

Rural Telematics and the Possibilities for Regional Development: The Case of Information Model Village in Weonju, Korea*

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Abstract : This study aims to reveal the capacity of impacts that the diffusion of networked computer in rural areas, or so-called rural telematics, has on regional development schemes. It is accomplished mainly by a case study of a small rural village near the city of Weonju, Korea, which has been recently designated as an information model village by the provincial government and given supports for information infrastructure. The case study shows that although the residents' computer use is confined to a very elementary level in every respect of using internet, e-mails, and visiting village portal site, there is high potential that extended use of networked computer would bring positive changes in life-styles and community formulation, and hence new possibilities of regional development. These positive moves will be possible by increasing economic, social and cultural benefits that the residents receive from using computer facilities. One of the important prerequisites is to transform external motivation to internal one and to lead the residents to a more active use of computers.

Key Words : rural telematics, regional development, internet, information model village, external motivation

요약 : 이 연구는 농촌지역에 있어 컴퓨터의 보급, 또는 보다 광범위하게 정보화의 확산이 지역발전에 미치는 영향을 밝히는 데에 목적이 있다. 이를 위하여 강원도 원주시의 정보화시범마을로 지정된 황둔 송계마을을 사례 지역으로 하여 컴퓨터의 보급 활용의 특성으로부터 지역발전의 시사점을 도출하였다. 마을주민들의 컴퓨터사용은 인터넷, 이메일, 마을홈페이지 활용 등의 측면에서 초보적인 수준이지만, 라이프스타일과 마을공동체의 형성에 있어 긍정적인 변화를 가져올 잠재력이 높고 따라서 지역발전의 도구로 사용될 수 있음이 발견된다. 이러한 긍정적인 변화는 주민들이 컴퓨터사용으로부터 얻는 경제적, 사회적, 문화적 혜택을 증대시킴으로써 가능하다고 보인다. 무엇보다도 필요한 것은 컴퓨터의 보급은 외적 동기에 의하여 이루어졌지만 이를 내적 동기로 전환시키고 보다 활발하게 컴퓨터를 사용할 수 있도록 유도하는 일이다.

주요어 : 농촌지역 정보화, 지역발전, 인터넷, 정보화시범마을, 외적 동기

1. Introduction

The use of networked computer including internet and e-mails has changed our lives a lot. We easily find diverse information all around the world by navigating the world of internet and communicate real time

with our friends in the opposite side of the earth.

A survey on social indicators in Korea shows that forty-six percent of total households have computers, most of them with more than pentium level and sixty-eight percent are equipped with communication devices, either modem or exclusive line (NSOa

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2001). Another statistics indicate that total amount of e-commerce in Korea reaches fifty-seven trillion won, equivalent to forty-four billion US dollars, occupying 4.5 percent of total transactions (NSOB 2001).

This wide trend of change will have vast impact on everyday lifestyle and on human spatial behavior. Changes in spatial behavior would have meaningful implications for regional development measures. This study has concerns on what impacts that the diffusion of networked computer in rural areas, or so-called rural telematics, would have on regional development schemes, or more practically, how rural telematics could be used as a tool of regional development.

It seems likely that most of theoretical or empirical concerns on impacts of information technology (IT) are concentrated on urban areas where computers are actively used (Graham and Marvin, 1996). Impacts on rural areas are discussed in the aspects of tele-medicine and distance learning which is dominated by the public sector (Choo and Kim, 1998).

It might be meaningless to confine the discussion to the rural area in today's society where distance decay effects are decreasing and division of urban and rural areas are getting ambiguous. However, it is possible that the effects of using internet and e-mail which goes beyond time and space limits could appear much more strong in rural areas which have received relatively less benefits of IT. Without the imperative of physical proximity, the predictions are for demographic and industrial location dispersal into lower cost, i.e. rural, locations and this might bring 'rebirth of the local' (Ray and Talbot, 1999, 149-150).

In order to identify the impacts of rural telematics on regional development, this study sticks to a case study of a small rural village in Korea. This village has been recently designated as an information model village and given information infrastructure by the local government. A survey has been conducted to the residents of the village.

