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“WE HAVE EVERYTHING TO WIN”:

COLLABORATION AND OPEN INNOVATION IN PUBLIC ADMINISTRATION

*"Nous avons tout à gagner" : la collaboration et l'innovation ouverte dans
l'administration publique*

Completed Research Paper

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Abstract

While the concept of open innovation has attracted significant industry and research interest in the past five years, there remains a paucity of research on the application of the concept in non-commercial settings. This paper presents an exploration of a network of Swedish municipal authorities. Within this network, we have observed a move from isolated innovation to the purposive leveraging of knowledge inflows and outflows in a manner characteristic of the open innovation paradigm. This paper presents a characterization of these knowledge exchanges using an existing framework of open innovation archetypes, as well as a description of the business model impacts of these innovation approaches for the participant municipalities. The paper concludes by discussing the implications of the findings for future research.

Keywords: open innovation, business model, public administration, inter-organizational network

Résumé

Le concept d'innovation ouverte a fait l'objet de peu de recherches dans les organisations à vocation non-commerciale. Notre étude explore un réseau de municipalités suédoises engagées dans des activités d'innovation. Cet article présente une caractérisation de ces activités, utilisant un modèle préexistant en matière d'innovation ouverte, et une description des impacts de ces activités sur les modèles d'organisation.

Abstrakt

Open Innovation-konceptet (OI) har varit föremål för lite forskning vad gäller det icke-kommersiella området. Denna artikel undersöker ett nätverk av svenska kommuner engagerade i OI-aktiviteter. Artikeln presenterar en karaktärisering av dess aktiviteter med hjälp av ett existerande ramverk för OI-arketyper, samt en beskrivning av dess påverkan på kommunernas affärsmodeller.

Introduction

The past decade has seen a dramatic transformation in the delivery of public administration services. This transformation is a complex process characterized by frequent changes in political agendas, legislation-driven rather than market-driven goals, and deficiencies in financial and human resources (Rusaw 2007). Technological innovation, particularly the widespread adoption of the Internet in industrialized countries, is seen as facilitating the creation of modern, effective and democratic public administrations. Electronic Government (e-Gov) has emerged as a global theme for governments aiming to provide citizen services and increase the authorities' efficiency using IT (Pedersen, *et al.* 2006), and is understood as a holistic transformation, affecting the management of human, technological, and organizational resources and processes (Jansen 2005). E-Gov, and related concepts such as mobile Government (m-Gov) and transformational Government (t-Gov), has attracted attention from policy makers, private actors, and the research community. Research in these areas have addressed the cooperative use of municipal e-services (Goldkuhl, *et al.* 2007), inclusion and exclusion (van Dijk and Hacker 2003; Kvasny and Trauth 2002), techno-philosophical issues (Lindblad-Gidlund 2005), ethics (Svensson and Wood 2004), political and organizational implications (Ilshammar and Åström 2001; Richard 1999; Barber 1999; Grönlund 2003) and economic questions (Kessler and Kelley 2000; Wyld 2001). The transformations associated with e-Government are complex, characterized by frequent changes in political agendas, legislation-driven rather than market-driven goals, and deficiencies in financial and human resources (Rusaw 2007). Consequently, many early adopters of technology in the public sector (e.g. the Scandinavian countries, the UK, Canada and Australia) have a highly developed technical infrastructure, a broad range of e-services, and a high penetration of IT among the population, but have not been able to achieve the desired levels of transformation of public administration. In many instances, this is a result of efforts being focused on infrastructural and technical development as well as digitising existing services, with the organisational issues receiving less attention (c.f. Cordella, 2007; Bekkers, 2007).

