CITIZENS' VIEW ON DEPOPULATION AND ITS LOCAL GOVERNMENT POLICY OF RURAL AREA IN JAPAN

[1]MICHIKO MIYAMOTO, [2]YUTA AKASAKA

Akita Prefectural University
E-mail: [1]miyamoto @akita-pu.ac.jp, [2]B15D001@akita-pu.ac.jp

Abstract - Depopulation is a worldwide phenomenon. Japan has been identified as one of the super aging societies and one of the largest low-fertility countries. Japan's population decline is eminent, and that the shrinking population is concentrated more than ever in Tokyo and its environs. Akita is one of prefectures in Japan facing serious depopulation, and its local government has attempted to return to a growth strategy. This study examines how Akita citizens view the local government policies, such as 1) Industry and Energy, 2) Agriculture, Forestry and Fisheries, 3) Tourism 4) Transportation, 5) Health, Medical, Welfare, 6) Education and their relationships with 7) Depopulationby using data from "Citizens Awareness Survey" conducted by Akita local government in 2015. Results show that relationships of all policies and depopulation are statistically positive and significant; however, standardized path coefficients between depopulation and transportation or industry/energy indicate "small" effects on depopulation.

Index Terms - Depopulation; Local government policies, Structure Equation Model.

I. INTRODUCTION

The 2015 national population census results emphasize that Japan's population decline is eminent, and that the shrinking population is concentrated more than ever in Tokyo and its environs [1].

The statistic shows the development of the urban and rural population in Japan from 2006 to 2014, with projections up until 2016. In 2014, about 118 million people had lived in urban areas of Japan. Akita prefecture, located in the northern part of Japan, also has a serious problem on decreasing population. (See number of depopulated rural areas of Japan and Akita in Table 1).

Table 1. Depopulated rural areas as of April 2017

	Number of Cities			Depopulated Areas a				Deemed as Depopulated Areas b		
	Cities	Towns and villages	Total A	Cities	Towns and villages	Total B	Percentage B/A	Cities	Towns and villages	Total
Entire Japan	**790**	**928**	**1,718**	**132**	**515**	**647**	**37.7**	**20**	**5**	**25**
Akita	13	12	25	7	11	18	72.0	4		4

	Cities with Depopulated Areas c				Total (Depopulated Areas) a + b + c			
	Cities	Towns and villages	(Depopu-lated Areas)	Total	Cities	Towns and villages	Total C	Percentages C/A
Entire Japan	**127**	**18**	**283**	**145**	**279**	**538**	**817**	**47.6**
Akita	1		1	1	12	11	23	92.0

(Source:Kaso-net.or.jp/kaso-db.htm, Retrieved on February 13, 2018)

In Akita, depopulation proceeds most rapidly in Japan. From a peak population of about 1,350,000 in 1956, Akita's population stood at 995,374 in 2017 [2]. A major problem facing rural regions, such as Akita, is its seemingly chronic loss of young people to urban areas. Most people leaving small communities are either young adults, between the ages of 15 and 24, or families with young children. Although they leave for a variety of reasons, the most common are to find jobs or to have better access to educational and medical facilities. Starting in the 1970s, the Japanese government introduced a number of policies that addressed regional depopulation. Support for peripheral areas consisted of financial help (25 billion yen between 1971 and 1989), which was aimed at improving infrastructure [3]. As of 2006, 7,878 marginal villages existed in Japan, which underlines the scale of population shrinkage [3]. Remedying Japan's population problem calls for fundamental changes in labor policy, corporate management,

education, gender relations and economic structure – strategies which some observers say the Japanese have so far appeared reluctant to consider. Various national policies have attempted to return to a growth strategy. Since Akita's economy remains dominated by traditional industries, such as agriculture, fishing, and forestry, many young people migrate to larger cities. It also has the lowest number of children as a percentage of the population, at 11.13% [4]. In Akita, there are at least 165 marginal villages, and 9 such villages are facing a threat of disappearance within 10 years, according to the local newspaper [5].

Akita Prefecture's local government has been conducting the "Citizens Awareness Survey" since 2011, in order to understand the feelings and needs of the citizens against the prefectural policy, including depopulation. The survey results have been used for the policy evaluation and the development of the management guidelines of the prefectural government's "the second phase hometown Akita well-being creation plan (tentative)"[6]. In this study, the authors analyze people in Akita's point of view on population decreases with regards to their local government policies, such as "Promotion of industry and energy," "Promotion of Transportation," "Promotion of education," "Promotion of health and medical services," "Promotion of agriculture, forestry and fisheries," and "Promotion of sightseeing".

This paper is structured as follows: in the next section the authors give a brief overview on depopulation. Subsequently, a research model, hypotheses, data and variables are detailed. In the fifth section, the results are discussed as well as their implications.

