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# EVALUATING LINKAGE BETWEEN OPERATORS' SATISFACTION AND POTENTIAL OF LOCAL RESOURCES FOR RURAL TOURISM: EVIDENCE FROM MATSUURA IN JAPAN

**Yasuo Ohe, Shinichi Kurihara, Shinpei Shimoura<sup>1</sup>**

**Abstract:** As rural tourism evolves into diversification, the connection between the individual and local resource management is becoming an important issue for the sustainable evolution of rural tourism. To explore this point, we investigated conceptually and empirically whether rural tourism operators' individual satisfaction enhances utilization of local resources and, if so, what mechanism works for it by focusing on rural tourism accompanied by an educational program, i.e. a farm-stay with farm and rural experience services implemented as a part of school trips in Matsuura, Japan. From statistical tests and an econometric estimation based on a questionnaire survey of rural tourism operators we found that operators' individual satisfaction gained from interchange with visitors and direct feedback can positively enhance locally exerted effects that stimulate operators to recognize opportunities within their community and raise the potential for local resource use. Thus, we should strengthen this connection to eventually create a new viable activity.

**Key words:** rural tourism, operators' individual satisfaction, utilization of local resources, feedback effect from visitors.

## 1. Introduction

As activities of rural tourism have become diverse, the demand for rural tourism is becoming more and more experience oriented (Ohe, 2007). One of these trends in diversified rural tourism is typically observed in the combination of an educational program with rural tourism in Western European countries and Japan. These diversified activities with an educational function open a new possibility for farm activity in response to diversifying the social needs of agriculture and rural areas in this century (Shichinohe et al., 1990). The educational function of rural tourism gives mainly urbanites a chance to experience farm and rural life and the significance of its cultural heritage. Specifically, here we focus on rural tourism accompanied by an educational program as a farm-stay with farm and rural experience services implemented as a part of school trips.

To cope with these new trends, it is increasingly important for operators to have a wider perspective not only on their own individual management, but also on local resource management. It is often pointed out that operators gain satisfaction through providing services by receiving immediate feedback from consumers (Wilson, 2007) due to the nature of rural tourism, which is a service good that is directly interchanged between producers and consumers. This is the major difference from the provision of traditional farm products that are simply trucked to urban markets. This

nature of interchange between operators and visitors gives operators an opportunity to rediscover local resources and eventually to come up with an idea for a new activity (Ohe, 2007). Especially, we can expect that rural tourism that includes an educational program provides a more substantial interchange effect among the people involved.

To tackle the issue, we employed a methodological individualistic approach since we investigated whether operators' individual satisfaction enhances the utilization of local resources and, if so, what mechanism works for it. The preceding studies, as mentioned in detail in the literature review, can be classified into the ones that utilized a methodological individualistic approach and the others that utilized community-based or aggregated performance approaches. In contrast, our approach tries to bridge the gap between the two approaches.

First, we conduct conceptual considerations whereby operators' individual satisfaction with the educational program can enhance locally exerted effects that stimulate operators to recognize opportunities within their community and that raise the potential for local resource use. Second, we conduct empirical analyses on rural tourism with an educational function, i.e. farm-stay school trip programs implemented in Japan, with an econometric model to verify the relationship between individual satisfaction and effects on local resource utilization. Finally, we suggest policy implications on the evolution of diversification of rural tourism.

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## 2. Literature review

The initiative for studies on rural tourism have been undertaken strenuously by rural sociology and multidisciplinary social science, which are the neighbouring disciplines to economics (Evans and Ilbery, 1989, 1992a, 1992b; Butler et al., 1998; Sharpley, 1996; Sharpley and Sharpley, 1997; Robinson et al., 2000; Roberts and Hall, 2001; Hall and Mitchell, 2003). (Hall and Mitchell, 2000) focused on the relationship between tourism including rural tourism and community development. This multidisciplinary research clarified the significance and problems of rural tourism and substantially contributed to the enhancement of social recognition of rural tourism. In contrast, approaches from the perspectives of economics and management have been few, although studies from the economic approach and management viewpoint are gradually increasing (Page and Getz, 1997; Hall et al., 2005; Tchetchik et al., 2008; Ohe, 2006; Skuras et al., 2006; Vanslembrouck et al., 2005; Partalidou and Lakovidou, 2008).