The ability of public administrations to innovate is central to meeting the many challenges associated with contemporary transformations in government services; innovation is fundamentally the result of combining different knowledge sets (Nonaka, *et al.* 2003; Tidd, *et al.* 2005), and such knowledge is frequently to be found outside the organization (Chesbrough 2006; De Wit, *et al.* 2007). However, despite the continuing importance of inter-organizational co-operation in relation to servicing consumer needs for products and services (Okamura and Vonortas 2006), organizations (both private and public) have been slow to harness the same type of external cooperation in relation to innovation (Lane and Probert 2007). Within most Western economies, profit-seeking organizations consider their competitors, and very often their suppliers, as the enemy (Opper and Fersko-Weiss 1992; Roper and Weymes 2007). Consequently, organizational strategies have traditionally focused on neutralizing competitors to gain control over their buyers or suppliers (Porter 1985); although recognizing that some cartels did operate. In the last two decades, competitive pressures have focused greater attention on co-operative ventures with partners (Henderson 1990; Reid, *et al.* 2007), even if some relationships are based more on power than on cooperation (cf. Webster 1995). In addition, developments in the production and use of complex product/service offerings (cf. Davidow and Malone 1992) and the desire to focus on providing 'whole' products (cf. Moore 1999) have resulted in organizations with similar goals aligning themselves in IT-mediated partner networks in order to meet consumer requirements (Stafford 2002; Okamura and Vonortas 2006).

Open Innovation has been defined (with the commercial context in mind) as "The use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively ... This approach places external ideas and external paths to market on the same level of importance as that reserved for internal ideas and paths to market in the earlier era." (Chesbrough 2008, p. 1) However, with the exception of notable examples of collective invention (cf. Allen 1983; von Hippel 1987), organizations have been slow to engage in open innovation (cf. Chesbrough 2006). In addition to worries about the quality and suitability of external ideas, organizations have resisted cooperative approaches to innovation due to perceived competitive necessities and issues relating to organizational control (Chesbrough 2004). In the commercial area adopting an open innovation process "includes various perspectives: (1) globalization of innovation, (2) outsourcing of R&D, (3) early supplier integration, (4) user innovation, and (5) external commercialization and application of technology" (Gassmann 2006). Consequently, in order to move towards open innovation, there is a need for organizations to adopt business models (Chesbrough and Schwartz 2007) that utilize "both external and internal ideas to create value, while defining internal mechanisms to claim some portion of that value" (Chesbrough 2006, p. xxiv). There have been numerous examples of the successful application of open innovation R&D processes in commercial settings such as consumer electronics (Blau 2007), pharmaceuticals (Lane and Probert 2007), as well as automobiles and

computer hardware (Gwynne 2007). While open innovation practices are not limited to 'high-tech' sectors (Chesbrough and Crowther 2006), there is a paucity of research on the application of open innovation outside the commercial environment.

The current research addresses the issue of how open innovation is used in public administration organizations dealing with the challenges presented by governmental transformation. The paper presents an exploration of a network of Swedish municipal authorities, in which we have observed a move from isolated innovation to practices characteristic of the open innovation paradigm. The remainder of the paper is structured as follows. In the next section we present a theoretical grounding for the study using the work of Gassmann and Enkel (2004) on open innovation archetypes and Osterwalder *et al.* (2005) on business models. This is followed by a description of the research methodology employed in the study. We then present the case environment, highlighting examples of the strategic changes taking place at a national level and the characteristics of the municipalities studied. We then present the findings of our study, namely, a characterization of open innovation activities within the network and a description of the impacts of these innovation approaches on the business models of the participant municipalities. We conclude with a discussion of the implications of our work for future research.

Theoretical Grounding

This section presents the theoretical grounding for the study, examining extant research on open innovation process archetypes, on inter-organizational business networks, and on business models. Together, these areas of inquiry frame our understanding of organizations seeking to form an ecosystem to exploit cooperatively developed innovation.

Building on Chesbrough's (2006) definition of Open Innovation, Gassmann and Enkel (2004) propose three core open innovation process archetypes (see Figure 1), namely:

1. The *outside-in process*: Increasing an organization's innovation capacity by integrating knowledge from external parties with the internal knowledge base. Examples include patent acquisitions, licensing externally developed technologies, engaging in supplier/customer co-development, etc.
2. The *inside-out process*: Increasing an organization's exploitation capacity by transferring internal innovations to external parties. Examples include the sale of intellectual property to external organizations (or the creation of spin off organizations) which may be able to bring the ideas to market faster or more effectively, the sale of patents and licensing of technologies, and the establishment of standards and platforms through the dissemination of knowledge.
3. The *coupled process*: A combination of the *outside-in* and *inside-out processes* characterized by the formation of enduring alliances with complementary external partners. Examples include both project specific and long-term alliances within inter-organizational networks.