II. RELATED WORKS

In the analysis of population shrinkage, two termsin particular document the economic and environmental consequences of population shrinkage: depopulated rural areas and marginal communities or villages [7.8.9]. In Japan, marginal villages, that is, places facing a very likely threat of disappearance, with close to zero children and a large majority of the population in their 60s and 70s [10]. This results in the precarious situation where communities reach the limits of their medical, educational and administrative capacity [7].

Population aging and declining birthrates are occurring throughout the world, and it is likely end of global population growth around the end of this century [11]. According to world population prospects by United Nations in 2015, Japan is listed as one of the largest low-fertility countries [12]. Japan's latest official population projection reported that the country's population is projected to decrease from 128 million in 2010 to 87 million by 2060, when roughly 40 per cent of the population will be age 65 and above. Since the mid-1970s, Japan's fertility rate decline to very low rates of 1.3 to 1.4 children per woman. The net migration losses and gains are not only accompanying natural decline, but are being driven by it [13, 14], which is a very different situation to the past. Since the early 1990s, the Japanese government has expanded family policies and programs in the areas of (1) childcare services; (2) parental leave schemes; and (3) monetary assistance in the form of child allowances. Comparing 18 member countries, the Organization for Economic Cooperation and Development (OECD) ranked Japan second from the bottom in terms of coverage and strength of policies for work-family reconciliation and family-friendly work arrangements, pointing out that Japan's childcare coverage and parental leave offered by employers are both especially weak [15]. A shrinking labor force and tax base makes it difficult for many rural communities like Akita to maintain infrastructure; such as roads, schools, medical facilities, and other public services, which in turn makes it difficult for small rural towns and villages to attract new immigrants or prevent current residents from moving to other places. The current Japanese government's administration has the regional policy of revitalization regions which hopes to reduce the influx of people from rural areas to metropolitan areas in order to stop Japan's overall depopulation [16]. The goal of the government policy would be achieved by creating jobs in regions and encouraging people to stay, or move, to those depopulating areas, and all local governments will be expected to draft a regional revitalization plan which takes into account local conditions to ensure effective policies for reviving their economies [17].

Centralization has been observed in many regions in Japan. Firms determine their location based on accessibility to their potential customers and qualified workers, and people choose their residential location based on job opportunities within a reasonable commuting distance [18]. Transport infrastructure, such as highways and airports, have played an important role in transforming society [19], and have impacted on development and population growth. Transportation networks are one of the fundamental tools for human society to work, and it is important to have a correct, efficient design of a transportation network for a given region or country.

Pablo-Martí and Sánchez [20] proposed relevant to policy making applied to designing transportation networks. McArthur et al [18] focus on how investments in transport infrastructure and the spatial distribution of basic-sector jobs can promote a relatively balanced growth of peripheral and central areas of a region.

Farming and related activities make up the basic fabric of rural life, contributing significantly to the overall state of rural regions in terms of employment and business opportunities, infrastructure and quality of the environment [21]. Like any rural areas throughout

the world, agriculture, forestry, and fishing represent the predominant land use and a major component of the viability of Akita.

III. RESEARCH MODEL AND HYPOTHESES

Akita prefecture has announced the key policies to focus on areas such as 1) Industry and Energy, 2) Agriculture, Forestry and Fisheries, 3) Tourism 4) Transportation, 5) Health, Medical, Welfare, 6) Education and 7) Depopulation. Based on prior literature and Akita's policies, the authors would like to propose the following research model as Fig. 1 and hypotheses which measure Akita people's feeling toward their prefectural government policies, and how they are related to depopulation.

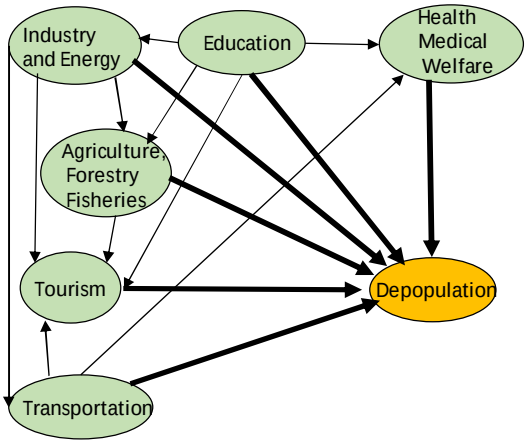


Fig. 1. A Research Model

H1. Local government policy on industry and energy is closely related to depopulation policy

H2. Local government policy on Agriculture, Forestry and Fisheries is closely related to depopulation policy

H3. Local government policy on Tourism is closely related to depopulation policy

H4. Local government policy on Transportation is closely related to depopulation policy

H5. Local government policy on Health, Medical,Welfare is closely related to depopulation policy

H6. Local government policy on Education is closely related to depopulation policy

III. DATA

The data used for this study was provided by Akita Prefectural Government, General Policy Division, which has conducted a questionnaire survey to their citizens every year since 2010. The survey for this study was sent by mail, by Akita local government, from June 17, 2015 to July 21, 2015.

