

eServices as Pull Strategies within Public Private Partnerships - Evidence from Case Studies

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Abstract

Broadband access plays a major role for the economic growth, and for the social, and cultural development of urban areas as well as for rural regions. In case of market failure in the broadband sector, Public Private Partnerships (PPP), respectively Private Finance Initiatives (so called in the UK), can be a powerful tool to encourage the deployment of broadband infrastructure. The market failure within the broadband sector emerges often in regions with a low density of population and weak economic conditions. A provision of broadband infrastructure and services in such areas is not attractive to private investments because of a low or even negative expected rate on return on investment (ROI). Thus, PPPs promise to be an attractive and applicable tool to overcome market failure and to enforce broadband diffusion. But the development and implementation of broadband infrastructure do not induce demand of the customers by itself. Case studies¹ from 'broadband-PPPs' from different countries show that the provision of additional eServices, especially value added eServices from local players and the active involvement of local public institutions (hospitals, schools, etc.) enforces the use of broadband technologies. Therefore, this contribution aims to encourage the discussion about successful strategies of PPPs within the broadband sector. For this reason, the distribution strategies of PPP projects will be validated by the analysis of eight PPP case studies from the broadband sector from Sweden, Great Britain, and France.

Keyword: Public Private Partnership, Broadband Diffusion, Rural Areas, eServices

JEL Classification: O33

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1. Introduction

The area-wide diffusion of broadband infrastructure and services is one of the major goals of the European Commission. The European Commission states that broadband technologies are one of the main drivers for economic growth and for the generation of jobs [EU06]. Accordingly, the program 'broadband for all', in the sixth framework program from the European Union converted the issue of broadband diffusion to a question of public interest. At present, broadband technologies are not available in all areas of the European Union. Especially rural areas with a low density of population and weak economic structures show lacks in broadband accessibility. The provision of broadband infrastructures and services in these kind of areas is not attractive to private business because of a low expected return on investment and high economic risks. In result, market mechanisms fail. Because of the importance of broadband technology for the economic growth there exists public interest which builds the basis for the legitimation for public authorities to support the implementation of such infrastructures. This aims at reducing the digital divide and attracting the region for investors and citizens [Mühl04].

To solve the depicted structural problems, several European countries follow the trend to implement Public Private Partnerships (PPPs). PPPs are special forms of co-operations among private and public partners to accomplish tasks which are of public interest [Bert+03]. PPPs within the broadband industry often have a technological focus and aiming at establishing an innovative technological infrastructure. It is a serious problem of such projects that there is normally a very low demand for such technologies and services. Therefore it is important to involve local players and to provide value added local services (so called 'eServices'), which result in a demand pull.

PPP case studies from the broadband sector, which are described and analyzed in this contribution, depict on the one hand that PPP solutions may provide a win-win situation for both, private and public partners due to the sharing of economic market risks and financial resources under certain circumstances. On the other hand PPPs provide the opportunity to establish new and innovative

services for citizens. Thus, the authors analyze different 'diffusion' strategies of PPP projects in the broadband sector by referring to eight case studies from Sweden, Great Britain, and France.

2. PPP as an instrument for bridging broadband gaps in Europe

2.1 Trends in the Development of PPPs in Europe

There is a growing number of public initiatives to enhance broadband diffusion in form of and PPPs in Europe. In this context, the European Union started the 'i2010' initiative in 2005 [EU05]. The organization 'Partnerships UK', which supports PPP projects, was founded in 2000 in Great Britain [Curw00]. The government in Sweden initiated the program 'IT för alla' in 2000 [SwGo00]. The French government set up a special national fund for PPPs [PdGo06]. Even if PPPs strongly emerge in Germany, there exists no outstanding PPP project in the broadband sector in Germany until now, as statistics depict [DIFU05]. The reasons to set up PPPs in the broadband sector are normally motivated as follows: Under certain circumstances, the implementation and installation of broadband infrastructures by the private corporations is not per se profitable. This is normally true for rural areas with a low density of population and weak economic structures. Under these conditions, private actors are not covering the market with their services and products. Market failure occurs, which then requires the involvement of the public authority. The main goal of PPPs in this context is to share the risks and expenses among private and public partners to foster the implementation of broadband infrastructure.

2.2 Broadband and PPP

The emergence of PPPs in Europe is insufficiently analyzed until now in the economic and social sciences. There exists no distinctive definition or taxonomy for PPPs, neither in scientific literature nor in practice. There rather exists a wide spectrum of descriptions of different forms of co-operation among partners from the private and from the public sector, which are coupled with the term PPP [Budä04]. This heterogeneity is widely criticized in literature, particularly in respect to the distinction to the phenomena of 'outsourcing' and 'contracting-out' [Schu01].