All three of the archetypes described above are dependent on the effective management of inter-organizational relationships; effective inter-organizational networks are critical for leveraging open innovation (Vanhaverbeke and Cloudt 2006). Participants in inter-organizational networks believe that collaboration will result in adaptive efficiency; "the ability to change rapidly and at the same time provide customized services or products, and at low cost" (Alter and Hage 1993). An inter-organizational network is a social action system as it exhibits the fundamental principles of any organized form of collective behaviour. These include the aim to achieve both collective (network) and self-interest (member) goals, interdependent processes utilized by network members, and the ability of the cooperative entity to act as a unit with a separate identity from its individual members (Van de Ven 1976).

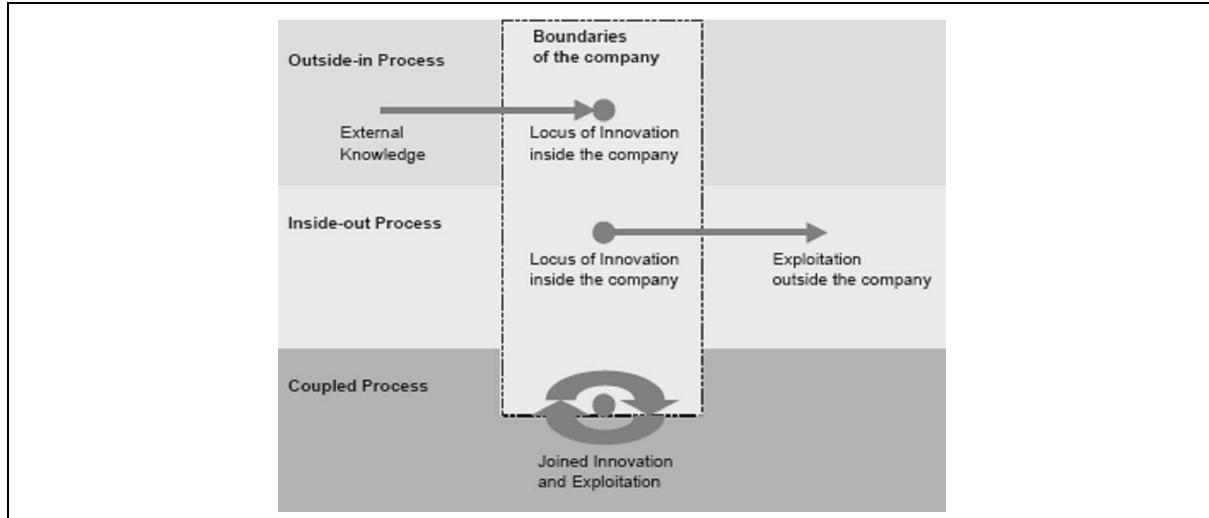


Figure 1: Three Open Innovation Process Archetypes (Source: Gassmann and Enkel, 2004)

The changing loci of innovation and exploitation that emerge from applying open innovation processes have implications for both an organization’s strategic direction and its operational activities. The architecture that represents the business logic connecting strategic and operational activities is referred to as a business model (Osterwalder, *et al.* 2005). Indeed, understanding the business model implications of open innovation is central to its exploitation (Chesbrough 2003; Chesbrough and Appleyard 2007; Chesbrough and Schwartz 2007). Timmers (1999) argues that architectures for business models can be identified through the deconstruction and reconstruction of the value chain. Value chain elements are identified, as are the possible ways that information can be integrated both within the value chain and between the respective value chains of interacting parties within the inter-organizational network. Furthermore, as more advanced information standards are introduced, levels of collaboration between organizations can be achieved that were previously only possible within a vertically integrated hierarchical intra-organizational structure (Evans and Wurster 2000). Indeed, it is evident from the work of Timmers (1999), Mahadevan (2000), and Osterwalder, *et al.* (2005) that business models must examine both strategic and operational value-adding activities in the context of an inter-organizational network.

Thus, in developing a conceptual framework for our study we utilize the work of Osterwalder, *et al.* (2005), who proposes a business model ontology that focuses on four aspects of the organization: product innovation, infrastructure management, customer interface and financial aspects (see Table 1). The application of the Osterwalder, *et al.* (2005) framework to open innovation is not completely new. Research such as Feller, *et al.*, (2008) has applied the framework to the business model implications of companies forming a business network to leverage externally produced Open Source Software (OSS), a phenomenon that has been posited as a notable example of open innovation (cf. West and Gallagher 2006).