Questionnaires were mailed to 4,100 male and female over twenty-year old that live in Akita. A two-stage random sampling method stratified on the basis of the Basic Resident Register was used. There are 2,048 questionnaires were returned for a 49.95% response rate. Most of the questionnaires are asked by a five point scale. A list of description of the samples is shown in Table 2, and a list of variables used in this study is shown in Table 3. Certain respondent characteristics were compared with the 2014 census data of Akita. Age comparisons indicates that the survey sample and the 2014 census data have different distributions in each age group, especially in the groups of age under 59 years old, and 70 years and older. The sample has included younger residents group. This suggests that the younger residents group may be overrepresented and the septuagenarian and older residents under-presented in the sample. No comparisons were made on family structure and length of residence because the 2014 census data were not available.

Table 2. Descriptive Statistics

	Attributes	Valid Responses		Estimated Population (as of Oct. 1, 2015)	
		Number	(%)	Over 18-year-old	(%)
	Total	2,048	100	895,221	100
Sex	Male	886	43.3	413,520	46.2
	Femail	1,084	52.9	481,701	53.8
	No answer	78	3.8	-	-
Age	18-19 (years old)	27	1.3	17,660	2.0
	20-29	272	13.3	71,371	8.0
	30-39	348	17.5	110,004	12.3
	40-49	411	20.1	122,844	13.7
	50-59	427	20.8	144,358	16.1
	60-69	389	19.0	172,143	19.2
	70 years old-	85	4.2	256,841	28.7
	No answer	79	3.9	-	-
Family Structure	Single	83	4.1		
	Husband and wife only	272	13.3		
	Parent-child two generations	987	48.2		
	Parent-child-grandchild three generations	504	24.6		
	Others	113	5.5		
	No answer	89	4.3		
Length of Residence	Less than 5 years	36	1.8		
	5-9 (years)	30	1.5		
	10-19	107	5.2		
	20-29	334	16.3		
	Over 30 years	1,463	71.4		
	No answer	78	3.8		

Table 4 contains the Pearson correlation coefficient between all pairs of twenty-one variables with the two-tailed significance of these coefficients. All variables correlate fairly well and statistically significant, and none of the correlation coefficients are particularly large; therefore, multicollinearity is not a problem for these data. Age comparisons indicates that the survey sample and the 2014 census data have different distributions in each age group, especially in the groups of 70 years and older.

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IV. RESULTS

A. The Structural Model Analysis

Based on a survey of 2,048 respondents from people live in Akita prefecture, the study employs a structural equation modeling (SEM) approach. The efficacy of the structural equation model was conducted by AMOS 24, and the major result of analysis is shown in Figure 2. The path diagram highlights the structural relationships. In this diagram, the measured variables are enclosed in boxes, latent variables are circled, and arrows connecting two variables represent relations, and open arrows represent errors.

When SEM is used to verify a theoretical model, a greater goodness of fit is required for SEM analysis [22]; the better the fit, the closer the model matrix and the sample matrix.

By means of various goodness-of-fit indexes, including the comparative fit index (CFI) [23], Incremental Fit Index (IFI) [24], and the root mean squared error of approximation (RMSEA) [25], the estimated matrix can be evaluated against the observed sample covariance matrix to determine whether the hypothesized model is an acceptable representation of the data. In general, fit indexes (i.e., CFI, IFI) above 0.90 signify good model fit. RMSEA values lower than 0.08 signify acceptable model fit, with values lower than 0.05 indicative of good model fit. Indicators of goodness of fits for this model are CFI=0.907, IFI=0.907, and RMSEA=0.061. Path Coefficient for the structural model suggested that the regression coefficient for all constructs show significance. See a list of reliability tests on Table 5. The Path Coefficient for the structural model suggested that the regression coefficient for all constructs show significance (see Table 6). Since all of the indexes satisfy the cut-off values, these results are regarded as acceptable.