In examining studies related to the topic of this paper, earlier studies on the diversification of rural tourism, which was classified as an alternative activity, are those of (Haines and Davies, 1987) and (Slee, 1989), and more recent studies are those by (Sharpley and Vass, 2005) and (Meert et al., 2005). Whereas all of these studies appraised the significance and problems of rural tourism, there has been no detailed analysis on the connection between the educational function of agriculture and rural tourism.

Multifunctionality in agriculture, in which the educational function is included, was studied not only from an international perspective (Brouwer, 2004; OECD, 2001, 2003, 2005), but also from a regional perspective (Van Hyulenbroeck et al., 2003; Ohe, 2007). Regarding multifunctionality in connection with rural tourism, (Vanslembrouck et al., 2005) considered the value of the landscape for rural tourism and (Ohe, 2007) dealt with rural tourism from the aspect of its recreational function. In connection with research on the educational function, the focus has been on city farms (Garett, 1986), but this function of agriculture was not fully addressed until the 1990s (Shichinohe et al., 1990). Currently, activity that aims at the educational function in farming has been supported as an official program in many industrial countries (Graham, 2004 for UK; Regione Emilia-Romagna, 2005 for Italy, Oshima, 1999 for France; Ohe, 2006 for Japan). The relationship between rural tourism and its educational function has not yet been examined except for a case study (Ohe, 2008).

With respect to operators' individual attitudes on rural tourism activity, the motivation of rural tourism operators has been studied (Nickerson et al., 2001; McGehee and Kim, 2004; Ollenburg and Buckley, 2007). (Skuras et al., 2005) conducted a comparative study on the effects generated from the difference in human capital among European countries. (Telfer, 2000) interviewed farmers in rural Indonesia on the adoption of agritourism and indicated tourism can act as a generator of community development. (Maestro et al., 2007)

studied consumer's attitude toward rural tourism on perceived quality and the moderating role of familiarity. There has been, however, no study on how the individual satisfaction of operators is connected with the utilization of local resources.

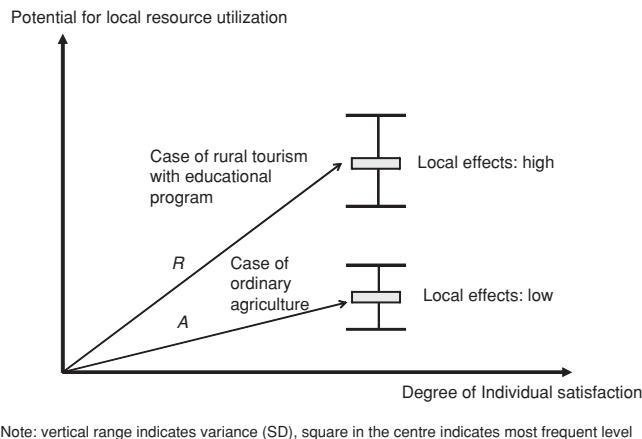
In the field of studies on the utilization of local resources, the cultural aspects of local resources have attracted attention (Barbiè, 1998; Hammer, 2008). As a software aspect of local resources, Yokoyama and Sakurai (2006) focused on the relationship between social capital and community development in Asian countries, including the case of rural tourism in Japan. (Garrod et al., 2006) conceptually presented an idea of countryside capital to consider the connection between rural resource use and rural tourism.

Local effects brought about by rural tourism have been approached from various aspects: socio-economic effects (Maude and van Rest, 1985), impact assessment by local residents (Rátz, 2008; Petzelka et al., 2005), and economic effects (Slee et al, 1997). These studies clarified the social and economic effects of rural tourism on the local community and their significance and thus contributed to progress in impact evaluation on rural tourism. Nevertheless, these studies on local economic effects tended to implicitly assume that study areas were already sufficiently developed to grasp clearly visible economic effects. These cases represent, however, a few of the best areas where full-sale economic effects have emerged. Ordinary rural areas have not reached the stage whereby economic effects are readily visible, but are at the preliminary stage before the emergence of visible economic effects. Likewise, in the case of these new services such as the farm and rural experience services studied here, neither a viable market has been established nor are local economic effects apparent. It is, therefore, natural to assume that the degree of local resource utilization is enhanced not directly, but gradually until the next stage of full-scale local economic effects have emerged. In summary, how individual effects or operators' individual satisfaction connect with the effects on local resource utilization at the preliminary stage of the emergence of economic effects has not been investigated empirically. To evaluate this connection, the results of these preceding studies suggest that it is necessary to consider operators' perception in terms of economic and non-economic aspects, features of rural tourism with an educational program, and stages of local resource utilization in the of local community.