2. Rural Telematics As a Tool of Regional Development?

The revolutionary development of information technology (IT) came to futurists as a good news for regionally balanced development, due to its diverse possibility of application and abundant potential (Bell, 1973; Toffler, 1980; Dizard, 1982). The revolution of IT is expected to create new employment, remove barriers of distance with information network, and thus alleviate regional disparity.

Contrary to this optimistic forecast, however, many theoretical and empirical researches have provided a view that IT would deepen regional disparity. The process of IT development and its acceptance has witnessed that large cities or central districts within large cities have emerged as the most benefited area in the information economy (Castells, 1989). Another research points out that cities would compete with each other in order to obtain new opportunities of investment in information infrastructure and of employment creation, and this would threaten the status of peripheral areas (Goddard and Gillespie, 1986).

Regarding the role of information technology on regional development, there are a gamut of expectations ranging from optimistic to pessimistic views. Kellerman (1993, 117-8) summarizes the arguments on this topic with four viewpoints. First, IT accelerates regional development. Second, IT is one of the necessary conditions for development, but not a sufficient one. Third, IT allows just a new opportunity for development. Last, IT is one of the production factors and acts as a catalytic agent. Although there are discrepancies of perception, a common denominator drawn from these arguments is that IT has become one of the fundamental conditions of regional development as other infrastructure.

This perception has encouraged governments of many countries adopt strategies that provide information infrastructure to utilize IT as one of the crucial tools of regional development (OECD/BRIE,

1989; Hepworth, 1992). The Korean government is not an exception and carries out diverse projects by many ministries involved, mainly with public sector domination.

Regarding the possibilities that IT can contribute to regional development of rural areas, two spheres of discussion are to be found. One is focused on economic benefits: rural telematics can help rural areas overcome disadvantages of accessibility and motivate industrial location. In a post-Fordist economy, a new scale of international and interregional division of labor could benefit rural or remote areas in a country (Ray and Talbot, 1999). A new work culture can emerge in which the households and the individual find themselves as key units of production (Casey, 1995)

The other is more oriented toward social or quality of life aspects. The diffusion of networked computer enables rural residents to be exposed to as much information as in urban areas, both in quantity and quality aspects. They are benefitted from using internet and e-mails, and can search for more advanced quality of life.

Ray and Talbot (1999, 154-5) denotes positive effects of telematics on rural society as 'valorization of place' and points out some possibilities. A rural community benefits through the possibilities of teleworking from home and improves the social and economic vibrancy of localities. This in turn removes some of the push or pull factors that result in migration out of the locality. Individuals, groups and territories of the rural society will be able to re-create and communicate their cultural identity to the outside through the medium of telematics. Moreover, telematics offers itself as a way of creating local communication webs of individuals, enterprises, associations and official bodies, and even creates a new 'virtual community' via internet.

There exist both optimistic and pessimistic views regarding the influences of internet on local community. The optimistic views posit that the cyber space could play a role as a new space of human exchange

and communication which goes beyond the social, economic and hierarchical barriers. On the other hand, the pessimistic view argues that even the opportunities of access to cyber space vary between individuals or groups, and that the individual nature of computer would destroy ever-existing mechanism of communities.

The shortage of empirical studies prevents us from determining which view is appropriate for today's society. There is a report that within a group of similar accessibility to cyber space, internet has contributed to increasing communication between the group members and enhancing regional solidarity. Hwang (2000) shows from a case study of residents of an apartment with local value-added network that increased communication through the apartment portal site has actively influenced on the formation of community structure.

These two spheres are not exclusive to each other. Social effects of telematics could be accelerated by economic motivation. In order to connect telematics to regional development effectively, alternatives of maximizing both of these effects should be considered.

3. A Case Study of an Information Model Village

1) Information Model Village Project and the Case Area

Since the middle of the 1990s, several attempts have been made by individual ministries of Korea to utilize information technology as a tool of regional development. The Information Model Village Project (IMVP) was initiated by individual local governments which intended to supply computers to rural residents who have very few opportunities to be exposed to computer use. It was expected that diffusion of computer would bring positive regional development effects. By providing information infrastructure to IT laggard areas, they wanted to

have remote villages in rural areas get easily access to diverse information.