Table 3. A List of Variables

Industry and energy	
Q1.1.1	Strengthening the management foundation of companies and efforts to promote regional industries
Q1.1.2	Education of companies that lead Akita and efforts to develop new business
Q1.1.3	Efforts to establish new energy, environment and recycling industry base
Q1.1.4	Expanding overseas transactions and efforts to form industrial bases
Q1.1.5	Efforts to foster human resources supporting Akita's industry
Q1.7.1	Industry and energy strategy for conversion of industrial structure
Agriculture, forestry and fisheries	
Q1.2.1	Efforts to expand brand agriculture to tackle with "All Akita"
Q1.2.2	Promotion of full utilization of paddy field centering on Akita rice
Q1.2.3	Promotion of the sixth industrialization that creates added value and employment
Q1.2.4	Fostering highly competitive management entities leading regional agriculture
Q1.2.5	Promotion of the nationwide largest lumber comprehensive processing area
Q1.2.6	Establishment of marine product brand and development of new fishery business
Q1.7.2	Aggressive Agriculture, Forestry and Fisheries Strategies to be found in Japan and abroad
Tourism and transportation strategies that create and support future exchanges	
Q1.3.1	Promotion of tourism as a comprehensive strategic industry that will continue and grow
Q1.3.2	Akita's efforts to polish the attractiveness of food and expand sales channels outside the prefecture
Q1.3.3	Regional energy creation through further improvement of cultural capabilities of Akita
Transportation	
Q1.3.4	Promotion of "Akita Sports Prefecture"
Q1.3.5	Improving the convenience of the transportation network and securing regional traffic
Q1.7.3	Tourism and transportation strategies that create and support future exchanges
Health, medical, and welfare	
Q1.4.1	Promotion of health promotion that can live healthy and long
Q1.4.2	Enhancing and strengthening the medical provision system that protects life and health
Q1.4.3	Creating a system to support the elderly and people with disabilities in the community
Q1.4.4	Efforts towards comprehensive suicide prevention measures that civil, scholarly, and government integrated
Q1.7.4	Health, medical, and welfare strategies to realize a healthy longevity society
Education	
Q1.5.1	Fostering human resources who will open up their own future and contribute to society
Q1.5.2	Establishing certain academic ability and cultivating creativity and expressive power
Q1.5.3	Fostering a rich heart and a healthy body
Q1.5.4	Creating a place for good and fascinating learning
Q1.5.5	Creating opportunities to become familiar with lifelong learning environment and arts / culture
Q1.5.6	Enhancement of higher education and promotion of regional contribution
Q1.5.7	Training human resources who can be active in the global society
Q1.7.5	Education and human resource development strategy for the future
Depopulation	
Q.1.6.1	Efforts to settle in Akita, to expand migration / settlement
Q.1.6.2	Promotion of countermeasures against declining birthrate that became unified public and private
Q.1.6.3	Improvement and enhancement of support for the next generation
Q.1.6.4	Improvement of enviroment of childbirth and raising environment
Q.1.6.5	Improvement of regional power by making use of local human resources and resources
Q.1.6.6	Efforts to revitalize the region based on a population declining society
Q.1.6.7	Securing a diverse range of "collaborators" and promoting activities
Q.1.6.8	Promotion of cooperation between prefecture and municipality
Q1.7.6	Regional power creation strategy in population declining society

