

Can Information Technology Revive Rural Economies?: The Cases of E-villages in Korea and Japan

Woo-kung Huh*

정보통신기술과 농촌 경제: 한국과 일본 정보화마을의 사례 연구

허우궁*

Abstract : There has been a high expectation that information technology (IT) can do something good for the rural perils. Efforts thus have been made in many countries to 'informatize' rural areas, namely to roll out IT infrastructure into remote areas and to enhance the computer literacy of rural residents. The present study examines the 'e-village' projects implemented in Korea and Japan. It evaluates the business models employed by the e-villages such as e-shops of local products and tour guide programs, the ways in which rural residents have managed their business models, the practices of information exchange within and outside of the villages, and the monetary gains of the business models. The study collects data mainly from the e-village web pages of both countries. The study reveals that the e-village business models have performed less than expected in general, and that Japanese e-villages are better off than the Korean counterparts. The study identifies the factors responsible for such mediocre performances of the business models including a lack of retail business experiences and capabilities of the rural people. The study findings highlight the importance of human resources, rather than the new technology per se, for rural development.

Key Words : information technology, rural area, e-village, business model, Korea, Japan

요약 : 농촌의 부흥을 위하여 정보통신기술에 거는 기대가 크고, 정보화 사업이 도처에서 이루어지고 있다. 그러나 정보통신기술의 보급만으로는 농촌의 경제가 활성화되기 어렵다는 시각도 있다. 이 논문은 농촌의 정보화사업에 대한 이런 쟁점을 가리는데 목적을 두었다. 한국의 정보화 마을과 일본의 무라(村)를 대상으로, 해당 마을의 홈페이지에서는 어떤 수익모델들을 채택하고 있으며 정보통신기술은 어떻게 활용하고 있는지, 고객들은 얼마나 자주 이용하고 있는지, 또 수익은 얼마나 창출되었는지를 비교 분석하였다. 분석 결과, 수익모델의 활용과 성과가 전반적으로 기대에 못 미쳤으며, 한국보다는 일본 사례에서 그 성과가 다소 나은 것으로 밝혀졌다. 수익모델의 활용과 성과가 이처럼 미흡한 것은 운영자들의 경험 부족과 농촌 인력의 한계 등과 관련이 있는 것으로 보인다. 이 연구 결과는 농어촌의 정보화에 정보통신기술의 보급 못지않게 인적 자원도 중요함을 부각시켰다.

주요어 : 정보통신기술, 농촌지역, 정보화마을, 수익 모델, 한국, 일본

* Professor, Department of Geography, Seoul National University, Korea, wkhuh@snu.ac.kr

1. Introduction

There has been a high expectation that information and communications technology (IT) can do something good for rural perils, such as freeing remote locations from the tyranny of distance and reviving the local economy. In fact, IT has made many new things possible in rural areas, such as to sell farm products on-line, to interact with people outside the village, to aid children doing their homework, and to passing time with computer games. IT has enormous potentials to bring benefits to remote areas.

There have been numerous studies and statements regarding whether and how IT can do something for the revival of remotes areas. Studies have found an interdependent relationship between economic activities and telecommunications infrastructure investments (for instance, Cronin *et al.*, 1995 in America; Ataka, 2006 in Japan). Parker (2000) points out two major barriers against rural economic growth, namely greater distance and a lack of economies of scale because of the smaller market size of rural areas. He maintains that an access to advanced telecommunications services is very important to residents and businesses in rural areas, because telecommunications infrastructure, particularly broadband data communications can neutralize both of these problems.

One of the policy options to mitigate rural perils is to provide an access to the Internet with rural areas. Grimes (2003) posits that the difficulty of obtaining affordable high-speed Internet access in remote locations is the major hurdle preventing e-businesses by rural small and medium-sized enterprises. In terms of telecommunications infrastructure, peripheral rural areas had benefited considerably in the past resulting from the application of universal service obligation by national telecommunications providers. With the

liberalization of telecommunications markets in recent years, however, this is no longer the case. With the shift towards more expensive broadband infrastructure being associated with a reliance on market forces, there is a real danger that peripheral rural areas will become increasingly disconnected from the opportunities presented by the new digital economy. Lentz and Oden (2001) too suggest that the central economic development challenge should be to ensure that rural businesses gain access to an advanced telecommunications infrastructure and that they develop the capacity to leverage this access to enhance their performance and expand their reach. Gunasekaran and Harmantzis (2007) suggest wireless technology can be a solution of developing countries, since the expansion of broadband networks requires a huge investment. According to them, developing countries can quickly adapt to the next-generation wireless technologies like wireless fidelity and microwave access, thereby gaining advantages over other wired infrastructures.