Pioneers in this project include Hwangdun-Songgye Village in Weonju City, Ibanseong Village in Jinju City, and some others. These villages were commonly designated as information model villages by the provincial governments in the context of their information projects. Therefore, the members of these villages were endowed with a common goal of 'becoming information village' by external motivation and continuously followed a given scheme. The projects were commonly financed by the information promotion fund of the central government, local fund and private sector assistance. Major programs include provision of computer and exclusive network and construction of village portal site and information center.

The central government, however, perceiving that it is necessary to create synergy effects and inter-ministerial coordination, has begun to take lead of the project. This move has been accelerated by

recently enacting the 'Act for Alleviating Information Divide'¹⁾.

Ministry of Government Administration and Home Affairs of the central government announced 'A Plan for Information Model Village Project' in March 2001, which includes pre-existing projects carried out by local governments and designates additional twenty model villages all over the country. The plan establishes the roles of each participants: the central government manages and coordinates the entire project by running 'the Committee for Informatization of Local Autonomy', while basic local governments compose village information committee and take charge of educating on computer use, and larger local governments encourage the private sector to participate in the project. But it is very doubtful that these roles could be appropriately played by each party as intended by this plan.

Hwangdun-Songgye Information Model Village, the case of this study, is located in Weonju City, Gangweon Province, a mountainous remote area in

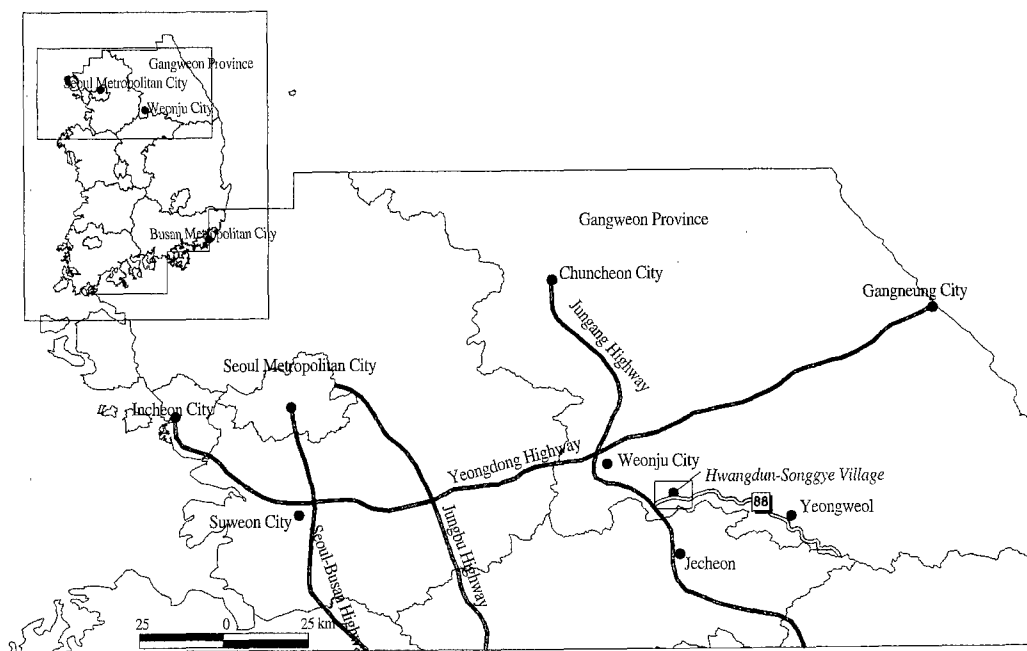


Figure 1. Location of Hwangdun-Songgye Information Model Village

Korea. The village lies thirty-four kilometers southeast of downtown Weonju and on the way connecting to southeastern part of Gangweon Province. This area is now under better accessibility by the opening of Jungang Highway (Figure 1).