Table 4. Correlation Matrix

	Q1.1.1	Q1.1.2	Q1.1.3	Q1.1.4	Q1.1.5	Q1.2.1	Q1.2.2	Q1.2.3	Q1.2.4	Q1.2.5	Q1.2.6	Q1.3.1	Q1.3.2	Q1.3.3	Q1.3.4	Q1.3.5	Q1.3.6	Q1.4.1
Q1.1.1	1	.815**	.619**	.610**	.635**	.544**	.486**	.554**	.569**	.526**	.500**	.441**	.391**	.443**	.339**	.364**	.345**	.336**
Q1.1.2	.815**	1	.640**	.630**	.672**	.520**	.493**	.558**	.574**	.534**	.516**	.454**	.406**	.459**	.360**	.385**	.361**	.349**
Q1.1.3	.619**	.640**	1	.597**	.565**	.509**	.471**	.499**	.497**	.481**	.461**	.422**	.412**	.439**	.372**	.385**	.351**	.349**
Q1.1.4	.610**	.630**	.597**	1	.579**	.469**	.419**	.530**	.508**	.474**	.477**	.383**	.364**	.410**	.312**	.335**	.308**	.286**
Q1.1.5	.635**	.672**	.565**	.579**	1	.479**	.495**	.524**	.547**	.483**	.492**	.430**	.390**	.472**	.359**	.385**	.392**	.365**
Q1.2.1	.544**	.520**	.509**	.469**	.479**	1	.716**	.623**	.644**	.582**	.588**	.473**	.475**	.487**	.402**	.397**	.378**	.373**
Q1.2.2	.486**	.493**	.471**	.419**	.495**	.716**	1	.623**	.668**	.590**	.585**	.447**	.447**	.472**	.391**	.364**	.345**	.380**
Q1.2.3	.554**	.558**	.499**	.530**	.524**	.623**	.623**	1	.725**	.632**	.632**	.440**	.386**	.459**	.362**	.374**	.353**	.337**
Q1.2.4	.569**	.574**	.497**	.508**	.547**	.644**	.668**	.725**	1	.677**	.695**	.486**	.422**	.483**	.360**	.388**	.361**	.343**
Q1.2.5	.526**	.534**	.481**	.474**	.483**	.582**	.590**	.632**	.677**	1	.730**	.430**	.405**	.469**	.357**	.351**	.327**	.330**
Q1.2.6	.500**	.516**	.461**	.477**	.492**	.588**	.585**	.632**	.695**	.730**	1	.422**	.418**	.461**	.357**	.342**	.341**	.326**
Q1.3.1	.441**	.454**	.422**	.383**	.430**	.473**	.447**	.440**	.486**	.430**	.422**	1	.661**	.605**	.491**	.492**	.484**	.425**
Q1.3.2	.391**	.406**	.412**	.364**	.390**	.475**	.447**	.386**	.422**	.405**	.418**	.661**	1	.640**	.527**	.487**	.464**	.440**
Q1.3.3	.443**	.459**	.439**	.410**	.472**	.487**	.472**	.459**	.483**	.469**	.461**	.605**	.640**	1	.575**	.486**	.465**	.470**
Q1.3.4	.339**	.360**	.372**	.312**	.359**	.402**	.391**	.362**	.360**	.357**	.357**	.491**	.527**	.575**	1	.453**	.403**	.434**
Q1.3.5	.364**	.385**	.385**	.335**	.385**	.397**	.364**	.374**	.388**	.351**	.342**	.492**	.487**	.486**	.453**	1	.725**	.423**
Q1.3.6	.345**	.361**	.351**	.308**	.392**	.378**	.345**	.353**	.361**	.327**	.341**	.484**	.464**	.465**	.403**	.725**	1	.400**
Q1.4.1	.336**	.349**	.349**	.286**	.365**	.373**	.380**	.337**	.343**	.330**	.326**	.425**	.440**	.470**	.434**	.423**	.400**	1
Q1.4.2	.339**	.333**	.356**	.287**	.359**	.372**	.385**	.343**	.345**	.337**	.320**	.423**	.453**	.426**	.396**	.429**	.409**	.731**
Q1.4.3	.314**	.323**	.334**	.281**	.357**	.355**	.372**	.339**	.352**	.329**	.324**	.395**	.417**	.438**	.369**	.394**	.383**	.684**
Q1.4.4	.319**	.336**	.336**	.314**	.346**	.340**	.307**	.347**	.348**	.338**	.325**	.361**	.361**	.374**	.346**	.359**	.311**	.473**
Q1.5.1	.413**	.419**	.391**	.364**	.473**	.408**	.394**	.416**	.424**	.389**	.415**	.438**	.420**	.485**	.397**	.383**	.376**	.464**
Q1.5.2	.340**	.336**	.372**	.318**	.351**	.375**	.348**	.362**	.355**	.329**	.343**	.378**	.431**	.423**	.372**	.347**	.313**	.444**
Q1.5.3	.343**	.339**	.388**	.307**	.351**	.390**	.370**	.340**	.358**	.322**	.330**	.396**	.432**	.427**	.410**	.375**	.347**	.508**
Q1.5.4	.351**	.336**	.340**	.300**	.366**	.370**	.367**	.353**	.359**	.348**	.330**	.365**	.430**	.448**	.411**	.360**	.339**	.503**
Q1.5.5	.333**	.343**	.361**	.320**	.374**	.396**	.380**	.371**	.361**	.347**	.342**	.414**	.447**	.460**	.492**	.436**	.404**	.389**
Q1.5.6	.351**	.357**	.366**	.341**	.393**	.389**	.380**	.392**	.392**	.370**	.338**	.411**	.438**	.481**	.432**	.426**	.383**	.523**
Q1.5.7	.361**	.370**	.340**	.355**	.395**	.396**	.353**	.392**	.415**	.373**	.404**	.388**	.404**	.443**	.371**	.365**	.369**	.414**
Q1.6.1	.401**	.412**	.322**	.331**	.388**	.375**	.361**	.379**	.428**	.349**	.357**	.451**	.432**	.434**	.369**	.353**	.340**	.367**
Q1.6.2	.389**	.399**	.323**	.335**	.375**	.397**	.376**	.401**	.414**	.347**	.353**	.434**	.412**	.433**	.348**	.366**	.346**	.399**
Q1.6.3	.392**	.393**	.351**	.327**	.376**	.368**	.370**	.388**	.406**	.352**	.359**	.406**	.363**	.400**	.340**	.370**	.361**	.385**
Q1.6.4	.294**	.311**	.301**	.251**	.317**	.301**	.318**	.332**	.324**	.273**	.250**	.373**	.354**	.373**	.330**	.385**	.369**	.395**
Q1.6.5	.418**	.440**	.404**	.375**	.425**	.414**	.395**	.434**	.453**	.403**	.427**	.433**	.442**	.470**	.366**	.399**	.379**	.422**
Q1.6.6	.406**	.440**	.361**	.360**	.452**	.395**	.397**	.442**	.456**	.369**	.403**	.429**	.416**	.487**	.393**	.401**	.391**	.405**
Q1.6.7	.453**	.470**	.371**	.389**	.433**	.410**	.418**	.471**	.512**	.448**	.462**	.435**	.387**	.474**	.352**	.387**	.356**	.412**
Q1.6.8	.447**	.465**	.366**	.365**	.410**	.383**	.394**	.430**	.471**	.432**	.443**	.397**	.378**	.460**	.352**	.396**	.350**	.393**