Studies went further to suggest a wide variety of policy options for expanding IT infrastructure, including a public-private partnership among local governments, utility companies and community organizations (Korsching *et al.*, 2000; Ramirez, 2001); and governmental encouragement and support for local rural initiatives (Parker, 2000). Countries have established plans to diffuse IT into their peripheral areas. For instance, a summary of e-Japan programs can be found in Takahashi (2003), and other series of articles elsewhere (for instance, in the Yearbook of Agricultural Informatization). Korea has also developed a number of policy measures to aid rural areas adopting IT (see Huh (1999) for a summary).

While hopeful statements are abound regarding the potentials of IT for rural economies, there are also a number of cautionary comments as well.

Mills and Whitacre (2003) warned that policies which focus solely on infrastructure and technology access will not mitigate the current metropolitan-nonmetropolitan digital divide, based upon their findings that the differences in household attributes, particularly education and income, account for much of the current urban-rural digital divide in the U.S. In a similar vein, Malecki (2003) emphasizes not only basic physical infrastructure but also human resources with a minimum level of training are the necessary conditions of rural development. He argues that telecommunications is not a magic solution for rural economic development. An alternative feasible approach in some (but certainly not all) rural areas is to attract entrepreneurs wishing to relocate for quality-of-life reasons. These in-migrants typically have the networks and competencies to gain access to core markets. Grimes (2003) too comments that one of the most serious potential errors is to assume that IT can in some way substitute for inadequacies in the range of entrepreneurial skills, which are essential to ensure that small and medium-size enterprises can compete. The apparent simplicity of the Internet as a tool for businesses to reach distant markets can cause business owners to neglect long-established rules of successful business. Nagaki (2003) reports that the sales of agricultural products over the Internet have been generally disappointing in Japan, due to a number of factors, such as the delivery cost of products, the cost of maintaining customer loyalty, and the risk of bad checks.

There are some other concerns with the problems rural areas face. Stover (2001) points out rural citizens often lack the skills or knowledge to realize the importance of digital information and communication. There is no need to mention that rural population tends to have much more of older age cohorts, while having far smaller proportions of 30s and

younger than urban population. The main patrons of computer and the Internet are young adults and teenagers. English is often used in the cyberspace, and English is not the language the rural adults are familiar with in non-English speaking countries like Korea and Japan. Young adults and teenagers are good at handling computer keyboards and mice, while the elderlies are not. The letters and graphics on monitors are often too small to comprehend for the elderly. Farmers are not accustomed with working in front of a table. The contents of the web pages are largely urban oriented. In addition, Oda (2000) indicates that computer and peripherals can be rapidly outdated due to the tremendous speed of technological development, resulting in a financial burden on the shoulder of rural poors upgrading the outdated computer hardware. These appear to be the main stumbling blocks against the adoption of computer by rural people.

2. E-villages in Korea and Japan

The present study aims to add evidences regarding these encouraging and discouraging statements on the roles of IT for rural areas. In particular, the study focuses on the business models implemented in the rural villages of Korea and Japan. Here business models refer to the primary methods of money making with the aid of IT.

1) IT programs in the rural areas of Korea and Japan

The central government of Korea have designated three hundred some villages throughout the nation as 'show case e-villages' during 2000s.¹⁾ In brief, the major components of the e-village program are: to provide IT

infrastructure with the designated villages such as the Internet and computer hardware; to establish a community telecottage; and to offer computer classes for the residents teaching how to handle computer and the Internet.

There appears no such centrally driven informatization program in Japan. Local governments of a prefecture, city, county, cho (town) or mura (village)²⁾ tend to have much more autonomy to develop their own programs.³⁾ It is thus quite difficult to summarize the main characteristics of Japanese IT programs. Nonetheless, there appears to be a common thread among the various programs: that is, investing the development funds and other community resources to roll out IT infrastructure into the villages and to utilize IT enhancing their local businesses.