Hwangdun-Songgye Village is not an administration center of the district, but an actual center with its higher central place functions, e.g. medicare center, elementary school, middle school, a branch of agricultural cooperative association, etc. 1,200 people reside in 401 households, among which 319 households or 80 percent of total households are wholly engaged in farming.

This village was selected as a model village due to conditions better than any other village: a network of optic cables were already completed near the village; residents are relatively young in forties and fifties and formulate congregative housing location

(Figure 2); village residents also show positive willingness to participate in the project. The Gangweon provincial government had five indicators of evaluation and chose this village out of the final three.

Three groups of actors can be identified in the information model village. The first group is the provincial government of Gangweon and the city government of Weonju. The one took the lead in the whole process from selecting a model village and encouraging the private sector participation to planning and activating the entire progress, while the other played the roles of choosing hundred households for computer provision and educating them. It is evaluated that the bigger role was played by the provincial government. Weonju city government now manages the village portal site and its server.

The second group is village residents. They tried actively to be selected as a model village before des-

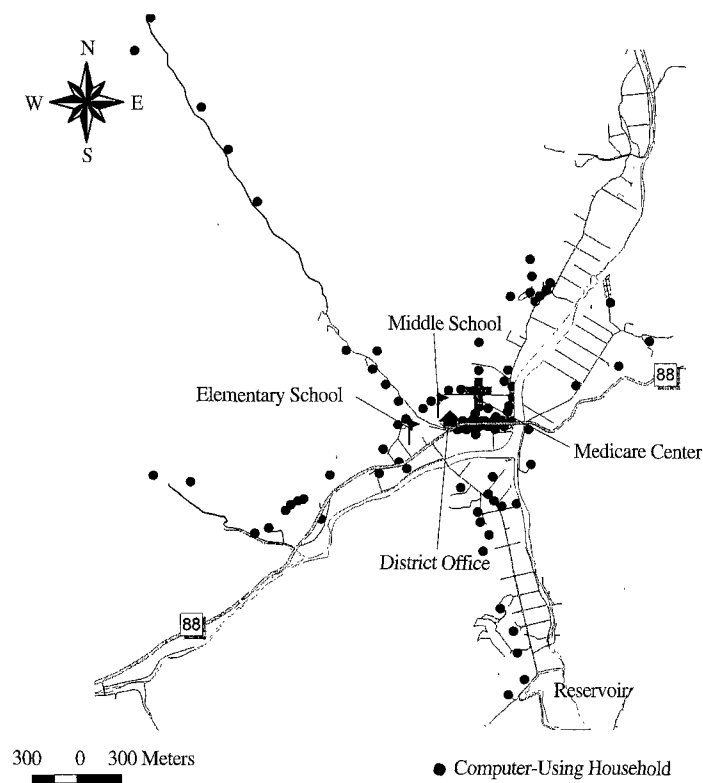


Figure 2. Computer-Using Households in Hwangdun-Songgye Village

ignation and, although encouraged by the public sector, organized a committee for information model village project by themselves after designation. This committee is composed of fifteen members with each function, e.g. secretary, public relations, education, etc. It is these members who now lead computer use among the residents.

The third one is the private sector who took the role of providing cable network and computers. Korea Telecom constructed cable network connecting to a trunk line nearby and to the individual households. Trigem Computer Company, one of the largest computer companies in Korea, donated 110 sets of pentium computers of which 100 sets were given to households for free of charge. The private sector invested more than half million US dollars in total.

A full-fledged running of the project was possible in August 2000, when ADSL network was open to use. All the hundred households were given the facilities free, but recently Korea Telecom began to charge about 25 US dollars a month for using network. This charge comes to the rural residents as a big burden. In total, one million US dollars have been spent for the project, half funded by the public and half by the private sectors.

In sum, the information model village project in case of Hwangdun-Songgye village can be uniquely characterized by its external motivation, especially by the public sector. The villagers show active will-

ingness to use computers, but this remains in some active group of members. A networked computer has been given free, but it is not in full use as intended at the launch of the project and monthly charge of network use is felt as a big burden. Therefore, activating computer use and connecting it to regional development is quite dependent on how this fundamental weakness of the project, external motivation by the public sector, can be overcome and transformed into internal motivation.