	Q1.4.2	Q1.4.3	Q1.4.4	Q1.5.1	Q1.5.2	Q1.5.3	Q1.5.4	Q1.5.5	Q1.5.6	Q1.5.7	Q1.6.1	Q1.6.2	Q1.6.3	Q1.6.4	Q1.6.5	Q1.6.6	Q1.6.7	Q1.6.8
Q1.1.1	.339**	.314**	.319**	.413**	.340**	.343**	.351**	.333**	.351**	.361**	.401**	.389**	.392**	.294**	.418**	.406**	.453**	.447**
Q1.1.2	.333**	.323**	.336**	.419**	.336**	.339**	.336**	.343**	.357**	.370**	.412**	.399**	.393**	.311**	.440**	.440**	.470**	.465**
Q1.1.3	.356**	.334**	.336**	.391**	.372**	.388**	.340**	.361**	.366**	.340**	.322**	.323**	.351**	.301**	.404**	.361**	.371**	.366**
Q1.1.4	.287**	.281**	.314**	.364**	.318**	.307**	.300**	.320**	.341**	.355**	.331**	.335**	.327**	.251**	.375**	.360**	.389**	.365**
Q1.1.5	.359**	.357**	.346**	.473**	.351**	.351**	.366**	.374**	.393**	.395**	.388**	.375**	.376**	.317**	.425**	.452**	.433**	.410**
Q1.2.1	.372**	.355**	.340**	.408**	.375**	.390**	.370**	.396**	.389**	.396**	.375**	.397**	.368**	.301**	.414**	.395**	.410**	.383**
Q1.2.2	.385**	.372**	.307**	.394**	.348**	.370**	.367**	.380**	.380**	.353**	.361**	.376**	.370**	.318**	.395**	.397**	.418**	.394**
Q1.2.3	.343**	.339**	.347**	.416**	.362**	.340**	.353**	.371**	.392**	.392**	.379**	.401**	.388**	.332**	.434**	.442**	.471**	.430**
Q1.2.4	.345**	.352**	.348**	.424**	.355**	.358**	.359**	.361**	.392**	.415**	.428**	.414**	.406**	.324**	.453**	.456**	.512**	.471**
Q1.2.5	.337**	.329**	.338**	.389**	.329**	.322**	.348**	.347**	.370**	.373**	.349**	.347**	.352**	.273**	.403**	.369**	.448**	.432**
Q1.2.6	.320**	.324**	.325**	.415**	.343**	.330**	.330**	.342**	.338**	.404**	.357**	.353**	.359**	.250**	.427**	.403**	.462**	.443**
Q1.3.1	.423**	.395**	.361**	.438**	.378**	.396**	.365**	.414**	.411**	.388**	.451**	.434**	.406**	.373**	.433**	.429**	.435**	.397**
Q1.3.2	.453**	.417**	.361**	.420**	.431**	.432**	.430**	.460**	.438**	.404**	.432**	.412**	.363**	.354**	.442**	.416**	.387**	.378**
Q1.3.3	.426**	.438**	.374**	.485**	.423**	.427**	.448**	.492**	.481**	.443**	.434**	.433**	.400**	.373**	.470**	.487**	.474**	.460**
Q1.3.4	.396**	.369**	.346**	.397**	.372**	.410**	.411**	.436**	.432**	.371**	.369**	.348**	.340**	.330**	.366**	.393**	.352**	.352**
Q1.3.5	.429**	.394**	.359**	.383**	.347**	.375**	.360**	.404**	.426**	.365**	.353**	.366**	.370**	.385**	.399**	.401**	.387**	.396**
Q1.3.6	.409**	.383**	.311**	.376**	.313**	.347**	.339**	.389**	.383**	.369**	.340**	.346**	.361**	.369**	.379**	.391**	.356**	.350**
Q1.4.1	.731**	.684**	.473**	.464**	.444**	.508**	.503**	.527**	.523**	.414**	.367**	.399**	.385**	.395**	.422**	.405**	.412**	.393**
Q1.4.2	1	.693**	.482**	.449**	.422**	.473**	.452**	.483**	.480**	.398**	.378**	.389**	.361**	.370**	.394**	.387**	.369**	.375**
Q1.4.3	.693**	1	.474**	.444**	.401**	.454**	.438**	.470**	.468**	.401**	.364**	.395**	.408**	.397**	.407**	.420**	.391**	.368**
Q1.4.4	.482**	.474**	1	.415**	.422**	.441**	.398**	.417**	.409**	.411**	.349**	.367**	.339**	.338**	.350**	.358**	.348**	.349**
Q1.5.1	.449**	.444**	.415**	1	.624**	.630**	.555**	.530**	.569**	.604**	.420**	.436**	.418**	.377**	.465**	.476**	.462**	.432**
Q1.5.2	.422**	.401**	.422**	.624**	1	.744**	.663**	.570**	.580**	.543**	.352**	.380**	.373**	.376**	.429**	.366**	.363**	.348**
Q1.5.3	.473**	.454**	.441**	.630**	.744**	1	.671**	.585**	.604**	.539**	.359**	.385**	.405**	.404**	.434**	.409**	.383**	.358**
Q1.5.4	.452**	.438**	.398**	.555**	.663**	.671**	1	.713**	.643**	.568**	.359**	.358**	.372**	.379**	.460**	.420**	.414**	.398**
Q1.5.5	.483**	.470**	.417**	.530**	.570**	.585**	.713**	1	.685**	.575**	.407**	.419**	.398**	.419**	.499**	.447**	.423**	.410**
Q1.5.6	.480**	.468**	.409**	.569**	.580**	.604**	.643**	.685**	1	.651**	.407**	.424**	.450**	.411**	.494**	.458**	.477**	.446**
Q1.5.7	.398**	.401**	.411**	.604**	.543**	.539**	.568**	.575**	.651**	1	.412**	.408**	.411**	.378**	.471**	.457**	.454**	.433**
Q1.6.1	.378**	.364**	.349**	.420**	.352**	.359**	.359**	.407**	.407**	.412**	1	.662**	.572**	.500**	.521**	.572**	.500**	.466**
Q1.6.2	.389**	.395**	.367**	.436**	.380**	.385**	.358**	.419**	.424**	.408**	.662**	1	.680**	.610**	.560**	.611**	.521**	.502**
Q1.6.3	.361**	.408**	.339**	.418**	.373**	.405**	.372**	.398**	.450**	.411**	.572**	.680**	1	.695**	.559**	.579**	.552**	.500**
Q1.6.4	.370**	.397**	.338**	.377**	.376**	.404**	.379**	.419**	.411**	.378**	.500**	.610**	.695**	1	.526**	.542**	.459**	.438**
Q1.6.5	.394**	.407**	.350**	.465**	.429**	.434**	.460**	.499**	.494**	.471**	.521**	.560**	.559**	.526**	1	.660**	.618**	.555**
Q1.6.6	.387**	.420**	.358**	.476**	.366**	.409**	.420**	.447**	.458**	.457**	.572**	.611**	.579**	.542**	.660**	1	.675**	.582**
Q1.6.7	.369**	.391**	.348**	.462**	.363**	.383**	.414**	.423**	.477**	.454**	.500**	.521**	.552**	.459**	.618**	.675**	1	.755**
Q1.6.8	.375**	.368**	.349**	.432**	.348**	.358**	.398**	.410**	.446**	.433**	.466**	.502**	.500**	.438**	.555**	.582**	.755**	1