For the purpose of the research focus in this contribution the term PPP will be described by six fundamental criteria, which are often addressed in literature ([Eich95], [Rogg99], [Ambr00], [Budä01],

[Grei02]). Hence, PPP is (1) a voluntary collaboration, based on contracts (2) among public and private partners (3) to fulfil a certain task (4) often performed in entrepreneurial manner. (5) The chances and risks are shared among the partners. (6) The partners expect a stimulation to achieve their own goals and to gain from economic synergies.

Most articles about PPPs have a national focus, thus comparative cross-country studies hardly exist [Kopp05]. However, Mühlenkamp analyzes PPPs with a focus on regulatory policy [Mühl04] and with reference to transaction cost theory and new political economics. Explicitly, Mühlenkamp states that the employment of PPPs roots in market failure, which, in the consequence leads to a legitimation for the general authority to act in public interest. Budäus [Budä05] combines the discussion about PPP with a discourse about corporate social responsibility and regards PPPs as an organizational concept for social responsibility and thus encourages the argumentation from Mühlenkamp. There are some studies which compare the successfulness of PPPs with those of traditional corporations. In respect to the corporate social responsibility, social welfare always plays a major role in this context [Kopp05]. Tenbenschel [Tenb05] examines PPPs from a theoretical and institutional based perspective. He defines PPPs as hybrid forms of organizations in contrast to markets und hierarchies. The following advantages can be realized by the implementation of PPPs: (1) Load rejection of the public authorities, (2) enhancing the efficiency due to a managerial organization of the PPP (3) risk sharing/risk reduction for every single partner (4) enhancing the know-how in the project, (5) realization of synergies, (6) enhanced customer orientation and (7) faster response time ([Rogg99], [Grei02]).

2.2.1 Broadband and eServices

One of the major questions in the context on broadband diffusion is about those services which on the one hand requires broadband technology and attract customers on the other hand. Such services are for example triple play applications, voice over IP, video and TV on demand, online gaming, or podcasting [Erbe06]. These kinds of services are emerging strongly since shortly and result in positive network effects [Tsuji03]. These services, which are dedicated to a broad range of customers, may result in a demand pull in several areas and cultures, such as in urban and well-developed areas.

However, until now, these services seem not to attract people in weak-structured, rural areas as much to justify economic investments in broadband infrastructure. According to Farr, the introduction of local strategies including the integration schools and universities or the health system will direct increase the demand for broadband access [Farr05]. In fact, in these cases local broadband services, such as eHealth, eLearning or eGovernment applications promise to be a solution to enhance the demand for broadband technologies in rural areas.

There exists no standardized definition for the term eServices. Many definitions contain the three elements (1) software/applications, (2) internet and (3) functionalities [Baid+04]. Baida et al. concern with the terminology service and try to point out the differences between the terms service, Web service and eService [Baid+04]. Furthermore there are consultant services and several other services such as logistic, science and e-production [ITWi06].

Thus, for the research subject of this contribution, we will use the term ‘eSolution’ for services provided by the local government, public or private institutions dedicated to regional customers and citizens, and which requires broadband technologies.

Demand for eServices

		Business		
		Consumer	global focus local focus	Administration
Supplier of eServices	Consumer	C2C e.g. electronic classifieds or exchange markets	C2B e.g. request for due a product offer	C2A e.g. electronic tax handling of private individuals
	Business	B2C e.g. eShops, eMalls, eCatalog, eLearning	B2B e.g. eProduction, eProcurement	B2A e.g. electronic tax handling of companies
	Administration	A2C e.g. eVote, eGovernment, eEducation, eHealth	A2B e.g. eGovernment, eProcurement of public bodies	A2A e.g. transactions between public bodies (at home and abroad)

Figure 1: Supplier-demand constellations to provide local eServices with impact on broadband demand

There exist three main actors in the interrelation of supply and the demand of eServices: private consumers (C), firms or business institutions (B) and the government/administration (A). eServices in our definition do only include those services that enable network effects on the demand side of citizens and firms (grey areas in figure 1). A2A (internal administration) services are excluded in this context (see figure 1) because this constellation have hardly an impact on network effects.

2.3 eServices and PPP

As mentioned above, PPP solutions provide broadband access in rural areas but they often focus only on the supply of the technical infrastructure instead of the provision of demanding services. This strategy can be characterized as a push strategy as the PPPs try to push the technology into the market. The analysis of the eight case studies shows that a more promising option to increase the broadband usage is to offer eServices with added values to the local customers.

The special organization of a PPP, where normally local public and private partners are involved, build the basic platform for the joined provision of local, demanding services for private and business customers [Too+06]. A PPP project allows an easy bundling of different eServices because of the close relation of the public and private actors. The strategy to provide such services is called pull strategy and promise to increase the growth rate of broadband diffusion [Ahn+06].