2) Characteristics of Computer Use and Changes of Life²⁾

It is found that the project gave seventy-seven percent of residents a new opportunity of using computers. Twenty-six households, fifty percent of the surveyed, actively use computers; longer than thirty minutes a day by male or female head of households and their children. But there are eleven households (21%) in which computer is used just by children and also five (10%) in which computer is never used at all (Table 1).

It is this active computer-using group that dominates the use of internet, e-mail, and sales and purchase through internet. Most of people belonging to this group give positive evaluation to the project.

The sphere of computer use by head of households concentrates on internet and games and very few use word-processors. Children in computer-using age, older than or equal to elementary school

Table 1. Types of Computer Use by Age of Household Head

	60s & over		50s		40s		30s & under		Total	
	no.	%	no.	%	no.	%	no.	%	no.	%
Active use by head of household and children	3	33.3	6	42.9	13	56.5	4	66.7	26	50.0
Minor use by head of household and active use by children	0	0.0	1	7.1	4	17.4	0	0.0	5	9.6
Minor use by head of household only	1	11.1	2	14.3	1	4.3	1	16.7	5	9.6
Active use by children only	3	33.3	2	14.3	5	21.7	1	16.7	11	21.2
Never used by anybody	2	22.2	3	21.4	0	0.0	0	0.0	5	9.6
Total	9	100.0	14	100.0	23	100.0	6	100.0	52	100.0

Note: 'Active' means longer than thirty minutes a day while 'minor' means within one hour a week.

Source: Survey by the author.

age, make active use without exception (72% longer than one hour a day). Those children living apart from their children for education purpose actively use when they visit their home.

The degree of computer use is relatively higher in younger generations and non-farm households, but the difference is not so big. Non-farm households, with greater motivations, makes attempts to utilize computers in any form of their life.

Purposes of internet use are, in the descending order, visiting village homepage, newspaper reading, obtaining farming information, and entertainment. This result means that internet use is still confined to leisure, not extended to economic purposes or living conveniences.

Just three households have experience of selling their products using internet, while ten households have experience of purchasing commodities and four of internet banking. Sales are confined to non-agricultural products (handicraft, bread, and tourist products) and no sales of agricultural products are yet found. However, visible or invisible advertising effects and tourist income through village homepage are perceived to increase.

Purchasing items by internet include small consumer electronics products, books, clothes, etc. As the purchase would have been made in nearby Weonju or Jecheon City, it could be said that internet use has decreased the number of trips to these cities.

Although more than half of the households have experiences of using e-mails and more than half of users actively use more than once per two or three days, their e-mail use still remains in elementary level in terms of the sphere of use and number of correspondents. E-mails are generally used for personal greetings and relatively little for information exchange or business. The number of correspondents is less than five.

By all accounts, we can say that the use of computer has influenced the life of village residents, but very limitedly (Choo, 2001). According to the evaluation by residents, computer use has made leisure

time more valuable, but it is not an obstacle to another types of leisure activity. Although internet can make it possible to sell or buy products, very little change happen in the number of trips and overall traffic amount. It is evaluated that solidarity between family members has increased around computer use and conversation has not been decreased. This result shows that individual use of computer has little possibility of interrupting conversation between family members, contrary to a general anxiety.

Changes of life due to computer use are perceived more distinctively by actively using group than by minor using one. In most respects of leisure use, traffic amount, community consciousness, and family solidarity, active using group shows higher positive level.

3) Effects on Community and Regional Development

A village portal site has been open for Hwangdun-Songgye model village since the launch of the project³⁾. It can be an indicator of community formation how actively this site is utilized by the residents because this site can provide space for exchange of information, opinion and fellowship.

As many as thirty-four households (65%) have experience of visiting village homepage, showing high interests in their common communication device. The degree of utilization, however, remains in elementary level. Fifty-five percent of visitors visit just once a week or once a month. Younger households and non-agricultural households have higher level of utilizing village homepage.