** Correlation is significant at the 0.01 level (2-tailed).

Table 5. Reliability Tests

Fit indicies	Recommended level	A Research Model
CFI	≧0.90(Bentler, 1990)	0.907
IFI	≧0.90(Bollen, 1989)	0.907
RMSEA	≦0.08(Browne and Cudeck, 1992)	0.061
AIC	Smaller values suggest a good fitting(Akaike, 1974)	6882.341

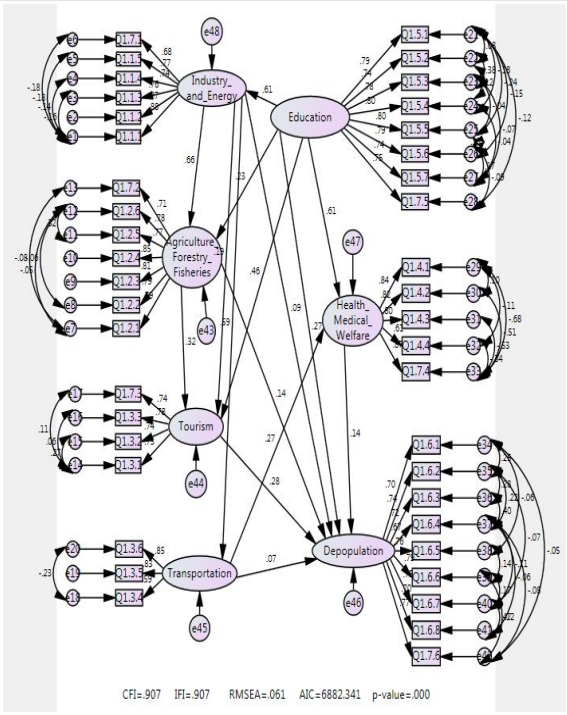


Fig. 2. A Research Model for Depopulation

B. Results of Hypotheses

The followings are results of hypotheses.

H1. There is a significant, positive relationship between local government policy on industry, energy and depopulation policy

H2. There is a significant, positive relationship between local government policy on Agriculture, Forestry, Fisheries and depopulation policy

H3. There is a significant, positive relationship between local government policy on Tourism and depopulation policy

H4. There is a significant, positive relationship between local government policy on Transportation and depopulation policy

H5. There is a significant, positive relationship between local government policy on Health, Medical, Welfare and depopulation policy

H6. There is a significant, positive relationship between local government policy on Education and depopulation policy

Although results of all hypotheses are statistically positive and significant, standardized path coefficients between depopulation and transportation or industry/ energy are less than 0.10, may indicate "small" effects. Relationships other than those with depopulation, standardized path coefficients between Industry /Energy and Education, Industry/Energy and Agriculture, Forestry, and Fisheries, Industry/Energy and Transportation are statistically positive and significant, and larger than 0.50, which indicate "large" effects between these factors.