Several villages became national celebrities due to their IT investments. For instance, Yamadamura,⁴⁾ Toyama Prefecture of Japan and Hwangdun-ri,⁵⁾ Gangwon Province of Korea became famous nation-wide. The Japanese Prime Minister visited Yamada, and Korean President appeared on a special program of Hwangdun televised nation-wide. Newspapers and broadcasters covered these villages repeatedly during the late 1990s and early 2000s. The details of the informatization projects of the villages can be found in Kamiya *et al.* (2001, 2004), Kurada (1997), and Hiratsuka (2005) for Yamada-mura, and in Huh (2001, 2004) and Choo (2001) for Hwangdun-ri.

2) A survey on the e-village websites

The present study examined the web pages of Korean e-villages and Japanese muras during the period from March through June, 2007. Among 306 e-villages designated in Korea, ten were in urban areas and the remaining 296 e-villages in rural areas (<http://www.invil.org>). There were

195 muras in Japan as of January 1, 2007,⁶⁾ and the web pages of 188 muras were accessible during the study period (<http://okitask.web.infoseek.co.jp/Cities/index.html>).

The study examined what kinds of business models are adopted in the web pages of those 296 e-villages and 188 muras, how they utilize IT for their businesses, how often the web pages are accessed for business purposes, and who run the business models. The survey results are interpreted in line with the arguments found in the literature.

Both Japan and Korea are good cases to examine the rural informatization programs on several accounts. First of all, both countries are among the leading countries in the world in IT penetration, so that there are plenty of examples to examine. Second, Japan has been a role model on rural informatization for Korea. Japan had started the policy of regional informatization⁷⁾ early in the 1980s, and a number of policy measures were benchmarked in Korea. Rural informatization programs are one of the cases.

There are differences between the two countries as well, which again serve as a rationale for a comparative study on IT applications. The rural IT projects in Japan have been initiated mainly by individual municipalities, whereas the IT programs of Korea have been formulated by the central government: a bottom-up versus a top-down approach to rural informatization. The IT applications in Japan thus appear to be quite vary among muras due to the time-honored local autonomy of the country, whereas the features of Korean e-villages are similar each other due to the strong control of the central government. A Japanese mura is larger (much larger sometimes) than a Korean rural village, ri, in its territorial size, population, and central functions. A mura has its own office, while a ri does not. The general situations of the rural areas of both countries are different as well. Japan has a much higher level

of income than Korea. The former suffers less from the out-migration than the latter. It is hope that these similarities and differences will aid to discern the key factors for the success and failure of rural IT programs.

3. Business Models of the E-villages

1) Utilizing IT on the rural business models

The web survey reveals both Korean and Japanese villages commonly have applied IT to the following three areas (to be called 'business models' in brief hereafter):

- e-retailing: to run on-line shops carrying local 'specialty' products and processed goods;
- village tours: to attract visitors and vacationers with local resources, including programs of practicing farming or fishing, leisure and sport activities like rafting, sailing or tracking, and classes teaching local culture; and
- lodge services: to run farm-stay houses, inns, hotels or other facilities to stay overnight.

The village websites also advertise restaurants. The restaurant business model, however, is not included in this analysis because the restaurants advertised are not many in overall and because the Korean e-villages have very few restaurants while Japanese *muras* have more of them.

Villagers advertise these three business models on the village web pages, take orders of local products or take reservations for village tour programs and lodges (via the email, on-line transaction system, telephone, or facsimile), and try to maintain contacts with the buyers and visitors afterwards.

E-retailing has both strengths and weaknesses. From the retailer's stand point of view, e-retailers can offer better customer service than their bricks

and mortar counterparts. They personalize sites, create opportunities for customization and provide added value (Walsh and Godfrey, 2000). E-retailing offers better access to information including price information, and a unique shopping experience for customers (Grewal *et al.*, 2004). However, e-retailing has inherent structural and functional weaknesses as well. The list of 'limiters' include a low profitability (Wilson-Jeanselme and Reynolds, 2005), a lack of trial, a lack of interpersonal trust, a lack of instant gratification, high shipping and handling costs, lower customer service, loss of privacy and security, high economies of scale, and a lack of stable customer base (Grewal *et al.*, 2004). Strategies employed in many European e-shops to overcome these limiters are focused on enhancing the efficiency of transaction and creating stickiness to facilitate repeat transactions (Zott *et al.*, 2000).