Major spheres of use are visiting bulletin board (52%), reading announcements (25%), and sharing information (9%), indicating that village homepage could be used as a tool of communication between neighbors. Just thirty-eight percent of visitors have left words at the bulletin board, but just once or twice. Very few people including members of village information committee are those who leave words continuously.

This result shows that the village portal site has not yet contributed to activating village community due to its insufficient use. Many users point out that the site does not yet have sufficient contents to be shared for practical purposes.

But the potential lies in the fact that village residents generally evaluate the success of the project in enhancing community consciousness. It is evaluated that solidarity between villagers has increased, village portal site has played a great role, and conversation between neighbors has increased around computer use. In the same context, conflicts between computer-using households and the others are not perceived big (Table 2).

It is found that actively using group evaluates more positively on the effects of the project than minor using group, a consistent result to perceiving changes of life. It can be argued that computer uti-

lization needs to be maximized if it intends to contribute to vibrating the work of community. A conspicuous finding is that conflicts between computer-using households and the others are felt more greatly by active using group. A possible interpretation is that active-using group better perceives the convenience of computer use and understands the complaints of non-using groups. Minor using group take the similar level of pride to active using one, indicating that the project itself has some meaning other than actual convenience.

We can find the possibility of positive effects in user's perceiving economic and psychological effects. It is difficult to perceive that income has increased by internet sale or advertisement effect, but pride in belonging to the model village greatly increased. Seventy-eight percent do not perceive income increase, but as high as eighty percent are taking

Table 2. Perception of Community and Regional Development Effects by Types of Computer Use (unit : number, %)

Perception of Community and Regional Development Effects		type of computer use	no.	results		
				yes	no	not know
Community consciousness	Solidarity between villagers has increased by the project.*	active	24	79.2	8.3	12.5
		minor	17	41.2	35.3	23.5
		total	41	63.4	19.5	17.1
	Community consciousness has increased by village portal site.*	active	25	72.0	4.0	24.0
		minor	18	38.9	33.3	27.8
		total	43	58.1	16.3	25.6
	Conversation between neighbors has increased around computer use.**	active	24	75.0	25.0	0.0
		minor	18	33.3	44.4	22.2
		total	42	57.1	33.3	9.5
	Conflicts between computer-using households and the others increased.	active	24	20.8	54.2	25.0
		minor	19	5.3	73.7	21.1
		total	43	14.0	62.8	23.3
Economic and psychological effect	Income increased by selling of products through internet.	active	20	15.0	70.0	15.0
		minor	17	5.9	88.2	5.9
		total	37	10.8	78.4	10.8
	Pride has increased by being a member of model village.	active	25	88.0	4.0	8.0
		minor	20	70.0	20.0	10.0
		total	45	80.0	11.1	8.9

Notes: 1) Active group in the type of computer use includes those household in which active use by head of household and children is made (longer than thirty minutes a day) and minor group includes the others.

2) * significantly different between types of computer use at 0.05 level using χ^2 test

** significantly different between types of computer use at 0.01 level using χ^2 test

Source: Survey by the author.

pride in being a member of the village (Table 2).

4) Implications for Regional Development

Most of the village residents evaluate the project positively (76%). But there are also people who emphasize negative sides of the project. Younger households and non-farming households express higher positive evaluation. All of the thirties expect the project to contribute to village development. As high as ninety-one percent of non-farming households see the project positively while just sixty-four percent of agricultural households do (Table 3).

Positive effects are expected in the respects of improving quality of life (40%), enhancing image of the village and taking pride (27%), income increase by selling products by internet (21%), heightening community consciousness (10%). Negative effects, on the contrary, are consistently centered on charges on network use and perception of over-consumption.

Whatever the evaluations, there are possibilities that the information model village project could contribute to regional development⁴⁾. First, there could be income increase effect by selling products or obtaining price information through internet. Direct transaction through internet can save expenses spent in the process of distribution. Applying prices obtained real time from internet can make it possible to strategically price each product.

Second, there are also advertising effects by the project and subsequent indirect income increase

effects. The project has already made the village one of the focuses of broadcasting and this could act as an attracting factor to tourists. The village can provide both rest and internet facility in vacation and this could be a great attraction of this area to urban tourists who are heavily dependent on computer for their everyday life.