Table 6. The Path Coefficients of the Research Model

construct			Std. weight	C.R. (t-value)
Depopulation	<---	Education	0.27***	7.707
Depopulation	<---	Health Medical Welfare	0.137***	5.663
Depopulation	<---	Agriculture Forestry Fisheries	0.14***	4.162
Depopulation	<---	Tourism	0.278***	6.35
Depopulation	<---	Transportation	0.067***	2.987
Depopulation	<---	Industry and Energy	0.093***	2.816
Industry and Energy	<---	Education	0.613***	26.023
Agriculture Forestry Fisheries	<---	Industry and Energy	0.657***	26.399
Transportation	<---	Industry and Energy	0.589***	19.541
Agriculture Forestry Fisheries	<---	Education	0.229***	10.83
Tourism	<---	Industry and Energy	0.189***	6.022
Tourism	<---	Agriculture Forestry Fisheries	0.323***	9.684
Health Medical Welfare	<---	Transportation	0.265***	12.656
Health Medical Welfare	<---	Education	0.612***	26.055
Tourism	<---	Education	0.461***	17.525
Q1.1.1	<---	Industry and Energy	0.885	
Q1.1.2	<---	Industry and Energy	0.869***	50.888
Q1.1.3	<---	Industry and Energy	0.758***	39.036
Q1.1.4	<---	Industry and Energy	0.744***	38.225
Q1.1.5	<---	Industry and Energy	0.77***	39.759
Q1.7.1	<---	Industry and Energy	0.681***	32.941
Q1.2.1	<---	Agriculture Forestry Fisheries	0.792	
Q1.2.2	<---	Agriculture Forestry Fisheries	0.787***	38.779
Q1.2.3	<---	Agriculture Forestry Fisheries	0.812***	40.401
Q1.2.4	<---	Agriculture Forestry Fisheries	0.852***	42.975
Q1.2.5	<---	Agriculture Forestry Fisheries	0.766***	37.44
Q1.2.6	<---	Agriculture Forestry Fisheries	0.784***	37.603
Q1.7.2	<---	Agriculture Forestry Fisheries	0.707***	32.629
Q1.3.1	<---	Tourism	0.725	
Q1.3.2	<---	Tourism	0.739***	34.78
Q1.3.3	<---	Tourism	0.785***	32.64
Q1.7.3	<---	Tourism	0.742***	31.717
Q1.3.4	<---	Transportation	0.589	
Q1.3.5	<---	Transportation	0.833***	22.675
Q1.3.6	<---	Transportation	0.85***	23.879
Q1.5.1	<---	Education	0.794	
Q1.5.2	<---	Education	0.744***	36.442
Q1.5.3	<---	Education	0.776***	36.592
Q1.5.4	<---	Education	0.803***	36.02
Q1.5.5	<---	Education	0.796***	34.755
Q1.5.6	<---	Education	0.791***	35.299
Q1.5.7	<---	Education	0.742***	34.394
Q1.7.5	<---	Education	0.749***	33.966
Q1.4.1	<---	Health Medical Welfare	0.84	
Q1.4.2	<---	Health Medical Welfare	0.818***	43.235
Q1.4.3	<---	Health Medical Welfare	0.799***	35.782
Q1.4.4	<---	Health Medical Welfare	0.606***	26.237
Q1.7.4	<---	Health Medical Welfare	0.874***	30.885
Q1.6.1	<---	Depopulation	0.705	
Q1.6.2	<---	Depopulation	0.737***	35.114
Q1.6.3	<---	Depopulation	0.721***	29.869
Q1.6.4	<---	Depopulation	0.668***	27.422
Q1.6.5	<---	Depopulation	0.759***	30.75
Q1.6.6	<---	Depopulation	0.785***	32.101
Q1.6.7	<---	Depopulation	0.752***	30.975
Q1.6.8	<---	Depopulation	0.698***	28.986
Q1.7.6	<---	Depopulation	0.766***	31.076

***Significant at the 0.01 level

CONCLUSION

In Japan, population of metropolitan areas, such as Tokyo, Osaka, Nagoya, are growing, while many rural regions are facing depopulation. Japanese government, as well as local governments, has tried to intervene by issuing possible policies which may be considered as effective ways to stop depopulation. Akita prefectural government also has conducted several key policies including depopulation. This study reveals the feelings of Akita citizens on local government's policies, especially relationships of those policies with that of depopulation. The results show all policies are statistically positively and significantly related to depopulation; where tourism, education, agriculture, forestry, fisheries, health, medical, welfare are more related to depopulation, while transportation and industry and energy are less extent. It implies that Akita people think those policies emphasis on tourism, education, agriculture, forestry, fisheries, health, medical, welfare may attract people to stay there. A previous study mentions that addressing depopulation with policy interventions is very challenging in peripheral locations with the structural demographic and economic trends encourage outmigration (McMillan, 2015). We will continue to look over Akita local government challenge on depopulation.

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