### 3. Analytical framework – Effect of the potential for local resource utilization: gradual enhancement hypothesis

It is considered that in the case of rural tourism that includes experience services, the feedback that operators receive from consumers will be greater than that for traditional farm products. This feedback, which is characterized as a non-economic benefit, can complement economic benefits. Given this point, a working hypothesis is

presented here. We assume that the enhancement of the potential for local resource utilization is a necessary step as a preparatory stage for full-scale realization of local economic effects. *Figure 1* symbolically illustrates that there is a difference between the case of conventional agriculture and the case of rural tourism in terms of the degree of the elevating effect of the potential for local resource utilization.



**Figure 1.** Relationship between individual satisfaction and potential for local resource utilization

Generally, the case of rural tourism with an educational program will enhance the potential for local resource utilization to a greater degree than the case of farming. This is because operators' encounters and exchange with visitors from outside the area enable operators themselves to become newly aware of local resources that they did not recognize prior to the extension of a human network outside of the local community. This recognition subsequently leads to the enhancement of the potential for local resource utilization by arrow *R*. This effect on local resources can be higher than the ordinary rural tourism.

Conversely, in the case of ordinary farm activity without rural tourism this effect will remain at a low level even if it exists (arrow *A*). The difference between the two activities depends on the existence of interchange and feedback. Through rural tourism with educational services local people can obtain new and objective perspectives brought by people from outside the community and find previously unnoticed valuable resources and eventually a way to utilize them. We call this a feedback effect on raising the potential of local resource utilization through interchange with people inside and outside of the local community. This effect is caused by participatory activity that creates an opportunity to receive direct feedback from consumers. Because of this feedback, farmers' satisfaction will be higher than that from ordinary farm activity.

Feedback will easily occur with provision of all service goods mainly due to the trait of service goods in that both production and consumption happen simultaneously (Hicks, 1971; Hill, 1999). Why, however, does this feedback extend to work as an enhancer of the potential for local resource initialization? There are several reasons that can be uniquely

found in rural tourism. First, rural tourism is tourism that originally utilizes local resources. Second, the farm-stay program just started a few years ago in the area examined in this paper, which means that there is still much room for utilization of local resources. Third, there are externalities generated along with rural tourism activity such as the educational function of the rural heritage and local food culture. The fact of exerting externalities means that provided services are not fully compensated and it often happens that experience services are offered free of charge. This behavior comes from the traditional rural mentality that gives gratis hospitality to visitors. In other words, this informality or incompleteness of rural tourism with experience services as an economic good becomes one of the factors that impresses visitors and eventually leads to a new possibility of local resource utilization.

## 4. Outline of study area

### 4.1. Overview of demand aspects and study area

The school trip in Japan has been customarily conducted as a part of the school curriculum. Among schools, 92.5% of elementary schools have such trips of a couple of days of duration, 96.7% of junior high schools have three- or four-day stays and 96.2% of senior high schools have four- to five-day trips. These days, school trips are becoming more and more experience-oriented. Especially, junior high schools adopt this type of trip (62.1%), with 7.9% involving experiences related to agriculture, fishery and forestry. In this context, this trend is considered as a new business opportunity, which intensifies the competition for attracting school trips among local municipalities concerned. In Matsuura, the farm-stay school trip was launched in 2003, and Matsuura is one of the leading areas in terms of hosting trips of this category in this country.

The study area, Matsuura, is located in the Kita Matsuura Peninsula in Nagasaki on the island of Kyusyu in western Japan. Initially, deregulation in accommodation facilities by the prefecture stimulated the start of farm-stay programs for school children in this area. In Matsuura, the farm-stay school trip was launched in 2003, and Matsuura is one of the leading areas in terms of hosting trips of this category in this country. There are 13 hamlet-based bodies that are capable of accommodation and these bodies are organized into one local association that is accountable for coordination, external marketing, and development of new experience services and provision of a training program for operators.