However, until now there exists no special literature in the research field of broadband diffusion, PPPs and eServices. To close this research gap, this contribution encourages the discussion about the integration of eServices in broadband PPP projects. To detect the interrelation between eSolutions and utilization of broadband technologies different case studies from PPPs in the broadband sector from Sweden, Great Britain, and France are analyzed.

3. Case Studies

The presented results in this contribution are part of an analysis which comprises in total twelve PPP broadband cases from Sweden, Great Britain, France, and the Netherlands. Eight of these case studies provide sufficient data for this research subject.

3.1 Methodology

The case studies based on guided interviews with experts and managers from broadband PPPs. The exploration was complemented by data from publicly available sources. The survey was conducted between February, 1st 2006 and April, 30th 2006.

3.1.1 Case Study: 'Falkenberg'

The Swedish municipality 'Falkenberg', located near to Gothenburg, lacked in the provision of broadband infrastructure until the year 2000. In 2000, the municipality decided to found a PPP together with e.On Broadband as the private partner in the PPP, a subsidiary of the German e.On corporation, to build up a broadband infrastructure and broadband services. Initially, the PPP based on a concession model, where e.On broadband was the only concessionaire with the allowance to provide services on the established technical infrastructure. After a successful start of the PPP, Telia Sonera, the former state-owned telecommunication provider in Sweden, entered the market with an own technical infrastructure and rewarded the same concession from the municipality like e.On, in order to ensure competitive neutrality. This is quite remarkable, because Telia Sonera have had no interests in establishing a broadband infrastructure in this region before the implementation of the PPP. E.On established eServices by actively integrating the local schools. Therefore broadband was integrated into the education program and pupils are able to use the PPP server e. g. for publishing school magazines.

3.1.2 Case Study: Tierp

Tierp municipality located 130km in the north of Stockholm, started the PPP project 'KanalTierp' in 1998. The project was developed by the municipality and the private actor OpenIP. Kanal Tierp is one of the first PPP within the broadband sector in Sweden. The infrastructure is owned by the municipality and OpenIP operates the broadband network. Open IP is a neutral operator and offers services to several service provider which offer broadband access to the customers. The services of OpenIP are (1) operations, (2) marketing, (3) customer relationship and (4) the management of e-services such as voice over IP. There are no specific services which are offered by the local

administration to the customers. Although the infrastructure quality is high the expected usage by the customers could not be realized until now.

3.1.3 Case Study: ‘Connected Communities’

The Western Isles are located off the northwest coast of Scotland. The Western Isles consist of more than 55 islands [CnES05]. The region is characterized by a declining and ageing population. There has been a sustained attempt to modernize the economy since 1990. Parts of the region are already covered by a broadband infrastructure of the British Telecom (BT). The PPP is focused on areas where no broadband infrastructure exists at all. The project ‘Connected Communities’ started in 2004. A new company, Hebrides.net, was founded by the PPP to provide broadband services on the basis of the new infrastructure. The infrastructure is 100% financed by the public authorities: the Scottish Executive and local communities.

Hospitals and local public authorities are actively introduced into the network; therefore they are used as a multiplier to accelerate broadband diffusion within the administration (A2A) but not to the customer. Therefore, there are no eServices integrated which might increase the use of broadband technology.

3.1.4 Case Study: Pathfinder North (Highland Council)

The Highland Council is one of the largest council by territory in the UK. The large area and relatively small population result in a low population density of eight persons per square kilometres [HiCo05]. The project ‘Pathfinder North’, supported mainly by the Scottish Executive, aims to enhance the demand for broadband services by the broad public, by involving more than 450 schools, libraries, and the public administration in the project [Path06]. Thus pull strategies are implemented. The PPP ‘Pathfinder North’ is organized as an operating model. Funding and project management is solely provided by the public partners. Private partners are involved in planning, installation, and implementation, as well as in the maintenance of the physical infrastructure [Path06]. The tendering process of the project is still ongoing (status: mid 2006). At the current state no eServices are planned to be integrated in this PPP.

3.1.5 Case Study: Shoreditch

The Shoreditch Digital Bridge is funded primarily by the Shoreditch trust, and will provide speeds of up to 5Mbps to over 20,000 residents and 1,000 businesses. Accompanying with the structure of the net several services are being offered like Internet-based television. This allows to call up real-time pictures of monitoring cameras in the socially unsafe quarter. The service will be operated by Video Networks Ltd who provide broadband and IPTV in London under the Homechoice brand. Transmission rates up to 2 Gbit/s will available from mid of 2006 on. The project has a financial total amount of about 20 millions £ (30 Mio. €), which are provided by the Office of the Deputy Prime Minister as well as by the European Union. It is intended to cover the running costs of the net by the fees of the inhabitants. This project is a good example of a successful integration of eServices to increase the demand of broadband internet access.

