Use of GIS in consensus building of a region: Case study of GIS workshops aimed at community leaders and administrative officers

Kazuya AOKI, Akihiro TERAKI and Motohiro KAMATA

Abstract: Historically, GIS has been used by professionals to suit the particular demands of companies and local governments. More recently, GIS has been adapted for use by citizens as well as specialists. In this study, we suggest that GIS can promote citizen participation in community planning, and assist in understanding coproduction awareness trends. The research focuses on Minamiboso City, a merger of seven municipalities that was founded in 2006. We disseminated a questionnaire survey to the community leaders and administrative officers in charge of community planning. From the survey results, we designed and conducted GIS workshops for community planners. On the basis of the attitudes of community leaders and administrative officers toward consensus building by GIS, we consider the applicability of GIS in community planning.

Keywords: community planning, citizen participation, Workshop, municipal amalgamation

1. Introduction

Rural areas are currently threatened by increasing depopulation and aging of their settled inhabitants. Consequently, maintaining the regional operations of traditional communities has become increasingly difficult. Administrative processes are further complicated by municipal mergers. As public awareness and administrative and financial reforms diversify, the importance of regional cooperation between the Government and local planners has become increasingly important. Rural areas are additionally weakened by the difficulty of maintaining extensive administrative services. For this reason, autonomous regional organizations formed by various entities have been established across the country (Fig. 1). These organizations are expected to employ staff that fulfill a village support role (Fig. 2).

Most studies of support staff of autonomous regional organizations have focused on the poorly defined role of support staff. They have emphasized the difficulties faced by regional organizations in finding solutions compatible with local circumstances and consensus building. To our knowledge, no recent studies have investigated both role and ability of support staff in autonomous regional organizations.

The present study proposes GIS (Geo Information Technology) as an intermediary support in community planning. Historically, GIS has been adopted by academics and professionals. Its use in community planning has been limited to disaster prevention and environmental considerations. Therefore, the purpose of this study is to evaluate the applicability of GIS as an intermediate support.

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2. Overview of the Study Area

The research focuses on Minamiboso City in the Chiba prefecture, Japan. Minamiboso City has established an autonomous regional organization to advance co-productive community planning. The city is now promoting the community planning of merger coproduction. Minamiboso City was founded in 2006 as the merger of seven municipalities. To advance co-productive community planning, autonomous regional organizations have been established in each of Minamiboso City's old towns and villages. In addition, two village support personnel have been instated in each district.

The continued depletion and aging of Minamiboso City's inhabitants is evident in Table 1. The aging rate is especially high in the Shirahama area, whereas the Wada district has become severely depopulated. Therefore, this study targets the Wada and Shirahama areas in Minamiboso City.

3. Survey and Research Methods

(1) Co-production of regional importance requires the cooperation of community leaders and administrative officers. Therefore, we disseminated a questionnaire survey to the administrative officers and community leaders in charge of coproduction. From the survey results, we can evaluate the coproduction awareness trends of rural planners.

(2) On the basis of the survey results, we conducted GIS workshops aimed at administrative officers and community leaders. We also encouraged community leaders and administrative officers to embrace the GIS technology.

(3) On the basis of the attitudes of community leaders and administrative officers toward GIS, we discuss how GIS can assist intermediate support measures.

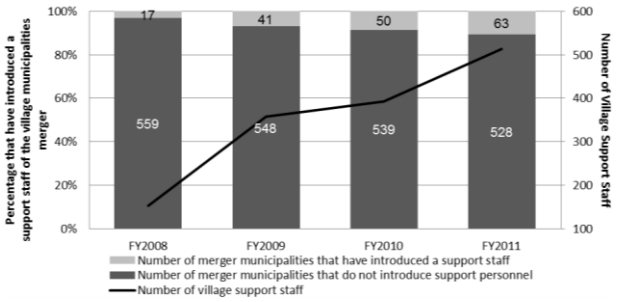

Fig- 1 Installation of village support staff in merged municipalities

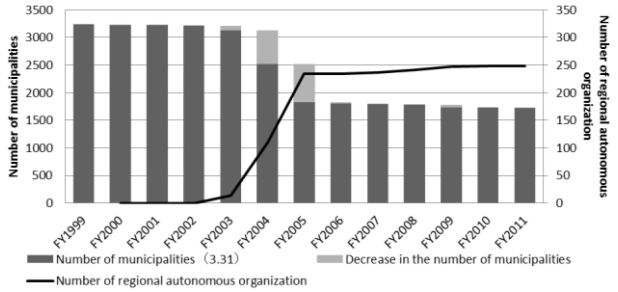

Fig- 2 Installation of autonomous regional organizations

Table- 1 Basic demographics of the old towns and villages comprising Minamiboso City

	Population (people)	Population density (people／km^2)	Population growth rate (%)	Population aging rate (%)
Minamiboso city	42,104	159.2	▲ 5.94	37.5
Tomiura area	5,104	182.9	▲ 6.37	35.2
Tomiyama area	5,470	198.7	▲ 4.89	37.8
Miyosi area	4,498	135.6	▲ 3.39	34.2
Sirahama area	5,108	132.6	▲ 8.61	42.1
Chikura area	11,577	299.2	▲ 6.49	37.6
Maruyama area	5,180	316	▲ 4.78	36.1
Wada area	5,167	117.4	▲ 5.97	39.0

※22 fiscal year Heisei census (population, etc. basic aggregate)

4. Questionnaire Survey of Administrative Officers and Community Leaders

The questionnaire survey was disseminated from November 2009 to January 2010 and the recovery rate was 88%. Approximately 60% of the community leaders were actively participating in community planning. As shown in Fig. 3, community leaders were more engaged in community planning than administrative officers. Therefore, it appears that administrative officers play an important role in the community planning of coproduction.