This association is supported by municipal and prefectural governments with regard to funding and staffing. The total capacity of accommodation in this area is 2 000 people a night. Although 500 farm and fishing farm households are registered, there are actually only 4 proactive bodies among the 13 bodies. In 2006, 10 101 students and teachers from 58 schools, mainly from the Tokyo Metropolitan area and the Kansai area, the second densely

populated, stayed in Matsuura. Among the 58 schools, junior high schools accounted for 77% of such trips and high schools 19%, meaning that junior high schools are the primary customers. With regard to the duration of the farm-stay among 63 schools that conducted farm-stays and excluding schools that only used hotel and inns, one-night stays accounted for 75%, two nights for 14% and day trips for 9%. These short stays are partly due to a gentlemen's agreement with local hotels and inns to share the benefit of local lodging demand by school trips. In the case of a two-night stay, the stay is supposed to be divided into one night for a farm-stay and another night for lodging at a hotel or inn. There are seasonal concentrations of farm-stay demand, led by May and June (62%) and followed by October (14%). The average farm size in the study area is 1.2 ha, which is identical to the national average (Agriculture and Forestry Census in 2005). Unified lodging fee/night/head is 6 300 yen including a 5% consumption tax (equivalent 48.7 euro rated at 1 Euro=130 yen) and dinner and breakfast. The experience fees are set ranging from 2 000 to 3 000 yen/head. Since 20% of each fee is deducted for operation of the association, including damage insurance fees, implementation of services for operators, and marketing activities, the remaining 80% goes to the operators. Roughly, 80 million-85 million yen are yielded as a direct local economic effect and operators receive about 300 thousand to 350 thousand yen from around 50 visitors on average. In this regard, this activity has not become a principal income source yet, but has remained at an amount that can be considered a sort of side income. Most operators are self-sufficient with regard to most of the foodstuffs such as vegetables and rice served to visitors and operators often barter among themselves for foodstuffs. Thus it is safe to say that the local economic effect is still very limited at this stage.

## 5. Survey method and data

Before completing the questionnaire survey for the collection of data, we conducted a preliminary interview survey of the people concerned, i.e. leaders of the hamlet group, officers of the municipality, and officers of the local association, in Matsuura in August 2007. Based on this information, we made the final questionnaire-survey after consultation with the funding bodies for this research, i.e. the Ministry of Agriculture, Forestry and Fisheries (MAFFJ), and the contracted national organization as the coordinator, i.e. the Organization for Urban-Rural Interchange Revitalization (OURIR). We asked 23 questions, soliciting information on profiles of respondents, such as age, sex, years of experience as a provider of the services, kinds of services offered, how providers felt about providing the service and whether they gained satisfaction from what they offer. The survey forms were distributed through the association for rural-experience tourism in Matsuura to 100 farm or fishing operators who provided farm-stay accommodations and rural experience services in the four

most active hamlets of this study area. The association selected proactive farm operators and asked those actually conducting tourism activities to complete the surveys through the leader of the hamlet group, who then returned them to OURIR by mail. There were 65 respondents.

## 6. Profiles of respondents

More than half of the respondents were female. Among the various age groups, those in their 50s accounted for more than 40% and represented the largest group while those in their 60s were the second largest group, comprising one third of the respondents. The youngest respondent was 43 years old and the eldest was 80. The average age was 59 years, indicating that middle-aged and senior wives were the main bearers of responsibility for farm-stay rural experience activities. Local food experience, farming experience and fishing experience were the three major services with respect to the menu of rural experiences in this area. Nearly half of the respondents offered only one service and 40% offered two services, so the provision of more than three services was not common. Among those who offered two services, the combination of farming and local food services tended to be offered by farmers. Half of the respondents accommodated fewer than 50 visitors a year, and 40% accommodated 50-100 visitors; only a few respondents hosted over 100 visitors annually.

## 7. Operators' satisfaction and index of potential for utilization of local resource

Table 1 show from results of the questionnaire survey, first, as an actual indicator of an operator's individual satisfaction, over 90% of respondents felt a sense of reward for provision of experience services. This shows that the activity is highly valued by the operators. Second, on the subject of local effects, over half of the respondents answered that they were embracing "a sense of local pride", which was the most common answer (Figure 2). This rising self-confidence among local people enabled them to abandon their groundless mental barrier or inferiority complex toward urbanites and to attitude.

Table 1. Private effect on operators: Do you feel sense of reward?

