefore, measures are needed to reduce model complexity to prevent overfitting. Additionally, because it may be difficult to model complex data patterns with thirty examples, it may be desirable to limit the complexity of the model and create a simple decision tree. Taking this into consideration, this study will make efforts to simplify the analysis model and reduce its complexity.

3.4. Analysis Target

The villages that are the subject of this study are thirty villages in Osh and Batken Provinces in Kyrgyzstan. Figure 1 shows the locations of the ten myeons (townships) containing the thirty villages.
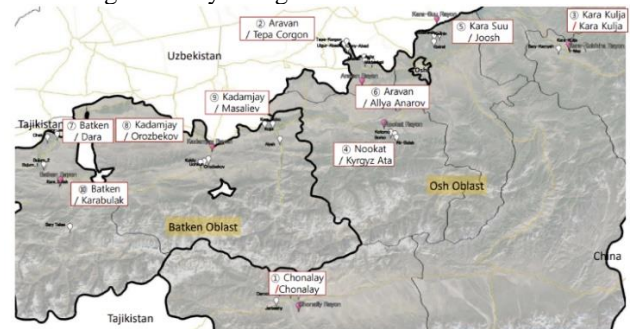

Figure 1. Kyrgyzstan's ten townships (Source: GNI interim inspection report, 2023).

Table 2 shows the evaluation results for each execution condition for the thirty villages. As mentioned above, the result scores in this table are evaluation scores based on the evaluation of field managers (FMs) who are promoting rural development projects in Kyrgyzstan.

Table 2. Evaluation scores on each variable for the thirty villages

Province	Township	Village name	Variable A: village leader competency (1 very low, 10 very high)	Variable B: degree of project support from the mayor (1 very low, 10 very high)	Variable C: degree of co-operation between village leaders and township mayor (1 very low, 10 very high)	Variable D: degree of racial unity of village residents (entirely homogeneous ethnicity 1, entirely mixed ethnicity 10)	Variable E: capabilities of IPs (1 very low, 10 very high)	Variable F: isolation of the village (completely open 1, completely isolated 10)	Variable G: degree of co-operation between on-site FM and village residents (1 very low, 10 very high)	Variable P: overall performance at the execution stage (1 very low, 10 very high)
Osh Province	Chong Alay	Kyzyl-Tuu	8	8	5	1	9	9	9	7
		Daroot-Korgon	6	8	5	1	9	9	6	7
		Jar-Bash	9	8	5	1	9	9	9	10
		Tepe-Korgon	5	1	3	5	9	2	7	7
	Tepa Corgon	Uigur Abad	10	1	3	5	9	2	8	8
		Jany-Abad	3	1	3	5	9	2	5	5
	Kara Kulja	May 1	8	10	10	1	2	3	8	8
		Kara-Kulja	9	10	10	1	2	3	10	10
		Sary-Kamysh	10	10	10	1	2	3	10	10
		Borko	10	7	7	1	5	2	8	10
	Kyrgyz Ata	Kotormo	7	7	7	1	5	2	7	7
		Ak-Bulak	3	7	7	1	5	2	5	5
	Joosh	Gairat	10	9	7	10	3	1	10	10
		Kalinin	10	9	7	8	3	1	10	10
		Bolshevik	9	9	7	8	3	1	9	8
	Allya Anarov	Aravan	8	10	9	2	9	1	8	8
		Madanyat	3	10	9	2	9	1	7	7
		Achey	1	10	9	2	9	1	1	1
Batken Province	Dara	Sary-Talaa	10	5	4	1	5	10	10	10
		Zhany-Zher	8.5	5	7	1	5	5	7.5	7
		Check	7	5	5	1	5	5	5	5
	Orozbekov	Orozbekov	10	10	10	1	5	4	10	10
		Uzkun	10	10	10	1	5	4	10	10
		Kuldu	10	10	10	1	5	4	8	8
	Masaliev	Kara-Dobo	8.5	1	1	10	5	3	8	10
		Alysh	7	1	1	1	5	3	8.5	8
		Kozho	6	1	1	1	5	3	7	5
	Karabulak	Kara-Bulak	7.5	6.5	7	1	5	5.5	7.5	6
		Bujum 1	3	6.5	5	1	5	5	1	1
		Bujum 2	3	6.5	5	1	5	5	1	1

Source: data collected by GNI FM.

