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Universal Service Policy in Vietnam: A Supply - Demand Perspective

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UNIVERSAL SERVICE POLICY IN VIETNAM: A SUPPLY - DEMAND PERSPECTIVE

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Abstract:

Universal service policy is a key program to bridge the digital divide. This paper provides an empirical examination on the existing universal service policy in Vietnam. Based on the framework of King et al. (1994) the paper analyses the universal service policy in Vietnam as well as the policies of broadband development in South Korea and Japan in order to clarify which types of initiative pursued by these countries. Furthermore, the paper makes a comparison between the policies to evaluate the universal service policy in Vietnam. Ultimately, the paper comes to discussion of how an effective policy looks like.

Keywords: universal services, broadband, policy, supply, demand.

1. Introduction

The impact of information and communication technology (ICT) in general and broadband in particular on the social and economic development is increasingly becoming critical to every country. According to a World Bank study, every 10 percent increase in broadband penetration has led to an increase of 0.24 to 1.5 percent in economic growth (Kelly & Rossotto, 2012). Nevertheless, how to transform fully the advantage of ICT into the growth of society and economy, and how to enhance the build out of broadband infrastructure still remain questions that many countries have looked for remedies. To identify factors fostering the penetration of broadband, in past years profound research has been undertaken, in which much of researches have addressed the role of governments or policies (Falch, 2007; Frieden, 2005; Hammond IV, 2005; C. Lee & Chan-Olmsted, 2004; Lee et al., 2003; Picot & Wernick, 2007; Samarajiva, 2000)

However, no one-size-fits-all policy has been developed for all countries. In line with conditions of economy and society, each country has pursued various types of measure.

This paper looks at the current universal service policy in Vietnam under the supply-demand angle as well as provide an overview of broadband development policies in South Korea and Japan. Furthermore, the paper makes a comparison between these policies to identify whether the Vietnamese policy is effective and how an effective policy looks like.

The paper will attempt to answer the following questions:

1. Which types of universal service/ broadband development policy have Vietnam, South Korea and Japan pursued?
2. Which recommendations will be provided to the government?

To answer the question, the paper applies the framework of King et al. (1994) in order to analyze the universal service policy that is being implemented in Vietnam as well as the broadband policies that were deployed in South Korea and Japan. This framework is built up by using the demand-pull and supply-push model in government intervention for IT diffusion.

The paper uses the qualitative methods to analyze the secondary documents collected from Vietnamese Ministry of Information and Communications (MIC) and the Vietnam Public Utility Telecommunication Service Fund (VTF), and some international organizations. Then the authors make a comparison to evaluate about the universal services policy in Vietnam.

The definition of universal access and service (UAS) is very distinct from countries. It is likely that each country has created a definition in line with its social, economic, and technological development. According to ITU, there are three fundamental characteristics of UAS: availability, accessibility, and affordability. The main target of UAS is to ensure that basic telecommunications services are accessible to individuals regardless of geography, gender, ethnicity, disabilities, or other factors. In this study, the term of UAS in Vietnam is understood as public

telecommunication services that include universal services and mandatory telecommunication services. In which, the universal services are telephone service, fixed broadband Internet access service, and terrestrial mobile communication service; the mandatory services are emergency calls¹. The fixed line and terrestrial mobile communication services are subsidized for low-income households. The fixed broadband Internet access service is subsidized for communes, hospitals, and schools over the whole country.

The paper is structured as follows: Section 2 presents the theoretical framework and research methods, section 3 highlights background of universal service in Vietnam; section 4 shows policies promoting universal services/ broadband development in Vietnam, South Korea, and Japan; section 5 is analysis; and finally, section 6 provides conclusions and recommendations.

2. Theoretical framework and research method

In their study, King et al. (1994) argue that information technology (IT) has been increasingly heavily used in both developed and developing nations. To enhance further the application of IT,

governments tend to facilitate the diffusion of IT. However, due to the absence of research attention to vital institutional factors, some of the appropriate national policies are uncertain and ambiguous (King et al., 1994).

Based on the perspective of the supply-push and demand-pull model, King et al. (1994) posit that an institution is any standing social entity and might exert influence and regulation over other social entities via supply-push and demand-pull force. In which the supply-push force comes from the production of the innovative product or process itself and the demand-pull force arises from the willingness of potential users to use the innovation. By combining perspective of supply and demand theory, and power of an institution (influence and regulation) they recommend six actions that institutions might intervene to promote the diffusion of IT, such as: ‘knowledge building’, ‘knowledge deployment’, ‘subsidy’, ‘mobilization’, ‘standard setting’, and ‘innovation directive’ (Table 1). An institution might apply each type of the action through exerting influence or regulation on the demand side or supply side.