Third, a diverse use of information can guarantee a convenient life and enhance quality of life. Trips for purchase could be replaced by e-commerce and a wide range of information, e.g. lifestyle, farming, education, leisure, can be easily accessed to. The education environment could be improved and this could take the role of preventing out-migration of people.

These possibilities now emerge differently in Hwangdun-Songgye Village. The second effects, advertisement and indirect income increase, are entering into a visible stage, but the other two kinds are still very weak. So, the question is how to make these possibilities come true in the real world.

4. Concluding Remarks: Suggestions for Further Policies

It is just a year or so that the information model village project launched. Due to its short history, it is too early to determine a success or failure of the project with just changes currently appearing. The villages which have accepted this project are now

Table 3. Overall Evaluation of the Information Model Village Project

	Total		Age				Occupation	
			60s & over	50s	40s	30s & under	farming	non-farming
	no.	%	%	%	%	%	%	
Positive	38	76.0	55.6	76.9	77.3	100.0	64.3	90.9
Negative	3	6.0	0.0	7.7	9.1	0.0	10.7	0.0
Both positive and negative	4	8.0	22.2	0.0	9.1	0.0	7.1	9.1
No effect	5	10.0	22.2	15.4	4.5	0.0	17.9	0.0
Total	50	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Survey by the author.

undergoing tremendous changes from a traditional agricultural society and adapting to a new environment. In order to achieve fruitful results from this project, or more generally, from rural telematics, practical alternatives of connecting to regional development measures need to be considered.

Some suggestions are made as concluding remarks for further policies. These will be a good reference to newly selected information model villages for minimizing trial and errors in the process.

First of all, the greatest weakness of the project, that is, external motivation and initiation by the public sector, should be overcome and transformed into an internally motivated one. This can be possible by connecting the project to economic purposes, in other words, to income increase. Currently, just non-agricultural products are sold by internet transactions and even this is not yet systematically fixed up. As most of the villagers are unfamiliar to e-business, a collective sales system could be of great help in the initial stage.

Second, in order to achieve this economic goal, alternatives to actively using village portal site should be sought for. It is generally proposed that homepage in a community can play diverse roles for exchange and cooperation. But this would be possible by providing abundant contents. A new scheme of utilizing the homepage needs to be prepared, so that it may connect the community, encourage diverse people, in or out of the village, to participate, and produce economic accomplishments.

Third, in activating the project, the vertical cooperation between a hierarchy of the central and local governments should be extended horizontally to institutions in the village. The project needs to be connected to education information project proceeding at elementary and middle schools, endowing the students with the role of leading computer uses. Medicare center, agricultural cooperative association, and other public facilities should also be incorporated.

Fourth, management skill of the project manager

should be refined. It is necessary to take quick response to the households who want to return the computer back and provide technical services, internally or externally, to quickly recover for appropriate computer use. Some exclusive personnel should be provided. Also, charges for network use needs to be discounted to fully assist the project. This depends on the managerial know-how of the those who are in charge of the project.

Finally, in medium or long term, investment for information infrastructure needs to be expanded. Some households near the village have the ability to use computers but are not able to do so due to the lack of network infrastructure. Providing information infrastructure to this group would be a way to alleviate conflicts between computer-using households and the others.

Notes

- 1) This act became effective April 17, 2001. Article 3 of this act says, "Both the central and local governments shall provide measures for every person to easily get access to diverse information and use it."
- 2) A survey was carried out to hundred households who now participate in Hwangdun- Songgye Information Model Village Project. It was done from May 9 to 11, 2001, by interviewer visit with a formatted questionnaire. 56 out of 100 households were available to ask questions, of which 52 appropriate answers were analyzed. More detailed information on the characteristics of computer use and subsequent changes of life can be found in Choo (2001).
- 3) The homepage address of this site is <http://www.kwcv.or.kr>.
- 4) The term 'regional development' is broadly used here to include residents' income increase and improvement of quality of life which can be grouped as micro-level elements of regional development.

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