Table 1: Business model Pillars and Components.		
Pillar	Building Block	Description
Product Innovation	Value Proposition	Gives an overall view of a company's bundle of products and services.
Customer Interface	Target Customer	Describes the segments of customers a company wants to offer value to.
	Distribution Channel	Describes the various means of the company to get in touch with its customers.
	Relationship	Explains the kind of links a company establishes between itself and its different customer segments.
Infrastructure Management	Value Configuration	Describes the arrangement of activities and resources.
	Core Competency	Outlines the competencies necessary to execute the company's Infrastructure business model.
	Partner Network	Portrays the network of cooperative agreements with other companies necessary to efficiently offer and commercialize value.
Financial Aspects	Cost Structure	Sums up the monetary consequences of the means employed in the business model.
	Revenue Model	Describes the way a company makes money through a variety of revenue flows.

Research Objective and Method

The objective of this study is to explore a network of public administration authorities in which municipalities collaborate with each other and external parties to accelerate the creation and exploitation of internal innovations. The network of municipalities is characteristic of other inter-organizational networks as described by Van de Ven (1976) and the inflows and outflows of knowledge in such networks are in line with the thinking of Chesbrough *et al.* (2006) on open innovation processes. In order to provide a more focused consideration of both the characteristics and business model impacts of the innovation processes employed in the network, we utilize the work of Gassmann and Enkel (2004) on archetypes of open innovation processes and Osterwalder *et al.* (2005) on business models to formulate the following research questions:

RQ1: How do network participants leverage outside-in, inside-out, and coupled open innovation processes?

RQ2: What is the impact of open innovation activities on the business models of the network participants?

Given the exploratory nature of this research, and the need to obtain rich data in a complex inter-organizational context, a case study approach was adopted. 'A case study examines a phenomenon in its natural setting, employing multiple data collection methods to gather information from a few entities. The boundaries of the phenomenon are not clearly evident at the outset of the research and no experimental control or manipulation is used' (Benbasat *et al.* 1987). Cases are most appropriate when the objective involves studying contemporary events, without the need to control variables or subject behaviour (Yin 2003).

Our case study seeks to 'approximate reality' (Guba 1990) using methods that emphasize the verification of existing knowledge and the discovery of new knowledge (Denzin and Lincoln 2000). Our method is thus consistent with the case study approach of Benbasat *et al.* (1987) and Yin (2003) in that we study the phenomenon in its natural setting, employing multiple data collection methods to gather information from a few entities, without employing experimental control or manipulation. We follow in the tradition of Eisenhardt (1989) and Madill *et al.* (2000) by seeking to reveal pre-existing, relatively stable and objectively extant phenomena and the relationships among them.

The case study focuses on *Sundsvallsregionen* (“The Sundsvall Region”), founded in 2004 as a cooperative network of six Swedish municipalities, geographically situated in the middle of Sweden. The researchers first conducted an archival search of public domain material on the network and its participant municipalities. Based on this preliminary analysis a case study protocol was prepared in order to ensure the consistency of data gathered from the various case study sites (municipalities) (cf. Yin 2003). Having secured the cooperation of five of the six municipalities, interviews with key informants were conducted during the period January to April 2008 (see Table 2). The choice of the interviewees was based primarily on history of network involvement (involvement in the ongoing network activities over a period of time) and seniority.

Table 2: The Interviewees	
Municipality	Position
Härnösand	Local Government Commissioner (LGC), Project Leader (PL)
Timrå	Local Government Commissioner (LGC 1), Local Government Commissioner (LGC 2), Head of Childcare and Education Board (HCEB)
Sundsvall	Strategic Investigator (SI), Chief Information Officer (CIO)
Ånge	Head of Municipality (HM), Investigator/Organizational Developer (IOD)
Nordanstig	Head of Municipality, Local Government Commissioner