Table 1: Dimensions of Institutional Intervention (King et al., 1994)

	Supply-Push	Demand-Pull
Influence	Knowledge building	Knowledge deployment
	Knowledge deployment	Subsidy
	Subsidy	Mobilization
	Innovation directive	
	I	II
Regulation		IV
	Knowledge deployment	Subsidy
	Subsidy	Standards
	Standards	Innovation directive
	III	
	Innovation directive	

Within this framework: *Knowledge building* is undertaken to provide the base of scientific and technical knowledge required to produce and exploit innovations, e.g. funding universities or institutes to

research the base of knowledge necessary for innovative activity; *Knowledge deployment* is to stimulate the dissemination of new knowledge; *A subsidy* is a support provided to innovators and users

¹ Decision no 1168 issued on 24th July, 2015 by the Prime Minister approving the Program on provision of public telecommunications services till 2020

to defray the unavoidable costs or risks in the process of innovation and diffusion in use; *Mobilization* basically means the encouragement of decentralized actors and organizations to think in a particular way with respect to an innovation, e.g. promotional and awareness programs or advertisement to support use of innovations; *Standard setting* is a form of regulation aimed at constraining options of decentralized actors and organizations in line with larger social or institutional objectives; *Innovation directive* is a command to produce innovations, to use them, or to engage in some activity that will specifically facilitate production and/or use.

This paper is applying the framework with the supply and demand side in order to look at which actions Vietnam, South Korea, and Japan are applying or were deployed. And then the research makes a comparison between these actions in Vietnam, and those in South Korea and Japan. Via the comparison, the paper conducts an evaluation of how effective the policy in Vietnam is. Some lessons for Vietnam and developing countries in building up policies will be drawn.

The secondary data were mainly collected from the Vietnamese Ministry of Information and Communications (MIC), the Vietnam Public Utility Telecommunication Service Fund (VTF). Some data were also gathered from reports of international organizations (ITU, the World Bank), nations and research findings of some papers.

Although the universal service policy has been carried out for a long time, however since 2005 Vietnam has initially addressed the development of universal service. In 2006, Vietnam introduced the Program on the provision of public telecommunications services until 2010. The program was completed in 2010. Recently, the government just issued the second program, the Program on the provision of public telecommunications services until 2020 (Decision 1168 dated on July 24, 2015). Hence, the paper looks at the second program.

3. Background in universal services in Vietnam

Vietnam has carried out policies of universal service since the 1990s. However, since joining the World Trade Organization in 2006, the Vietnamese

government has considerably adapted the universal service policy to meet the WTO's requirements.

The first universal service program was already implemented from 2005 – 2010 (namely the Program on the provision of public telecommunications services until 2010). The total budget of this program was approximately 210 million euros collected from an annual revenue share of the incumbent providers. This program made some significant achievements, such as: the penetration rate of fixed line increased to 16 percent at the end of 2010 (more than 6 times the penetration in 2005) and the figure for internet subscribers was 0.32 percent in 2010 compared with 0.018 percent in 2004 (Report 74, 2012)².

Nevertheless, some targets of the program were not reached. A mere 55% of communes throughout the country had a public internet access centre and only 40% of the households in unserved and underserved areas had a fixed-line (Report 74, 2012). The type of universal services provided was still modest. The majority of universal services were fixed voice and dial-up internet access or broadband internet access (Decision 43, 2006)³. The form of provision of universal services was completely implemented via 'order place' or 'plan assignment' imposed on incumbent operators, not by bidding or based on the market mechanism (Circular 05, 2006)⁴.

In 2011, another program on provision of universal service was approved by the Prime Minister and would have been deployed in a five-year-interval, from 2011 to 2015 (Decision 1643, 2011)⁵. However, this program was postponed and reformulated. On July 24th, 2015 the Prime Minister issued the new program (that was rebuilt from the program in 2011): Program on the provision of public telecommunications services until 2020.

4. Policies promoting universal service/ broadband development

In this section, the paper uses the framework of King et al. (1994) to analyze which initiatives Vietnam, South Korea, and Japan are deploying or were implemented.