Some of these strengths and weaknesses may have relevancy to the e-retailing model of rural villages. The Internet can facilitate the direct sales of local specialties of small communities which are far distant from markets. On the other hand, e-retailing tends to suffer from seasonality, in that local products are harvested in specific seasons. The rural retailers also have substantial time conflict because the season of high demands for local products often matches with the busiest season in rural areas. Since the rural retailers tend to have a primary job of farming, they have substantial burden to allocate time on the management of their e-shops.

Local specialties produced are often small in quantity, hard to standardize, and thus increase the costs of handling and make it hard to maintain constant sales year round. A study on yuzu (a type of citrus fruits) products in Umajimura, Kochi Prefecture, reports that the village faces a problem of securing the raw material, yuzu, in order to run the business year-round

(Hashimoto, 2005). The study found that the shortfalls of raw materials were made up by purchasing yuzu from all across Kochi Prefecture; and this not only reduced profit but also disrupted the image of 'Umaji-mura's yuzu.'

The resources of villages are critical to developing the business models of tour programs and lodging services. The villages endowed with scenic beauty, hot springs or cultural heritages are better off to establish tour businesses. Lodging service often goes along with tour programs because village attractions can persuade visitors to stay overnight. These models are simply not feasible if an area has no such tourist attractions.

In brief, an ordinary farmer or a fisherman needs to be a competent manager of business as well as an experienced computer technician. The aged rural community is another disadvantage for managing e-shops and tour programs. The study on Umaji-mura points out that rural villages need to elaborate marketing strategies on product concept, marketing channels, and product images (Hashimoto, 2005). Such requirements are often beyond the capability the ordinary aged farmers can bear.

2) The number of business models appeared on the village homepages

The survey found that most of the Korean ris and Japanese muras have implemented more than one business models: about one half of both ris and muras have homepages of all three business models in their websites; and only very small number (less than five percent) of the ris/muras do not carry any of e-shops, village tour programs, nor lodging services. These quite high proportions of rural villages carrying business models indicate that rural people tend to make every effort to exploit their resources at maximum.

One interesting difference between the two countries is that the business model Korean villages have adopted most is e-retailing (93% of the ris), whereas Japanese muras adopted tour programs most (86% of muras). One of the reasons why most of Korean villages run e-shops is that the central government encouraged villages to implement the e-retailing model. An e-shop has been a standard ingredient of the e-village project configured by the central government. In addition, to run an e-shop is easier than the other business models in that any

Table 1. The number of e-villages and muras carrying business models on their websites, 2007

Country	Korea	Japan
Number of villages surveyed	296	188
Number of villages carrying:		
E-shops	275 (92.9%)	137 (72.9%)
Tour Programs	217 (73.3%)	162 (86.2%)
Lodge services	206 (69.6%)	129 (68.6%)
Number of villages carrying:		
All three business models	144 (48.6%)	98 (52.1%)
Two business models	116 (39.1%)	52 (27.7%)
One business model	34 (11.5%)	30 (16.0%)
None of the business models	2 (0.7%)	8 (4.3%)

Table 2. Local specialty goods, tour programs, and lodges advertised on the village websites

Business models		Korea	Japan
E-shops: Kinds of local products on sale	Mean	3.3	6.3
	Median	3	6
Number of tour programs	Mean	2.8	7.8
	Median	2	5
Number of inns, hotels, and farm-stay houses	Mean	6.1	0.8
	Median	2	3

Table 3. Number of villages offering tour programs

Types of programs	Korea (296 villages)	Japan (188 <i>muras</i>)
Farm-stay and practice	172 (58.1%)	37 (9.7%)
Fishing village-stay and practice	26 (8.8%)	34 (18.1%)
Classes of local culture	104 (35.1%)	67 (35.6%)
Leisure and sports	122 (41.2%)	133 (70.7%)
Spa	-	86 (45.7%)
Others	7 (2.4%)	19 (10.1%)

individual can open an e-shop without much difficulty. On the other hand, substantial group efforts are required to run a tour program, and one needs to have a decent house to lease rooms of his/her house to visitors.

Japanese *muras* tend to offer more variety on the business models than Korean villages: far more kinds of local products carried in the e-shops, of tour programs, as well as of lodges. Such a difference appears to be due to in part the larger size of *muras* over *ris*, and partly to the fact that Japanese businesses are run largely by some form of group endeavors such as a co-operative or a corporate body, while Korean businesses are more often run by individuals. The survey counted only 89 corporate bodies in 66 e-villages of Korea: meaning 1.3 joint ventures per village. The remaining majority of e-villages have much looser forms of producer organizations or none at all.