The interviews, which followed an interview guide (cf. Patton, 1980), were of 50-60 minutes duration and conducted in Swedish both in person and by telephone. The interviews were transcribed and translated (by one of the authors), and follow-ups were made by e-mail and telephone to clarify and refine issues that emerged during the transcription/translation process. The interview transcripts were supplemented with 20 official documents provided to the researchers by the interviewees. The documents included policy statements and project reports published by the municipalities in the region, and by various national governmental authorities. Content analysis was then carried out on both the interview and document data sets. A coding system was derived using the frameworks provided by Gassmann and Enkel (2004) and Osterwalder *et al.* (2005), and a two-phase coding process was employed (c.f. Miles and Huberman, 1994). During the *first-level coding* phase, each segment of the interview/documentation data was summarized and labelled. This was followed by a *pattern coding* process in which the segments of data were organized, analyzed and synthesized within the themes/concepts embedded in the theoretical framework. While the emphasis of the *first-level coding* phase was on description, the *pattern coding* process focused on explanation. Data gathered from the different municipalities were compared to distinguish between network-wide and municipality-specific phenomena. The analysis of the official documents was used primarily to supplement the data gathered through the interviews and to provide context.

Case Environment

Since the late 1980’s, the Swedish public sector (the largest public administration in the western world), has undergone a substantial amount of reorganization, characterized by the decentralization of a traditionally central bureaucracy (Sköldberg 1994). Traditionally the Swedish authorities have had a monopoly position in providing services to its citizens. The concept of ‘*Folkhemmet*’ or ‘The People’s Home’ (Tilton 1990, p. 125), has played an important role during the building of the welfare state. The dominant paradigm has been that the State “takes care of you”, and no one should make profit upon people’s rights and needs. The welfare model is built on a taxation system which has both a broad basis of taxation, high taxation burden and income redistribution (Andersen 2004). It is considered that a commercial or private-sector organization should put their profit interest before the public good, and is thus not suitable for running public services e.g. schools, kindergartens, hospitals or homes for the elderly. Swedish Public Authorities are organized at three levels; local, regional and national. ‘The Administrative Procedure Act’, ‘The principle of public access to official documents’, and ‘The Swedish Local Government Act’ are some of the regulations that form the framework which governs public administration activities (Government Offices of Sweden 2007a). ‘Transparency’ and ‘decentralization’ are regarded as the guiding concepts for the Swedish authorities. In addition, the system requires that responsibility for the activities and the decision making should be

located as close as possible to those concerned as such decentralization makes it possible to adjust activities to local conditions.

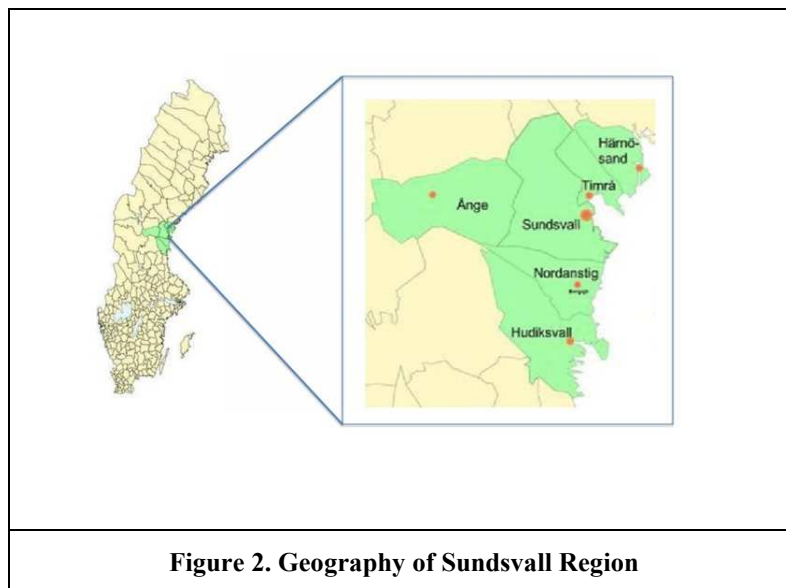
Municipal administration represents approximately 70% of the public administration in Sweden (Government Offices of Sweden 2007b). The 290 municipalities in Sweden are all organized in a similar way; a Municipality Council serves as the highest decision-making body, and a Municipal Executive Board and a number of boards are responsible for the different areas of activity. The Council consists of representatives elected in general elections every fourth year; boards are comprised of politically-appointed representatives. Connected to every board is an office with civil servants that is charged with putting the board's decisions into practice. The Municipality Council takes decisions concerning the Municipality's overall annual budget, as well as the level of municipality tax and fees. Each Board is allocated a budget, which by law must balance (Swedish Government 2001).