3.1.6 Case Study: 'Irisé'

The Irisé project aims to build up an open broadband infrastructure for an unlimited number of operators and service providers to break the monopoly of France Telecom in the area of 'Ile de France' The project was initiated by SIPPEREC in 2001, an inter-communes organization of 86 cities in the region 'Ile de France'.

A new company, Irisé, was founded by the involved partners to fund and administer the network. Involved partners are the LDCollectivités, a 100% subsidiary of Neuf Télécom, the Caisse des Dépôts et Consignations, a public financial institution, Telcité as a subsidiary of a public corporation, and Dexia as a private partner who is specialized on project management. Irisé is successful in providing broadband access in the region. Low prices and innovative services increased the diffusion of broadband in the areas. Innovative local eServices are offered partly by schools and universities. Furthermore, hospitals are also involved in developing of eServices.

3.1.7 Case Study: 'Teloise'

The French region Oise is characterized by smaller cities and rural areas. The project Teloise aims to achieve two goals: (1) uncovered areas should be supplied with broadband technologies and services, (2) competition should be increased. The private partners for the PPP were selected in February 2004

by the municipality Oise. The installation and implementation started in July 2004. At the beginning of 2006 the infrastructure was not totally deployed. However, network effects started to be effective. Within the framework of the Teloise project schools, universities and administrations have devised new electronic services, such as eEducation portals, eVote, eCulture etc. [Telo06]. Hospitals are involved in development of eServices as well (tele medicine).

3.1.8 Case Study: 'Pau Broadband Country'

Pau Broadband Country (PBC) is an innovative project with the aim to launch the first very-high-speed infrastructure (ftth - fibre to the home) in France. The technological infrastructure was build up solely by the group of communes in the 'Pau Pyrénées' region (14 cities from the department Pyrénées-Atlantiques). The public authority provided 100% of the funds and is the owner of the net. The municipality 'Agglomération Pau Pyrenäen' manages the project and provides funds and the implementation of infrastructure. The private partners are responsible for the marketing and service provision. The importance of developing innovative eServices was regularly underlined by the project managers. The promised innovative online services were not developed. Further new implemented services differ not fundamentally from existing offers.

3.2 Evidence/ Findings

The eight case studies show that there are three interdependent factors which affect the success of PPP: environmental conditions (risk, social structures, density of population etc.), organizational model, and funding modes [Latt+06]. The analysis of the cases depict that there exist an interrelation between the adoption rate of broadband technologies and supply of innovative eServices.

In four cases (Tierp, Connected Communities, Pathfinder North, Pau) pull strategies are not applied to intensify the broadband utilization by the citizens. Despite the supply of technical infrastructures the use of broadband technologies by the citizens does not achieve the prospected numbers. The provided accesses and services for example in the Pau project did not have the promised quality and/or no appropriate price-performance ratio.

In cases of Shoreditch, Falkenberg, Irise and Teloise pull mechanisms are used and innovative local services and public areas are involved are offered. The demand for broadband access increased

clearly in these projects. For the Shoreditch project there are still no figures about the usage available, caused by the fact that the project was started at the beginning of this year.

PPP Project	population density (inhabitants/ skm)	innovative eSolutions offers	utilization of broadband technology
Falkenberg (S)	36	<i>available</i>	<i>increasing</i>
Tierp (S)	13	<i>not available</i>	<i>slow increasing</i>
Connected Communities (GB)	9	not available	unknown
Pathfinder North (GB)	8	not available	unknown
Shoreditch	Inner city, 20.000 inhabitants in the relevant area	available	unknown
Irisé (F)	940	<i>available</i>	<i>high increasing</i>
Teloise (F)	133	<i>available</i>	<i>increasing</i>
Pau Broadband Country (F)	150	<i>not available</i>	<i>slow increasing</i>

4. Summary and Outlook

At present, broadband access is not guaranteed in all regions of the European Union. Especially PPPs are observed in areas with unattractive economic conditions for broadband projects. PPPs seem to be an adequate form of organization to connect rural areas to broadband networks. The considered case studies pointed out that only the supply of a technological infrastructure is not sufficient. Especially in rural, developing areas push strategies generate hardly enough demand on customer side to justify an investment.

However, PPPs which provides not only a technological infrastructure but furthermore eServices with regard to the local area generate additional benefits for citizens and the local business. Thus they are more successful in the diffusion of broadband usage. eServices promise a direct benefit and provoke a pull effect. This takes place on the one hand via the creation of added value, for instance by better medical support by means of an electronic patient document, and on the other hand by the generation of net effects, for example with voice over IP.

The implementation of eServices in common broadband projects is complicated because of the dispersed distribution of the tasks of the participants. There exist players on different technological and services levels who have to work together to implement eServices.

However, the specific organizational structure of a PPP, where public and private partners on different levels work together, provides an ideal platform to realize eSolutions. This is because of the close coordination and collaboration for other concerns.

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