The local products carried on the e-shops are quite varied: from fresh vegetables to processed

agricultural products, wood ware, cloths, etc. The villages also developed a variety of tour programs, among which leisure and sports activities are the most preferred by Japanese *muras*, and farming practices by most Korean villages. One feature unique to *muras* is that nearly a half of *muras* have spas, while Korean villages have none.

3) Geography of the business models

The web survey was also able to observe a geographic pattern of the business models: a gradation from the core to peripheral regions of both countries. The numbers of *muras* adopting the business models of e-shops, tour programs and lodging service are all increasing from the central core region of Japan towards either the northern or southern peripheries: in more detail, the north-bound increase of *muras* is more salient than the south-bound. The islands of Okinawa appear to be an exception due perhaps to its

Table 4. Regional distribution of the business models

Region(and the number of villages in the region)		Proportion (%) of the villages adopted business models		
		E-shops	Tour programs	Lodge service
K O R E A	N Capital Region (51)	88.2	90.2	66.7
	Gangwon (40)	80.0	87.5	92.5
	Chungcheong (51)	94.1	74.5	54.9
	Gyeongsang (71)	100.0	67.6	80.3
	Jeonla (72)	94.4	62.5	56.9
S	Jeju (11)	100.0	45.5	81.8
J A P A N	N Hokkaido (15)	93.8	93.8	93.8
	Tohoku (35)	80.0	80.0	80.0
	Kanto (24)	70.8	70.8	70.8
	Chubu (51)	66.7	66.7	66.7
	Kinki (16)	50.0	50.0	50.0
	Chukoku, Shikoku, Kyushu (29)	75.9	75.9	75.9
	S	Okinawa (18)	77.8	77.8

remote location from the main island.

In Korean peninsular, the geographic pattern is somewhat complicated. Within a gradation from the Capital Region towards southern regions, the number of villages adopting e-retailing is the smallest in the core region and increasing southward; the case of tour programs on the contrary declines from the northern core to the

southern peripheries. The Capital Region has the largest cluster of population, so that the Capital Region and its vicinity appear to have advantages of employing tour programs in order to cater the demands of out-door activities in the core region. On the other hand southern regions tend to specialize in sales of local products. The case of lodging service does not reveal such a core-

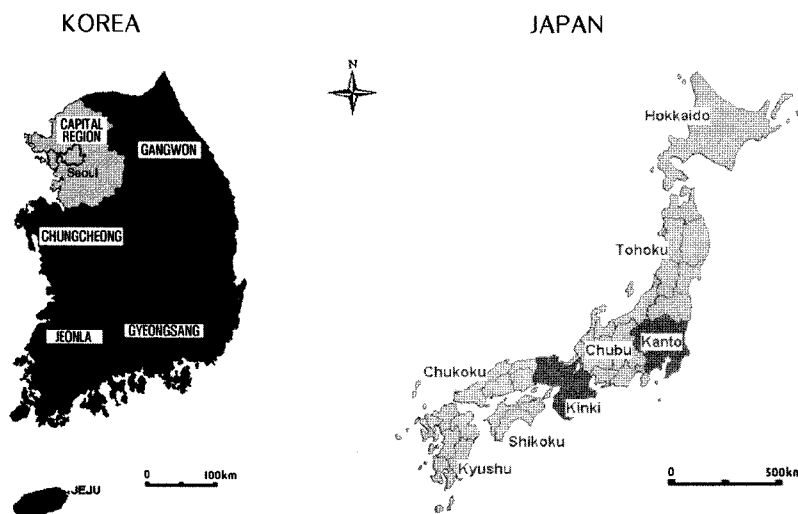


Figure 1. Regions of Korea and Japan

periphery gradation, in that the regions of resort areas such as Gangwon, Jeolla and Jeju have much higher proportions than the remaining regions.

4. Performances of the Business Models

The biggest challenge of this study faced was to collect evidence on the performances of the business models implemented in ris and muras. A direct proof on the success/failure of the models would be the sales and customer data on the e-shops, tour programs and lodges; however, such data were simply not available for this study. Thus this study has to be dependent upon indirect evidences to check the performance of the business models.