Evaluation	Yes	Somewhat yes	Neither nor	Somewhat No	No	No answer	Total
(%)	83.1	10.8	1.5	1.5	0.0	3.1	100.0
Frequency	54	7	1	1	0	2	65

Source: Questionnaire survey conducted by authors in Matsuura in 2007.

Therefore, this positive feeling can be a precondition to build an equal urban-rural assume a forward-looking relationship in the future. In sequence, the rediscovery of unrecognized local resources, the activation of communication among locals and the building of a network with

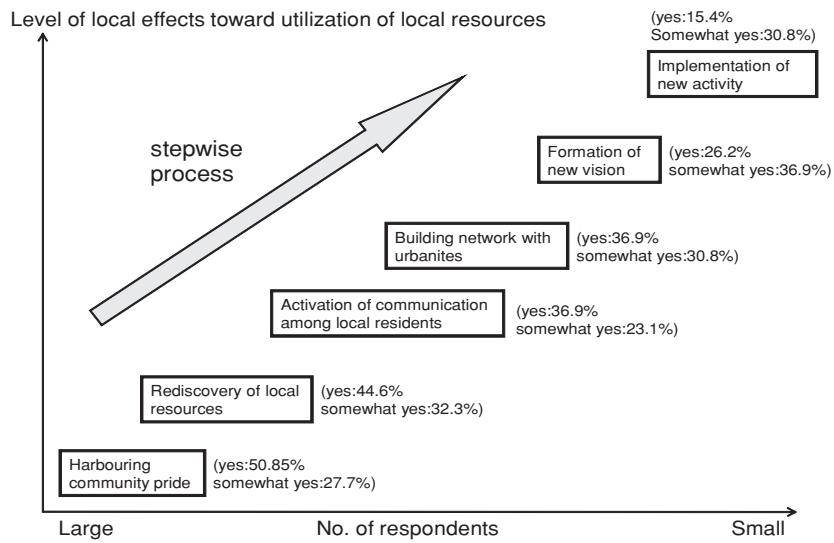


Figure 2. Stages of local effects from the operators' response

Table 2. Partial correlation coefficients among local effects

Items	Sense of local pride	Rediscovery of local resources	Activation of communication among local residents	Building network with urbanites	Coming up with an idea for new activity	Putting into practice new activity
Sense of local pride	1					
Rediscovery of local resources	0.5773***	1				
Activation of communication among local	0.5682***	0.5917***	1			
Building network with urbanites	0.4735***	0.5404***	0.6699***	1		
Coming up with an idea for new activity	0.3663***	0.5439***	0.5765***	0.5518***	1	
Putting into practice new activity	0.2995**	0.5084***	0.5152***	0.3447**	0.7294***	1

Note: \*\*\*, \*\*, \* show 1%, 5% and 10% significance, respectively.

Source: Same as Table 1.

urbanites followed in this order. Stated differently, we can say that a widening perspective of operators in terms of not only inward looking, but also outward looking is occurring. Further, fewer respondents indicated effects related toward the actualization of a new activity, such as coming up with an idea for a new activity and putting into practice a new activity. To sum up, it should be noted that rather than directly formulating a new idea and initiating an activity, these local effects took a stepwise form from low to higher stages in the order of rising self-awareness and self-confidence, rediscovery of local resources, building of open human network, coming up with a new idea, and eventually putting into practice a new activity.

We estimated partial correlation coefficients among these six actual local effects for further examination (Table 2). We found statistically significant positive correlations among these effects. An interesting result is that the higher local effects have smaller positive coefficients with the lower local effects or higher positive coefficients among the neighbouring effects. These facts suggest that the order among these six effects from the lower to higher effects is not inconsistent. If every local effect gets the highest score, which is five, the sum of these six effects will be the

maximum value of 30 per contra. If the lowest score is obtained for each local effect, the sum will be a minimum value of six.

We summed up the score of a five-point Likert scale for the six effects, and the average value was 24.6, with a maximum value of 30 and a minimum value of 17. Consequently, it is safe to say that the higher the sum, the higher the potential for local resource utilization and that we are able to use the sum of these six effects as a comprehensive indicator of the potentiality of local resource utilization. We conducted the normality test of distribution (Shapiro-Wilk's W test) and found that the null hypothesis of normality was not rejected. The advantage of this score is that it is easily calculable and quantitatively manageable for the evaluation of the local effects, so we term this score the "index of potential for local resource utilization".