This system of public administration has been subject to major overhaul in recent years. A governmental bill proposed in 2000 (Swedish Government 2000) outlined the ambition that Sweden should become "the first information society for all". This goal includes a demand upon public authorities at all levels to transform to 24/7 authorities, i.e. develop Internet based services available day and night, year-around.

From a situation where the municipalities have acted as independent competitors in a more or less closed environment, a number of initiatives for openness and cooperation are evident today. Escalating costs, an ageing and, in many areas, decreasing population, as well as increasing globalization and mobility all create the need for public administration to operate in new ways. Of particular interest, in recent years several municipalities have formed networks with the aim of sharing ideas, experiences, innovations and software. Many of the activities within the public administration networks that have emerged can be seen as examples of open innovation processes in that they use 'purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively' (Chesbrough, et al. 2006, p.2).

The Sundsvall Region

The idea behind the Sundsvall Region (Figure 2) is that, through cooperation, synergetic effects will strengthen both the individual municipalities' and the region's ability to provide services to citizens as well as the prerequisites for sustainability and growth. The vision for the Sundsvall region has been expressed as follows: *In a region with 200,000 inhabitants we can, through cooperation, create better conditions for individuals and companies, create strong and sustainable growth, and increase our competitiveness. Härnösand, Timrå, Sundsvall, Ånge, Nordanstig and Hudiksvall are all unique and independent municipalities. Together, we are now building a strong joint identity for our region, at the same time as we put every municipality's uniqueness forward. It will give us the strength to become a successful part, not only of Sweden, but also of Europe.* (Kortfattat om Sundsvallsregionen 2006).



The six municipalities (Table 3) vary in many aspects including population size, land area, level of municipal tax, higher education provision, hospitals, geographical situation and labour market. The dominant partner in the network (from the perspective of population and labour market) is the Municipality of Sundsvall. Nevertheless, on its own it would not be able to compete with the southern metropolises such as Gothenburg or Stockholm.

Table 3. Description of the municipalities in the ‘Sundsvall Region’					
Municipality	Pop.	Pop./ km²	Area (km²)	Primary Labour Sector	Character
Härnösand	25 227	24	1 064.5	Care/Welfare	Small Towns
Timrå	17 747	23	788	Manufacturing	Small Towns
Sundsvall	94 044	29	3 208.7	Trade/ Communication	Large City
Ånge	10 692	3	3 068.1	Trade/ Communication	Rural
Nordanstig	9 847	7	1 380.1	Manufacturing	Rural
Hudiksvall	37 004	15	2 497.5	Care/Welfare	Small Towns
Total/average	194 561	16	12 006.9		

Findings

In this section, we discuss the findings from our study. We begin with a description of some of the strategic changes in Swedish public administration affecting the municipalities in the Sundsvall region. We then discuss the various open innovation activities observed in the five municipalities researched, illustrating how such activities fit within the three process archetypes described by Gassmann and Enkel (2004). Finally, we examine the ways in which adopting these open innovation processes have affected the business models of the municipalities.

Strategic Changes

The Swedish Public Administration has adopted important strategic changes at the national, regional and local levels. One area of change is the development of administrative IT-systems and the creation of a ‘24/7’ authority, which aims to: a) reallocate resources from administration to core activities, b) rationalize and assure quality in the activities in order to create ‘more customer time’ by reducing the time used for peripheral tasks, and c) simplify and make communication with the municipalities more effective. Minor municipalities are trying, through cooperation, to rationalize and realize economies of scale by sharing technology and operations with others. In counties comprising one larger and several smaller municipalities, the larger one assumes a responsibility for regional development. Many larger municipalities have an ambition to support the minor ones through development of joint IT-support (Svensson 2005).

In response to an increased scrutiny of the public sector’s quality and effectiveness, many ideas on ‘how to run a business’ have been adopted from the private sector; a move supported by the governmental authorities and seen in publications from agencies such as The Swedish National Financial Management Authority and The Swedish National Audit Office. Similarly, legislative changes have made the privatization of elderly care possible and enabled a larger pattern of organizational change in the production of welfare services. Additionally, new funding rules stimulating the development of independent schools has forced the municipalities to change their educational strategies. Marketing the municipal schools, cooperation with other municipalities, preparedness if independent school withdraws, and a more complicated planning process, are all results of this change. Other important changes which the municipalities have to take into consideration in their planning include increased regulation of municipal childcare (in 1995) and municipal elderly care, health and medical care (in 2002), as well as new legislation regarding the balanced municipal budget (in 2003). During the 1990’s, there was also an escalation in the formation of municipal companies, and many activities that were traditionally performed by the municipal administration were transferred to a municipal company. It was most common in the financial/infrastructure areas like real estate,

electricity, gas, and water supply, rather than social and cultural services (Forsell 1999). These changes (learning from the private sector, privatization and semi-privatization) were all driven by a political conviction that increased competition and more participation of private actors within sectors that have traditionally been protected against market forces, will have a positive effect on quality and effectiveness (Blomqvist and Murhem 2005).