4.1. Vietnam

² MIC's report on the implementation of the Program on provision of public-utility telecommunications services until 2010.

³ Decision no 43 dated November 2th, 2006 by MIC Issuing the list of public-utility telecommunications services.

⁴ Circular no 05 issued on November 4th, 2006 by MIC Guiding to implement the Program on provision of public-utility telecommunications services until 2010.

⁵ Decision no 1643 issued on September 21st 2011 by the Prime Minister approving the program of provision of universal services period 2011-2015.

After some years to adapt and build up the new program, on July 24th, 2015 the Program on the provision of public telecommunications services until 2020 was issued (hereinafter called Program 1168), a total of the budget is around 440 million euros. The program 1168 has been divided into five-part plans: ‘Broadband Connection Plan’, ‘Emergency

Connection Plan’, ‘Public Connection Plan’, ‘Institutes Connection Plan’, and ‘Digital Broadcast Connection Plan’. Table 2 specifies the plans that Vietnam is implementing.

Table 2: An overview of the Program on the provision of public telecommunications services until 2020

	Broadband Connection Plan	Emergency Connection Plan	Public Connection Plan	Institutes Connection Plan	Digital Broadcast Connection Plan
Beneficiary	Facility based service Providers	Users	Users	Schools, hospitals, and Commune People’s Committees	Poor households
Investor	Government and facility-based service Providers	Government	Government and Telecom Providers	Government	Government
Main objective	Mobile and Fixed Broadband Network	Access to emergency calls	Access	Access	Access to broadcasting

Source: The Vietnamese Ministry of Information and Communication

4.1.1. On the supply side

In order to enable the availability of infrastructure for the provision of universal services, Vietnam has issued a variety of subsidies, such as subsidies for the development of infrastructure, and subsidies for development and maintenance of public internet access centres.

Subsidies for development of infrastructure - the ‘Broadband Connection Plan’: Having recognized the shortcomings of the precede program (Program on provision of public-utility telecommunications services until 2010) in terms of insufficiently supporting facility-based service providers in infrastructure roll out⁶, and departed from the point of view that “infrastructure development incorporated with efficient, technological management will

facilitate the provision of universal services in future”⁷ hence, in the ‘Broadband Connection Plan’, Vietnam is to primarily concentrate on funding telecom providers to support them set up broadband infrastructure in communes where there do not have broadband network. The main objective of this plan is to cover broadband network over 99 percent of the communes in the whole nation that have power. Dwellers may access to fixed broadband internet connectivity via public internet access centres. This subsidization accounts for a major share of the total budget of the Program 1168 (up to 70 percent of the budget, approximately 300 million euros). The subsidization will be auctioned to select telecom providers to build out infrastructure. Apparently, Vietnam in its agenda is giving a high priority in

⁶ Because loan interest for building and updating infrastructure was not really attractive to telecom providers and did not help them to offset the investment cost in unserved and underserved areas. Thus, not many facility based service providers wanted to loan, the amount of money disbursed solely reached 25% of planned budget

(Report on the implementation of the Program on provision of public-utility telecommunications services until 2010, MIC 2012)

⁷ Project of formulating the Program on provision of public-utility telecommunications services towards 2020, MIC

building up broadband networks, particularly in isolated and mountainous areas.

Subsidies for development and maintenance public internet access centres - the 'Public Connection Plan':

Besides, the government is also to deploy the 'Public Connection Plan'. The main objective of the plan is to enable users living in underserved and unserved areas to access to broadband internet services at public internet access centres (PIACs). By this plan, telecom providers will not only be equipped with facilities (computer sets, printers/scans, and tables) to set up 500 new PIACs, but also be financed in order to maintain all of the PIACs in underserved and unserved areas (consist of 500 new PIACs).

It can be said that it is a remarkable change of the government with regard to subsidizations compared with those of the previous program (Program on the provision of public-utility telecommunications services until 2010). This is because previously the government only provided facility-based operators with loans at preferential rates for roll out of network and financed them to sustain public telecommunication services centres. However, nowadays they will provide finance to build up new infrastructure and equip the PIACs with digital devices in order to encourage users to access.

However, some kinds of actions like 'Knowledge building', 'Knowledge deployment', 'Innovative directive', and 'Standards' have not been addressed yet.

4.1.2. On the demand side

In addition to providing subsidies to telecom providers, the government is also to subsidize to stimulate demand among the population.