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To sum up, it was revealed that operators felt satisfaction in terms of non-economic effects rather than economic effects and that not only individual effects but also local effects were expressed. It was also revealed that local effects evolved in order starting from harboring community pride, rediscovery of local resources, widening the scope of their network, and eventually to the formation of a new vision and the implementation of a new activity. In this respect, evolving and widening perspectives through the enhancement of the sense of community pride will be an important first step leading to the stage of subsequent full-scale local economic effects.

These local effects have not been considered in the case of ordinary farm production and were not generated fully

**Table 3.** Individual and local effects vs operators' profiles

Items	Female	Over age 60s	Sense of reward	Over 50 visitors	Satisfaction on service fee	Farming exp.	Fishing exp.	Food exp.	Food & Farming exp.	Test method
Sense of reward	H*		—	H**	H*			H**		X <sup>2</sup>
Reason for provision of experience services										
Teaching rural culture			H**	H+			L+	L+		X <sup>2</sup>
Revival of antiquated techniques			H***		H+				H+	X <sup>2</sup>
Fun in teaching			H***							X <sup>2</sup>
Fun in interchange with visitors			H***							X <sup>2</sup>
Rediscovery of local resources	H***		H***		H+					X <sup>2</sup>
Expectation of increase in income	H**				H+					X <sup>2</sup>
Chance for sale of farm/fishing products	H**									X <sup>2</sup>
Individual effects after starting activity										
Being in better shape	H*				H***	H*			H***	X <sup>2</sup>
More enjoyable life	H**	H+	H***		H**			H**		X <sup>2</sup>
Increase in variety of vegetables produced	H*				H*	H*	L+		H**	X <sup>2</sup>
Increase in family conversation	H+	H+	H**		H*		L*			X <sup>2</sup>
Decrease in abandoned farmland					H+					X <sup>2</sup>
Rising motivation for farm activity	H*				H*			H+		X <sup>2</sup>
Increase in income	H+		H+	H**	H*					X <sup>2</sup>
Local effects after starting activity										
Sense of local pride			H***	H***	H***	H**	L**		H**	X <sup>2</sup>
Rediscovery of local resources					H**	H*	L**			X <sup>2</sup>
Activation of communication among local residents	H*		H***		H***		L+	H+	H+	X <sup>2</sup>
Building network with urbanites	H**	H+	H***	H*	H+	H+	L**	H*	H***	X <sup>2</sup>
Coming up with an idea for new activity				H+		H**	H***			X <sup>2</sup>
Putting into practice a new activity					H+	H**	H**		H***	X <sup>2</sup>
Index of potential for local resource utilization	H* e		H*** e		H*** e	H+ e	L* e		H*** e	t

Note: X<sup>2</sup> = Chi-square test, t=t test. \*\*\*, \*\*, \*, + indicate 1%, 5%, 10%, 20% (reference) significance. L=lower ratio than the total ratio while H=higher ratio than the total ratio of that category and e=equal variance, u=un-equal variance.

Source: Same as Table 1.

until experience-oriented rural tourism activity started. These effects work on basic conditions that are present to prepare for the next stage of full-scale economic effects. Thus, we can say that the index of potential for local resource utilization will be an effective indicator of local effects in the preliminary stage. We examine how this index connects with the individual satisfaction of operators below.

## 8. Statistical tests on individual satisfaction and local resource potential

*Table 3* summarizes the results of statistical tests on the relationship between individual and local effects. We touch upon only those relationships with statistical significance. First, those who felt a sense of reward were those who were female operators, hosted over 50 visitors, were satisfied with the fee level and provided food experience services. Second, with respect to the reason for the provision of experience services, female operators indicated the rediscovery of locality and the expectation of new income. Those who felt a sense of reward cited as reasons for provision of services the opportunity to teach rural culture and to teach old farm techniques, to have fun teaching and engaging in interchange with others and the rediscovery of the locality, but we found no statistical connection with income expectation. In short, operators can learn themselves through teaching rural culture and antiquated farm techniques to students from outside of the local community, and interchanges through service activities generate individual satisfaction among operators.