1) Page views and comments uploaded on the web bulletin boards

The page view of a website is an indicator of how much active the website has been. The page views of mura homepages were counted for a one-hundred-day period from mid-March to late June, 2007. One hundred and four mura websites were accessible during the counting period. The

view counts reveal that the number of page views ranges from 10.5 up to 2,856.4 in daily average: the mean value is 249.6 views, and median is 164.6 views. Notice there is a substantial difference between the mean and median of daily page views. Such a highly skewed distribution of page views indicates that the majority of muras have relatively small number of page views, while only a handful number of mura homepages are hyper-active. In addition, a daily page view of 165 is hardly an impressive figure, given the fact that a mura office homepage deals with the entire mura administration. It is more than likely that only a fraction of the 165 views is related with the business models.

Some of the individual businesses of Japanese muras also have their own websites. The page views of those individual homepages were also counted during a fifteen-day period in August, 2007. The counting of sixty four business homepages revealed that they have 270.8 daily page views in average, and 52.5 median page views. These statistics indicate that the page views are quite varied among the businesses: some homepages are visited frequently whereas others are not. In other words, some of the rural businesses are enjoying attentions nationwide, while many others are somewhat dormant.

Most of the homepages of Korean e-villages

Table 5. Daily page views of the village websites

Websites	Korea		Japan	
	Page views of e-village homepages	Page views of mura homepages	Page views of mura homepages	Page views of individual business homepages
Survey period	March-June, 2007	March-June, 2007	March-June, 2007	August, 2007
Number of cases	6 villages		104 muras	64 businesses*
Page views: Mean	38.0		249.6	270.8
Median	29.3		164.6	52.5

* Comprised of 14 e-shops, 10 tour programs, 11 inns and hotels, 11 spas, 7 agricultural and fishery co-operatives, and 11 mura chambers of tourism.

unfortunately do not have a page view counter. There were only 6 e-villages with a counter during the 100-day counting period of mid-March through late June, 2007. The page views of six e-villages were quite even, averaged 38.0 views daily. This statistic is far smaller than those of muras and individual businesses in Japan.

2) Media for transactions

The media of making/taking orders of local specialty products and reservations for tour programs and lodges can be taken as another indication how much IT is employed in the village businesses.

The survey found that Japanese muras are still highly dependent upon the ordinary landline telephone and facsimile for their businesses. The email system is found to be the only electronic medium to make orders, reservations, and

questions and answers. And less than one quarter of Japanese muras provides email addresses of their e-shops, tour programs, and lodges. On the contrary, quite a large number of Korean e-villages employ more sophisticated medias in which people can use not only the email but also a reservation system, even on-line payment, thanks to the technical supports by the central government.

The percentage figures of Korean villages adopting advanced transaction systems look quite impressive, in comparison to such a low rates of email use in Japanese muras. The mere existence of email and other advanced transaction systems, however, does not necessarily mean that people would use the systems often. The e-village homepages thus were examined further to count pre-transaction queries and post-transaction comments uploaded on the bulletin boards of the web pages. The counts found to be disappointing

Table 6. IT use in the homepages

Using email or other electronic order/ reservation system for		Number (and proportion) of e-villages and muras adopting the system	
		Korea	Japan
Making/taking an order on e-shops		270 (91.2%)*	39 (20.7%)
Tour programs	Reservation	174 (58.8%)*	17 (9.0%)
	Contacts	182 (61.5%)	49 (26.1%)
Lodge service	Reservation	44 (14.9%)*	27 (14.4%)
	Contacts	136 (45.9%)	41 (21.8%)

* Payment can be made on-line with a credit card or bank transfer.

Table 7. Queries and comments regarding the business models, uploaded on the e-village homepages, Korea, July 2006~June 2007

Business models		Number of question and comments Yearly total (per village)		Number (and proportion) of e-villages having the comments
E-retailing	Asking questions	302	(7.2)	42 (14.2%)
	Making Comments	702	(8.5)	85 (28.7%)
Tour programs	Asking questions	992	(10.0)	99 (33.4%)
	Making Comments	702	(8.5)	85 (28.7%)
Lodge service	Asking questions	377	(9.4)	40 (13.5%)
	Making Comments	41	(2.0)	21 (7.1%)

in that only less than one third of entire villages have less than ten questions or comments during one year period from July 2006 through June 2007. This means that the sophisticated transaction systems of the e-village homepages have been virtually idle during the one-year period.