Subsidies for demand - the 'Institutes Connection Plan': The first measure is the 'Institutes Connection Plan'. Having identified institutes such as schools, hospitals, and commune people's committees have a high demand for broadband internet in training, education, health, and provision of public administration services. However, many of them located in rural and remote areas do not have access to broadband internet, due to lack of infrastructure or high price. The 'Institutes Connection Plan' will fund these institutes for installing broadband internet connectivity. Moreover, these institutes will be subsidized with a special monthly fee. Through the subsidization, the government hopes to enhance considerably demand for internet usage among the population.

In addition, the government is also to subsidize poor households to support them to use telephone or terrestrial mobile communication service via the 'Public Connection Plan'. Due to the growing decline in telephone subscriptions and the prevalence of mobile communication service, the government is to support poor households by monthly subscription fee to use a fixed line or a mobile communication service.

Like the supply side, on the demand side, the government has not focused on introducing and improving end-users' IT knowledge or training them in the skills of using IT ('Knowledge deployment' and 'Mobilization').

4.2. South Korea

South Korea is one of the leading countries in terms of penetration of broadband in the world, in which the Korean government has played a critical role in implementing several national broadband development policies, liberalizing the telecommunication industry, privatizing state-run companies (C. Lee & Chan-Olmsted, 2004), and particularly in carrying out facilities- to services-based competition on broadband policy implementation (Choi, 2011).

In 1993, South Korea formulated a set of national policies on broadband internet information infrastructure (the Korean Information Infrastructure Plan-KII and the Cyber Building Certification system) to foster broadband roll out.

4.2.1. On the supply side

On the supply side, the Korean government has introduced a wide range of initiatives to stimulate the build-up of broadband (Lee et al., 2003), such as partially subsidized facility-based service carriers to construct broadband networks (*Subsidy*) (Choudrie et al., 2003), and supported research institutes and universities in order to undertake research and development of broadband (*Knowledge building*) (Choudrie et al., 2003). In addition, the government has facilitated competition by granting licenses to telecommunications operators and implementing the hands-off policy to deregulate the registration procedure. They have also required builders of large apartment complexes to install information and communication networks for residents (C. Lee & Chan-Olmsted, 2004).

4.2.2. On the demand side

On the demand side, South Korea stimulated the awareness of people about the benefit of broadband access by forming the Ten million people internet education project (*Mobilization*) (Choudrie et al.,

2003; Lee et al., 2003). In line with the policy, the groups of housewives, the elderly, military personnel, farmers, and low-income families have been trained about the IT literacy and internet literacy programs. Particularly, housewives were targeted as the main sector due to their great influence on purchase. As a result, the government has funded private IT/Internet institutes for training housewives and allowing them to take the internet courses at an affordable price (*Knowledge deployment*) (Choudrie et al., 2003). Furthermore, to promote the broadband access platform in apartments and new buildings, in 1997, the Korean government introduced the Cyber Building Certificate system (*Standards*) (Choudrie et al., 2003). Accordingly, the government has issued certificates for buildings with high-speed telecommunications capacity and ranked buildings according to their capacity.

Consequently, the average annual growth rate of high-speed internet in South Korea, in the period 1999 - 2001, reached 30 percent (C. Lee & Chan-Olmsted, 2004). Moreover, in February 2001, 57.3 percent of the Korean Internet home users were accessible to broadband connections whereas the second country, the United States, had only the penetration of 11.1% (Lee et al., 2003).

4.3. Japan

With regard to measures of Japan that enhanced the penetration rate of broadband, we based on the National strategy for the information society (the e-Japan Strategy) to examine their policy implementation. The strategy was clarified by five specific programs (e-Japan Priority Policy Program)⁸ (Takada, 2003). It can be said that the e-Japan Strategy was an ambitious program that Japan anticipated being the world's most advanced IT nation within five years (Takada, 2003).

4.3.1. On the supply side

The Japanese government issued various types of measure to foster the penetration rate of broadband infrastructure, such as:

(1) Providing low-interest loans, tax incentives, and loan guarantees to private telecommunication carriers for the construction of ultra-high speed network infrastructure in the program of 'Formation of the World's Most Advanced Information and Telecommunications Networks' (*Subsidy*). (2) Installing PCs and providing broadband internet

access to schools and 7,000 libraries, public halls across the nation in the program of 'Promotion of Education and Development of Human Resources' (*Subsidy*). (3) Promoting research and development in the program of 'Formation of the World's Most Advanced Information and Telecommunications Networks' (*Knowledge building*). (4) Moreover, the government carried out regulation reforms in preventing and eliminating the anti-competitive behavior.