Third, looking at the individual effects, we can easily notice that there were many statistically significant items. For instance, female operators cited joy in their daily lives. Also,

those who were satisfied with the fee level found joy in daily life. Regarding the type of experience, it is interesting to know that those who conducted food experience services expressed high individual effects while those who offered fishing services only expressed lower individual effects. This difference between farming and fishing communities is considered to come from the cultural difference between the two communities (for Japanese rural community, see Fukutake, 1980).

Likewise, fourth, in the case of local effects, there were many statistically significant items as well. Female operators responded highly on the formation of both an inward and outward human network such as active communication within the community and the extension of their network to include urbanites. Those over the age of 60 pointed out a sense of pride in his/her place, which indicates that the elderly tend to feel the local effect at the initial stage. On the other hand, those who felt a sense of reward and satisfaction with the fee level expressed higher

local effects, which indicate that the higher the individual effects operators have, the higher are the local effects. Regarding the type of experience services, we can observe an interesting contrast; those providing the combined experience services of food and farming had higher local effects while those who provided simple food services or fishing services did not. To summarize, local effects have a positive correlation with individual effects. They are higher among female providers and providers of the combined experience services of food and farming while lower among the fishing services providers. Among elderly providers, the local effects remain at the initial stage despite their higher individual effects.

## 9. Regression analysis of factors determine the potential for local resource utilization

Given the statistical analysis above, the following structural model is presented to empirically clarify how individual satisfaction actually results in enhancement of local resource potential (*Figure 3*).

We assume that the process that connects individual effects and local effects has two sub-processes: one connected with individual effects (individual process) and the other connected with local effects (local process). The former individual process stipulates that the economic reasons that those operators provide experience services and the non-economic reasons and operator's attributes determine operators' individual satisfaction. The latter local process stipulates that individual satisfaction and types of experience services (community attributes) determine the degree of the potential for local resource utilization. Given this working hypothesis, we can expect positive sign

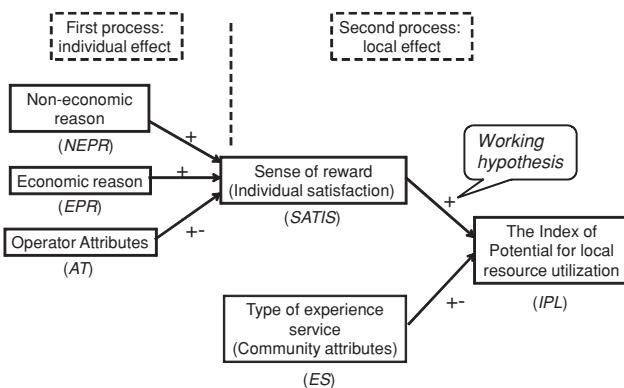


Figure 3. Relationship between the individual satisfaction and the local effects

conditions for these three working factors to raise the potential for local resource utilization. The signs of operator and community attributes will be determined empirically.

Given the two-stage structure of raising the potential for local resource utilization above, we can describe a determinant function of the potential for local resource utilization below.

$$SATIS = g(NEPR, EPR, AT) \quad (1)$$

$$IPL = f(SATIS, ES) \quad (2)$$

Where,

*SATIS* = psychological satisfaction (individual satisfaction)

*NEPR* = non-economic reasons

*EPR* = economic reasons

*AT* = attributes

*IPL* = index of potential for local resource utilization

*ES* = provided experience services (attributes of village)

We use the index mentioned earlier as an actual variable for the potential for local resource utilization (*IPL*). Other variables in equation (1) are as follows based on the preliminary findings: a variable for an economic reason (*EPR*), expectation of income gain (five-point Likert scale), and a variable for a non-economic reason (*NEPR*), the enjoyment of teaching rural culture (five-point Likert scale). We used a common indicator, the operator's age for the attribute (*AT*).

Although in the preliminary estimation we tested the operator's years of experience in providing this service and the number of visitors hosted by an operator for the variable for an operator attribute, neither case showed a good result. With respect to the variables in equation (2), we used the estimate of individual satisfaction (*SATIS*) from equation (1) and the types of experience services (*ES*) as follows: food and farming experiences=1, other experiences=0.