These findings altogether illustrate that the level of IT use has been yet a rudimentary one, i.e., to use the homepages simply advertising the village resources. A more elaborate use of IT such as using the email and electronic transaction systems is not yet widely utilized. People tend to stick with the good old media of communications like the landline telephone and facsimile for an enquiry and monetary transactions.

3) Monetary gains of the business models

As mentioned before, it was practically impossible to obtain data in monetary terms on the performances of each mura or e-village. In the early 2006, Korean government awarded 22 best e-villages in terms of their performances on

various criteria. table 8 excerpts yearly sales figures of top ten e-villages from a document of the Ministry of Government Administration and Home Affairs. This table gives us some hints how much the business models have contributed towards the income of villages.

It can be seen in the table that monetary earnings of the business models are modest at the best. In average, the s-shops of the ten villages earned US\$71,693, tour programs \$53,030, and lodge services \$101,800 respectively. Considering the sales figures are for the entire year of 2005 and for the entire village, the monthly earnings for individual households of an e-village become quite small. Given that these earnings are for the ten best performed villages, the earnings of the remaining villages are assumed to be far smaller.

4) Use of computer

Having a computer and the Internet in the home does not necessarily mean that people use them for economic purposes only. Rather, findings are such that people tend to use

Table 8. Yearly sales of the best performed e-villages in Korea, 2005

Location of e-villages		Sales (US \$)		
Region	County	E-retailing	Tour programs	Lodge service
Gangwon:	Samchok	14,600	37,790	101,800
	Gangnung	20,950	-	-
	Chunchon	3,500	-	-
Capital Region:	Gapyeong	55,240	-	-
Chungcheong:	Danyang	91,430	-	-
	Asan	42,860	-	-
Jeonla:	Gochang		112,750	-
	Gwangyang	85,700	-	-
	Haenam		8,550	-
Gyeongsang:	Bonghwa	259,260	-	-
<i>Average</i>		<i>71,693</i>	<i>53,030</i>	<i>101,800</i>

* The exchange rate of Korean Won to US dollars was around 1,050:1 in year 2005.

Source: Ministry of Government Administration and Home Affairs, Korea.

computer and the Internet more for education, entertainment, and communication than for their businesses. Surveys on Korean e-villages found that people used computers mostly for entertainment and education, and seldom for business purposes. Adults used computers for playing cards, and the facilities in the village telecenter were often used for playing DVDs in the evening hours. Children too were another major user group of the village computers for gaming (Huh, 2001, 2004). Non-farm uses of computers and the Internet are reported in other countries as well (for instance, Abbott *et al.*, 2000).

5. Conclusions

Regarding the role of IT in rural economy, given the distance-free nature of the technology, the main stream of thoughts has been such that IT can do something good for the lagging peripheral areas. The major task is then how to provide an access to IT in rural areas, and a number of policy measures have been implemented to roll out IT infrastructure to the peripheries. However, there are cautionary statements positing that IT is not a sufficient but just a necessary condition for rural revival. What matters is the lack of human resources in rural areas in order to materialize the potentials IT has. These counter arguments served as a starting point of the present study. The study surveyed the web pages of Korean e-villages and Japanese muras to see what kinds of business models have been employed for the village economies, how they have performed, and what are the pitfalls of running e-businesses in rural areas.

The web survey found that the majority of both Korean and Japanese villages adopted three kinds of business models, i.e., e-retailing, village tour

programs, and lodge services; Korean e-villages are leaning towards on e-retailing more, whereas Japanese muras on village tour programs.

The survey reveals that the level of IT application to the business models is not sophisticated in overall, in that the village homepages have been somewhat dormant, and that the sales performances of the business models have been moderate at the best. Most of the village websites carry colorful, well-designed homepages on the e-shops, tour programs and lodges. But these impressive visuals of the business models are as far as they went. Not many village homepages adopted an email or other electronic system which allows making orders, reservations, transactions, queries, or comments. In particular, virtually no Japanese muras provide such a system, except posting an e-mail address on the homepage as a contact point. For Korean cases, most homepages have been idle, and even the sales of best-performed e-villages are less than impressive.

The study findings suggest that a lack of business experiences of rural residents is one of the factors behind such mediocre performances of the business models. Securing an access to IT is a precondition for rural businesses. But providing computer hardware with rural areas does not guarantee a success in businesses. What is needed is a good management capability and mind set. In brief, the study highlights the importance of human resources more than a technological fix for rural development.