Table 3 presents a summary of the abbreviations of the variables presented in Table 2.

Table 3. Abbreviations of variables

Variable symbol	Variable type	Variable name	Range
Variable A	independent	Village leader competency	1 very low, 10 very high
Variable B	independent	Degree of project support from the township mayor	1 very low, 10 very high
Variable C	independent	Degree of co-operation between village leaders and township mayor	1 very low, 10 very high
Variable D	independent	Degree of racial unity of village residents	1 very low, 10 very high
Variable E	independent	IPs' capabilities	1 very low, 10 very high
Variable F	independent	Isolation of the village	
Variable G	independent	Degree of co-operation between on-site FM and village residents	1 very low, 10 very high
Variable P	dependent	Overall performance at the execution stage	1 very low, 10 very high

4. Analysis Results

Figure 2 presents the result of the decision tree analysis. It shows that the thirty villages are divided into six nodes. Node 6 is a 10-point group with the highest performance score for the execution process, and includes seven villages. The characteristic of these villages is that the value exceeds 9.5 points based on the value of variable G. In other words, if the degree of co-operation between FM and village residents is 9.5 points or higher, the process of executing the rural development project in the village can be carried out successfully. By contrast, Node 3 has the lowest execution performance score (only 1), and includes three villages. What can be seen here is that the degree of co-operation between the FMs working in the village and the village residents has a decisive influence on the project execution process.

As can be seen in the case of Node 3, if the degree of co-operation between FM and villagers falls below 3, the execution performance becomes significantly less effective. On the other hand, if the rapport and exchange between FM and village residents is well-established and the score is 9.5 points or higher, the best execution performance of ten points can be attained.
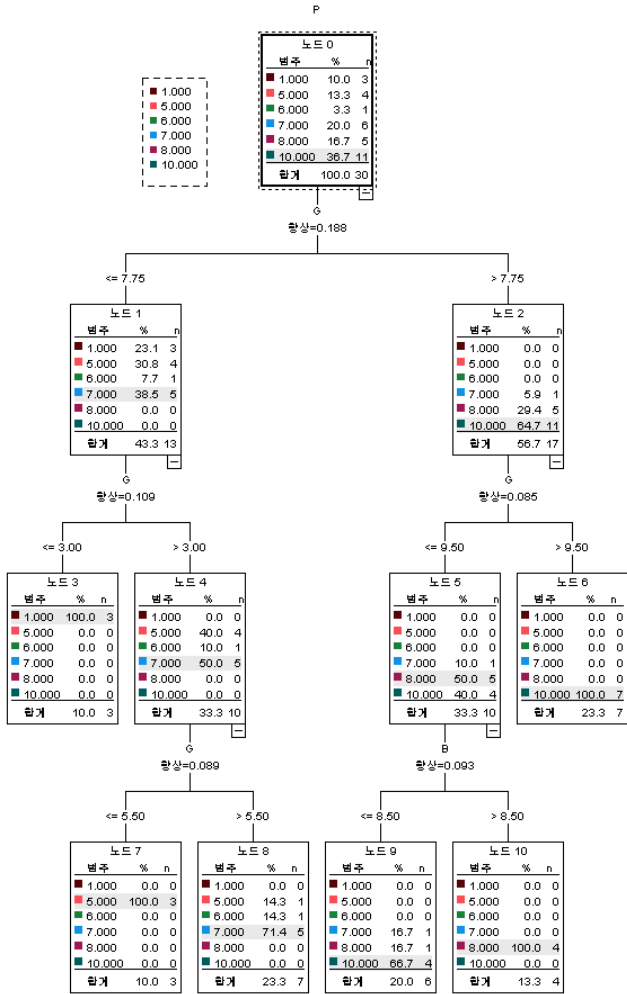
Figure 2. The derived decision tree

Meanwhile, Table 4 presents a comparison between the actual performance scores for each village and the performance scores predicted as a result of the decision tree analysis performed in this study. As Table 4 indicates, there are inevitably cases where the actual performance score and the performance score based on the predicted model are somewhat different, but the overall prediction accuracy is 86.7 per cent, which can be said to be relatively high.