4.3.2. On the demand side

On the demand side, the government deployed almost three out of its five programs (the e-Japan Strategy) to stimulate demand for usage of ultra-high speed internet, such as 'the Facilitation of Electronic Commerce', 'the Digitization of the Administration and Utilization of IT in Other Public Areas' (*Innovation directive*), and 'the Promotion of Education and Development of Human Resources' (*Knowledge deployment*). In which, 'the Facilitation of Electronic Commerce' boosted the commerce transactions online that led to shaping the e-marketplace (B-to-B) and the net action markets (C-to-C). 'The Digitization of the Administration and Utilization of IT in Other Public Areas' promoted the electronic applications in the administration field. It enabled administrative procedures in public areas to be conducted without any geographic or time constraints, thereby contributing to increased comfort and convenience for people. Moreover, 'the Promotion of Education and Development of Human Resources' enhanced IT education and educational content in schools. Besides, in order to improve IT skill for its citizens (managers of SMEs, consumers, women, farmers, and fishers) Japan delivered IT skill training courses targeted to train around 6 million attendants.

By implementing the e-Japan Strategy, Japan although is not among top countries in terms of penetration, they are leading in the penetration of FTTH and relating to bandwidths offered (Falch, 2007).

5. Analysis

In this section, we examine if whether the Program 1168 in Vietnam is effective.

We encapsulate measures that Vietnam, South Korea, and Japan were, and are deploying in Table 3 in terms of supply side and Table 4 in terms of demand.

⁸ They are Formation of the World's Most Advanced Information and Telecommunications Networks; Promotion of education and development of human resources; Facilitation of Electronic

Commerce; Digitization of the Administration and Utilization of IT in Other Public Areas; and Ensuring of security and reliability over advanced information and telecommunication networks.

Table 3: Summarizing strategies applied by the countries on supply side

Measures	Vietnam	South Korea	Japan
Knowledge Building		Support research institutes and universities to undertake research and development (Choudrie et al., 2003)	<i>Formation of the World's Most Advanced Information and Telecommunications Networks: Promotion of R & D</i>
Knowledge deployment			
Subsidy	Broadband Connection Plan and Public Connection Plan	Provision of loans at preferential rates (Choudrie et al., 2003)	- <i>Promotion of education and development of human resources: install PCs and provided access to the high speed Internet.</i> - <i>Formation of the World's Most Advanced Information and Telecommunications Networks: budgetary support, incentives tax, low interest loan.</i>
Mobilization			
Standard setting			
Innovation directive			

Table 4: Summarizing strategies applied by the countries on demand side

Measures	Vietnam	South Korea	Japan
Knowledge Building			
Knowledge deployment		Deployment of Information technology literacy and Internet literacy programs (Choudrie et al., 2003)	<i>Promotion of education and development of human resources: Enhancement of IT education; Enhancement of educational content; Delivery IT skill training courses.</i>
Subsidy	Institutes Connection Plan		
Mobilization		The 'Ten Million People Internet Education' project (Choudrie et al., 2003; Lee et al., 2003)	
Standard setting		The Cyber Building Certificate System (Choudrie et al., 2003)	

<p>Innovation directive</p>		<p>- <i>Facilitation of Electronic Commerce.</i> - <i>Digitization of the Administration and Utilization of IT in Other Public Areas.</i> Digitization of administration procedures and applying IT in other public areas.</p>
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Basically, the Vietnamese government has introduced the Program 1168 with efforts into balancing on promotion both supply side (subsidizing facility based service providers for roll out of broadband network and development of PIACs) and demand side (funding institutes to use broadband internet service and poor households to use telephone or mobile communication service). The main objective is to enable citizens and institutes to get benefit from advantage of telecommunication services. In the Program 1168 the government is to focus on development of infrastructure (subsidization up to 70% of total budget total). However, efforts only focusing on roll out of broadband network but few measures increasing knowledge or skills of citizens do not seems to have been considered as an effective policy.

Lessons from the prior program (Program on provision of public-utility telecommunications services until 2010) shows that as users have had information about the program and had recognized benefits that they could have received both of priority fee and advantage of ICT applications, they would have used further telecommunications services and applied them into their business⁹.