Given the overall low performances, Japanese muras appear to be better off than the Korean counterparts. Muras are in general much bigger than Korean ris. Muras have larger population and more extended families than Korea villages. The areal size of muras is bigger than that of ris and thus endowed with more resources. Muras have their own officers and money to execute IT programs, while Korean ris do not have any.

These are not the only reasons why Japanese *muras* are doing better than Korean *ris*. The study found that Japanese business models tend to be run by some form of joint-ventures: most of the e-shops and tour programs are run by corporate bodies such as limited companies or co-operatives. On the contrary, many of the business models are run on individual and/or family bases in Korea. While some villages do have producer groups, their bindings and management intensity are looser than the Japanese formal joint ventures.

The literature emphasizing the importance of human resources suggests the role of return migrants, and 'lone eagles' and 'high fliers'⁸⁾ for rural revival. However, such an argument appears to be relevant only for those rural areas not too distant from large urban centers. In remote areas, an in-migration of high fliers and lone eagles would rather be very rare and exceptional. In-migration of retirees, of entrepreneurs wanting off the boring urban life, and of returning children will not happen overnight too (Malecki, 2003). Given such a little hope of IT-competent in-migrants into rural areas, the only alternative left is to mobilize the indigenous human resources at their best. The study findings suggest the Japanese approach as a feasible solution, that is, to form joint ventures instead of letting individuals run their own businesses separately. A legally-binding group of farmers or service providers would have a synergy to maximize the capacities they have.

Other policy implications can be drawn upon the study findings as well. While supplying IT infrastructure to rural areas is a prerequisite for rural development, just one-time support is not sufficient enough to enhance rural economy. Rural villages often can not afford even paying monthly Internet service fee, not to mention of the expenses of upgrading home computer and maintaining the village telecottage. Without a

continued financial support, the hardware initially invested will soon be outdated and useless. What is much more needed is to train rural people how to run e-retail shops, lodges, and tour programs, as well as how to improve their computer literacy.

Notes

- 1) The e-village program is still in its 'show-case' phase in that only one fifth of rural administrative units (209 eups and 1208 myons altogether) have e-villages. The numbers of e-villages designated were 1 in year 2000, 24 in 2001, 78 in 2002, 88 in 2004, 89 in 2006, and 26 in 2006 respectively. (Source: Ministry of Government Administration and Home Affairs, Korea)
- 2) A *mura* is one of the basic administrative units in rural Japan.
- 3) Regions in Japan have adopted different information networks such as cable television networks, NTT off-talk networks, facsimile networks, or the Internet (Nihei, 2000). Variations can be seen at a lower administrative level too. For instance, while *Yatsuo-cho* and *Yamada-mura* are located side by side near Toyama City, Toyama prefecture, they have gone to different directions in that the former town focused on establishing a cable TV network into the community and to 'make the daily life more active,' whereas the latter village invested its funds to expand the Internet into the village and to 'enhance information interaction' within and outside of the village (Hiratsuka, 2000).
- 4) *Yamada-mura* was consolidated to the City of Toyama as of April 1, 2005.
- 5) The lowest administrative unit in rural areas is a *myon* in Korea, and a *myon* is comprised of several *ris*.
- 6) The number of *muras* has been decreased drastically in recent years due to the consolidation of administrative units. The numbers of *muras* were 567 in year 2000, 567 in 2001, 566 in 2002, 562 in 2003, 547 in 2004, 462 in 2005, 247 in 2006, and 195 by January 2007. (Source: National Statistical Office of Japan)
- 7) The term *regional informatization* was coined in Japan, referring to the diffusion of information technologies in a region including computers and the Internet, and enhancing computer literacy of people.

8) These terms originally referred to telecommunications-related proprietors or information-oriented businesses (Beyers, 2000). I borrowed this term here to use in a looser way referring to information-oriented leaders in rural areas. Malecki (2003) too uses the term in a similar way.

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- Correspondence: Woo-kung Huh, Department of Geography, Seoul National University, 599 Gwanak-ro, Shinlim-9dong, Gwanak-gu, Seoul, 151-746, Korea(e-mail: wkhuh@snu.ac.kr, phone: 02-880-6450, fax: 02-876-9498)
- 교신: 허우궁, 151-746, 서울특별시 관악구 신림9동 관악로 599, 서울대학교 사회과학대학 지리학과(이메일: wkhuh@snu.ac.kr, 전화: 02-880-6450, 팩스: 02-876-9498)
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