The survey results revealed the coproduction awareness of administrative officers and community leaders. Approximately 60% of the community leaders considered that towns and villages were suitable targets for coproduction activities. Fig. 4 shows that the coproduction priorities of administrative officers are diverse, whereas those of community leaders are biased. Furthermore, as shown in Fig. 5, administrative officers prefer activities that are "evenly spread across all regions," whereas community leaders focus their activities on "vulnerable regions." Both community leaders and administrative officers advocate a coordinator to adjust the relationships between parties (Fig. 6).

Clearly, the coproduction priorities differ between community leaders and administrative officers. This conflicting coproduction awareness must be ameliorated by an intermediate support.

5. Implementation of the GIS workshop

(1) Implementation of the GIS workshop

The workshop was directed toward solving regional problems by displaying the statistics of each village. The statistical information was the age and numbers of the village populations and environmental and disaster prevention data. The workshop was facilitated by our group.

(2) Intended GIS use by administrative officers and community leaders

Our workshops were designed to introduce GIS to community leaders and administrative officers. The workshops revealed the different intentions of GIS use by community leaders and administrative officers.

Administrative officers were interested in capturing wide areas such as old towns and villages, or even the entire city. In contrast, administrative officers desired to understand the characteristics of various regions and to use GIS statistics for comparisons among

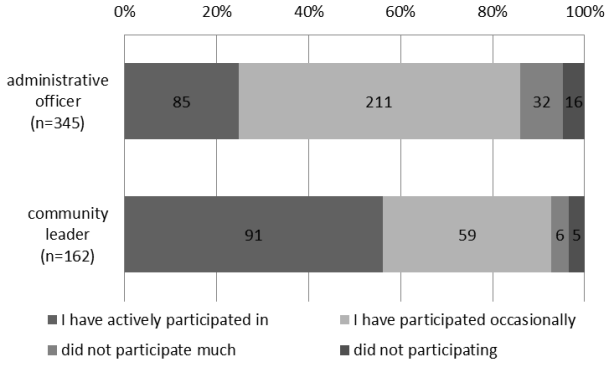

Fig. 3 Survey results of participation in city planning

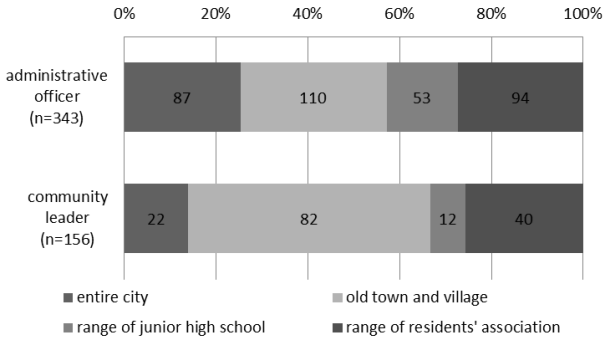

Fig. 4 Priorities for coproduction (by region)

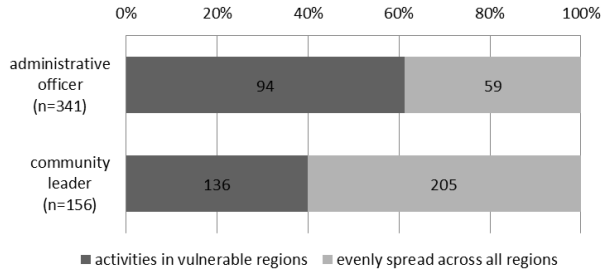

Fig. 5 Priorities for coproduction (by vulnerability)

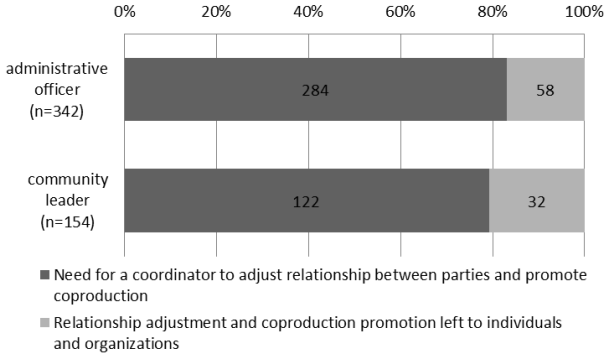

Fig. 6 Need for a coordinator to support coproduction

villages or between old towns and villages. Administrative officers were particularly interested in the depopulation and aging statistics, since these statistics indicate the urgency of a region.

For these reasons, community leaders captured narrow areas of Minamiboso City, such as individual households or villages. Community leaders also intended to resolve issues of specific regional information sharing by GIS. In particular, community leaders sought information on the specific regional challenges encountered by residents.

6. Conclusion

This study has examined the use of GIS as an intermediate support in coproductive planning. The study evaluated the cooperation awareness of community leaders and administrative officers. Reflecting their disparate coproduction awareness, administrative officers and community leaders revealed different intentional uses of GIS. Therefore, if GIS is to provide an intermediate support in city planning, it must be first adjusted to satisfy the conflicting intentions of the involved parties.

Fig- 7 Implementation scene of workshop

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