Table 4. Actual and predicted performance scores by village

Village name	Actual performance result	Node name	Predicted performance result
Kyzyl-Tu	7	9	10
Daroot-K	7	8	7
Jar-Bash	10	9	10
Tepe-Kor	7	8	7

Uigur Ab	8	8	10
Jany-Aba	5	7	5
45047	8	10	8
Kara-Kul	10	6	10
Sary-Kam	10	6	10
Borko	10	9	10
Kotormo	7	8	7
Ak-Bulak	5	7	5
Gairat	10	6	10
Kalinin	10	6	10
Bolshevi	8	10	8
Aravan	8	10	8
Madanyat	7	8	7
Achey	1	3	1
Sary-Tal	10	6	10
Zhany-Zh	7	8	7
Check	5	7	5
Orozbeko	10	6	10
Uzkun	10	6	10
Kuldu	8	10	8
Kara-Dob	10	9	10
Alysh	10	9	10
Kozho	5	8	7
Kara-Bul	6	8	7
Bujum 1	1	3	1
Bujum 2	1	3	1

Table 5 shows the accuracy of the performance scores for the actual execution process and the predicted performance scores. The analysis model in this study shows a prediction accuracy of 86.7 per cent, so it can be said to show relatively high accuracy.

Table 5. Accuracy of classification

Table 6 shows the importance of independent variables. The variable that has the greatest impact on execution performance in the process of promoting rural development projects is variable G. This refers to the degree of co-operation with village residents that FMs demonstrate in the process of promoting the project in the village. It can be seen that, among all other variables, the role of FMs who interact with village residents while promoting the actual project on-site plays a decisive role in the success of the project. The next important variable is A. Variable A refers to village leader competency, leader competencies such as

persuasion ability and leadership skills being important for the project in the village targeted by the overall project.

Table 6. Importance of independent variables

독립변수 중요도

독립변수	중요도	정규화 중요도
G	.471	100.0%
A	.194	41.3%
B	.147	31.2%
C	.139	29.6%
E	.083	17.7%
D	.082	17.3%
F	.080	17.0%

성장방법: CRT
종속변수: P

Figure 3 shows the variables that have the strongest influence on the promotion of ODA rural development projects, in order of importance.
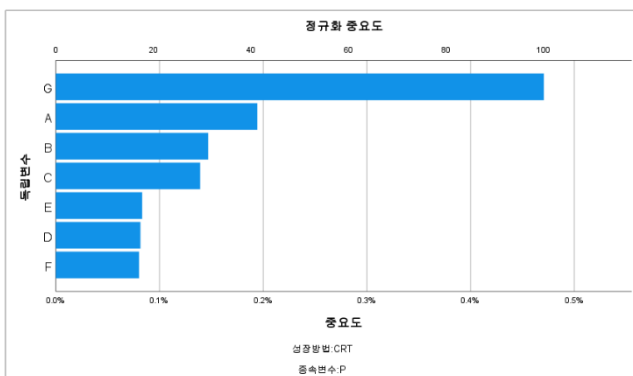

Figure 3. Importance of variables (normalized importance)

As Figure 3 shows, variable G has the greatest influence on the performance of the execution process, followed by variables A, B, C, E, D and F.

5. Conclusion

The aim of this study has been to analyse the variables that affect performance in the implementation process when promoting rural development projects in developing countries through ODA projects. For this purpose, the integrated rural development project being carried out in

Kyrgyzstan, a Central Asian country, by Korea's KOICA via Good Neighbors International (GNI), an international NGO, was analysed as a case study. This project targets thirty villages located in ten townships in two regions of Kyrgyzstan's Osh and Batken Provinces. Looking at how the execution process from September 2021 to June 2023 was carried out, we find that overall, the execution proceeded smoothly, and that the initial goals of increasing incomes, enhancing women's rights and improving the lives of farmers have been achieved smoothly.

However, it was found that among the thirty villages, some were carrying out the project particularly well, whereas in others the implementation performance needed to be improved. It can be seen that the biggest cause of villages showing low implementation performance is the low level of co-operation between FMs and village residents. Looking at the results of this analysis, we can see clearly that for rural development projects carried out through ODA the role of FMs active in the project field is critically important. Efforts to provide institutional support to FMs so that they can secure good co-operation with village residents are also needed.

All projects have a higher chance of success when field workers can obtain consent and secure co-operation from village residents at the project site. These results are also confirmed by many other academic papers or reports. When carrying out rural development projects in developing countries in the future, it is necessary to adequately prepare in advance various institutional support measures, such as improving treatment for field workers who are promoting projects in the field, strengthening incentives and improving working conditions.

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