As the variable for individual satisfaction, we used sense of reward (yes=1, no=0). At the preliminary trial estimation, although we used each of the individual effects for the *SATIS* variable, there was no other variable that generated a far better result than that of a sense of reward. The types of experience services provided were also able to distinguish between fishing and farming villages. This is a clear indicator that tells the difference between the two communities because food and agriculture experiences are only offered by operators in farming villages. In this respect it can be implicitly assumed that the social capital is reflected in these village characteristics. In taking into account of endogeneity of the operators' individual satisfaction, this model was a simultaneous estimation model. Actually we estimated a logic model for equation (1) and then with the estimate of the individual satisfaction gained from equation (1) we estimated equation (2) (two stage least square method: TSLS). The sample size was 44. This is because we needed to use all data on local effects to obtain the unbiased potential estimate for local resource utilization, so we excluded samples with missing observations on local effects.

## 10. Results

The results are tabulated in Table 4. Adjusted *R* square was not high, probably because all of the variables were qualitative variables and there is no other similar study for comparison. Nevertheless, every parameter was statistically significant (up to 10% significance) and the sign conditions were satisfied, so we can interpret them and accept these results.

Table 4. Estimation results of determinant function of the potential for local resource utilization

Equation	#1	#2
Effects	Individual effects	Social effects
Variables	Individual satisfaction	Potential for local resource utilization
Economic reason (expectation of income, 5-point scale)	1.4666* (1.77)	-
Non-economic reason (fun in teaching, 5-point scale)	2.1113** (2.01)	-
Operator's age	0.2190** (2.12)	-
Individual satisfaction (estimate)	-	5.7564** (2.41)
Type of experience service (food & farming experience, yes=1, no=0)	-	4.0981*** (3.31)
Constant	-22.8075 (-2.32)	18.3472*** (8.55)
Estimation method	Logit model	TSLS
LR chi-square	15.51***	-
Ajst <i>R</i> <sup>2</sup>	-	0.2539
RMSE	-	3.4455
Sample size	44	44
vif	-	1.0
Heteroscedasticity (Breush-Pagan Test)	-	n.s.

Notes: \*\*\*, \*\*, \* indicate 1%, 5%, 10% significance and not significance, respectively. Figures in the parenthesis are Z values for #1 and t static for #2.

Source: Same as Table 1.

We found neither serious multicollinearity from the value of vif nor heteroscedasticity (Breusch-Pagan test). Now let us examine results in detail. In equation (1) although both economic and non-economic reasons positively worked on individual satisfaction, the non-economic reason worked stronger than the economic. The parameter of the operator's age was positive, which means that the elderly operators gain higher satisfaction than younger operators. In equation (2) the parameter of estimated individual satisfaction was positive, which means that our hypothesis that operator's individual satisfaction works on the local resource potential was supported. Parameter of food and farming experience services was positive, which indicates that the combination of food and farming experience services enhanced the potential of local resource utilization and the local resource potential in farming villages was higher than that in fishing villages partly because of the different mentality in people between the two types of villages.

To summarize, the results demonstrate that what matters most to raise the local resource potential is that operators enjoy themselves performing the service. Although this point is often stated by rural tourism operators, it has not been confirmed empirically and quantitatively. The results clarified the working factors for this mechanism. In this respect, food and agriculture experience programs should be extended and improved in quality as well.

## 11. Conclusions

This paper investigated conceptually and empirically how operator's individual satisfaction enhances the local resource potential based on a questionnaire survey of operators of farm-stay programs for students on school trips in Matsuura, Japan. Although further research is needed to more widely generalize the results, the following main points were disclosed.

(1) Farming experience services are characterized as newly emerging services that utilize local traditional food culture and farming techniques that are often forgotten in modern life. The one unique feature is that close interchange and direct feedback can happen between operators and visitors and that this interchange generates not only individual effects, but also local effects.

(2) We defined an 'index of potential for local resource utilization', which is calibrated from survey data. This index expressed local effects from initial psychological confidence of the operators themselves, rediscovery of local resources through the extension of human networking, and higher stages of a new idea and its realization in terms of rising potentials for local resource utilization.

(3) From an econometric estimation, we confirmed that individual satisfaction works as an enhancer of local resource potential. Among individual effects, the non-economic effect rather than the economic effect is more closely connected with higher local effects. This means that non-economic based satisfaction is effective for evoking local resource potentials in stages.

(4) As policy implications, we should recognize the positive connection between individual satisfaction and local resource potential and therefore strengthen this connection to realize a new viable activity eventually. In this respect, the coordinator's role as a go-between will be increasingly important to successfully connect between operators and consumers as briefly mentioned in this paper. This topic should be examined in further research.

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