Open Innovation in the Municipalities

Traditionally, Swedish municipalities have been more receptive to the idea of outside knowledge flowing in to the organization, rather than internal knowledge flowing out. While external knowledge has been welcomed and used in both the development of new systems and the performance of operational activities, there has been limited willingness to share innovations or experiences as neighbouring municipalities were considered 'competitors'. However, the respondents within all five municipalities agree that on-going changes in Swedish society, necessities enforced by an economic reality, and directives from the Government towards a co-ordinate public sector with integrated e-services all call for more openness and cooperation. This move has been summarized in the words of one official who noted "We can't win anything by being closed to our surroundings; instead we have everything to win by cooperating" (LGC, Ånge).

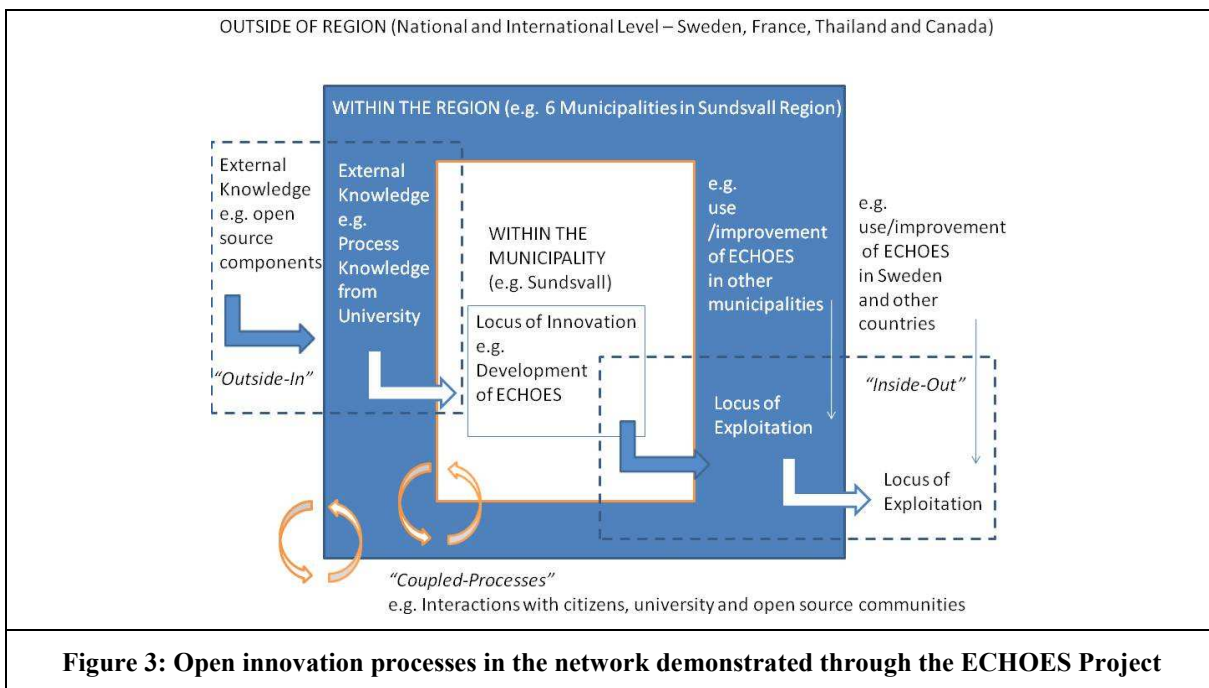
The shift towards greater openness has manifested in many ways. For example, we note the recent changes in attitude towards out-sourcing of operational activities. All of the municipalities were amenable to the idea of out-sourcing; in the extreme, the LGC in Härnösand argues: "We work hard to out-source or sell everything that could be run by private actors." Also, there is demonstrated willingness within the municipalities to share their experiences and innovations with others, and to collaborate on projects. As the SI in Sundsvall notes, "In my opinion, we [the municipalities] all will gain from an increased cooperation. There is a more open attitude nowadays where we share ideas, and a number of networks to facilitate this sharing have been launched." An example of one such network is 'Sambruk', in which participants collaborate to select, develop and run e-services. Similarly, 'e-Ringen' is a network for sharing ideas and experiences regarding e-administration in the public sector.