Besides, there has been much researches on imperative of promoting demand and raising the knowledge and ICT skills for users. The research of Lee et al., (2003) posits that efforts have focused on the supply side and then waited for services following, but in fact there will not be effort to generate demand. Youtie et al., (2007) also point out reducing the cost of technology does not ensure rise in demand, particularly from low-income households. Choudrie et al. (2003) conclude that citizens must be prepared to use the new technologies and services so that they can benefit from the enhanced capabilities. The government should pursue a variety of policy measures for creating Internet demands as well as networks. This conclusion is also consistent with the study of Falch (2007) and Long (2010). As Falch (2007) states that it is important

to stimulate the demand side via content development and increasing ICT skills. And Long (2010) indicates that universal service policies should spend in promoting applications in education, agriculture, and health information by local language as well as fund for rural IT training. Apparently, policy makers not only need to emphasize on infrastructure development but also launch plans stimulating demand, especially increasing knowledge and ICT skills for users.

On the other hand, as demonstrated at Table 3 and Table 4 we can see that by deploying a variety of strategies that have attributed to the boom in the penetration of broadband in South Korea and led this country to the top country is very critical. In which considering actions that stimulate demand, not just supply (Choudrie et al., 2003; Lee et al., 2003). Similarly, though not becoming the leading country on broadband penetration, Japan by applying complex programs is also quite successful with regard to achieving a high broadband penetration rate within a short time (Falch, 2007) or satisfy the highest service quality in the world (Takada, 2003). This point of view is as well similar to the study of Jordana et al., (2005). In their research, Jordana et al., (2005) posit that more complex initiatives has more intense impacts than simple ones on the regional Internet usage rate. Damsgaard & Lyytinen (2001) based on study on diffusion of electronic data interchange in Denmark, Finland and Hong Kong also point out that standard setting, mobilization, knowledge building and knowledge deployment are the most prominent measures that an institution may facilitate the diffusion of electronic data interchange. Whilst the Program 1168 is somewhat simple, the Vietnamese government is merely to carry out subsidization measures both for telecom providers and users, do not pay attention to increasing the knowledge and ICT skills for users (knowledge deployment and mobilization strategies) or funding to research institutes, enterprises to research developing the content (knowledge building

⁹ An issue of the prior program was that the volume of telephone subscriptions that had been funded dropped considerably when the government stemmed subsidization. Because local users had not perceived the advantage of ICT or joined into another promotion

plans (Report on the implementation of the Program on provision of public-utility telecommunications services until 2010, MIC 2012).

strategy). South Korea may be a very good experience for Vietnam and other developing countries to study. There are of course some other important factors such as culture, geography, demography, competition, and PC Bang model contributing to diffusion of broadband in South Korea (Lee et al., 2003). And although Japan also needs to enhance further the development of applications and content (Takada, 2003). Nevertheless, governments take the leading role influencing other players by their actions (Choudrie et al., 2003), they may foster ICT development by articulating from the top a broad vision of what ICT can do for a nation and its citizens (Frieden, 2005). Thus, the initial action to strengthen the penetration of broadband and promote usage have to come from governments who will take factors into account in formulating policies.

6. Conclusion

By applying the framework of King et al., (1994) the paper indicates that a complex initiatives that stimulate the diffusion of ICT is very crucial, particularly the balance between the demand side and the supply side in formulating universal services policy.

Subsidization for facility based service providers to build up broadband infrastructure is indispensable that ensure the carriers able to invest and maintain their business in unprofitable areas. Moreover, providing finance to develop public internet access centres is also to facilitate local citizens' accessibility to broadband internet services easier.

On the other hand, in order to stimulate demand of broadband internet the Vietnamese government is also fund schools, hospitals and commune people's committee to set up internet connectivity and use these service with priority fees.

Nevertheless, the subsidies are unlikely to be really effective if users do not recognize the benefit of ICT, especially dwellers living in unserved and underserved lack of knowledge of ICT. The Vietnamese government should diversely deploy the Program 1168 that means along with support for facility based service providers, institutes and users they need carry out other plans promoting demand, such as plans to raise the knowledge and ICT skills for users or to develop applications in education, agriculture, and health information in local language.

The research has also some limitations. Constrain number of countries compared in performance may not has remarked the importance of applying complex actions or measures to increase knowledge and ICT skills. Future research should gather more other

countries' policy initiatives to examine, particularly nations that have the same economic and social conditions.

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