A closer examination of the various projects and networks in which the municipalities participate revealed that the three open innovation process archetypes described were evident at both the municipal and network level in the Sundsvall Region (see Table 4).

Table 4: Examples of Innovations and Open Innovation Archetypes	
Example Initiatives	Open Innovation Archetype
ECHOES Project - A development project (including the Municipality of Sundsvall, Mid Sweden University, an IT-consultant company, Åkroken Science Park, parents and teachers) to create an open source, web-based tool for communication between homes and schools.	Coupled process
'Listening Posts' - The creation of citizen-to-authority communication mechanisms and activities for gathering knowledge by scanning the environment.	Outside-in
Elektronisk inköpsprocess - An internal (municipal) project for developing an e-procurement tool for use in the Municipality of Ånge that leveraged the experiences and competencies of consultants and other municipalities.	Primarily Outside-in, some Inside-out flows
Förståelseinriktad Skola - An internal (municipal) project for developing new pedagogical approach and a tool for judging pupils' progress and results, which leveraged the experiences and competencies of consultants, Mid Sweden University, The Swedish National Agency for School Improvement, a regional development network and other municipalities.	Primarily Outside-in, some Inside-out flows
'Pensiostorm' Project - A development project (including the Municipality of Sundsvall, Mid Sweden University, an IT-consultant company, Åkroken Science Park, The National Government Employee Pensions Board, and pensioners) to create an open source web portal for elderly citizens.	Coupled process
Digital Age in Rural and Remote Areas (DARRA) - An EU project for exchanging experiences and best practices in public e-business services.	Coupled process

Although examples of all three archetypes were found in the analysis, the outside-in process and the coupled process were more popular and mature than the inside-out process. In the next three sections we discuss the manifestation of the three processes in greater depth.

Figure 3 provides an overview of the various processes, using one example activity, the development and subsequent deployment of the ECHOES software project, to illustrate the inflows and outflows of knowledge and exploitation. ECHOES is a web-based application for connecting homes and schools that was developed as a joint project with Åkroken Science Park, the Child Service and Education Office at the Municipality of Sundsvall, the CITIZYS Research Group at Mid Sweden University and a private IT consultant company as partners. Open source components were used during the whole process, and after test and evaluation the application was released in the software pool eGovforge.org (an initiative for collaboration through open software development for the public sector in Sweden) under an open source license.



Outside-In Processes

The main characteristic of the outside-in process, as described by Gassmann and Enkel (2004), is use of external knowledge, information and capability to support and strengthen internal activities, innovation and knowledge base. Our study indicates that the outside-in process is the dominant open innovation approach adopted by the municipalities. Municipalities cooperate with suppliers, customers and other public administrations, integrating these external knowledge sources with their own operations and innovation efforts. For example, the creation of ‘Listening posts’ to scan the environment play an important role in gathering external knowledge; “We actively monitor what is going on in the surrounding world to catch ideas and experiences from others” (LGC, Härnösand). The outside-in process also includes active cooperation with academic institutions, neighbouring municipalities and the commercial sector, as well as with organizations outside the country. By leveraging external knowledge, municipalities not only avoid ‘reinventing the wheel’ but also fill the gaps within their own internal set of competencies.

A number of projects provide illustrations of how the outside-in process is implemented in practice. For example the ECHOES project (which includes aspects of all three archetypes) initially began with the collection of sector knowledge from a university and private companies, as well as leveraging a pre-existing code base from the open source development community. Similarly, the ‘Elektronisk inköpsprocess’ (electronic purchase process) was developed in the municipality of Ånge, but was dependent upon external knowledge and experiences which were integrated in the municipality’s knowledge base. Specifically, Ånge solicited other municipalities for experiences

and results arising from similar projects, retained external experts to deliver workshops for internal staff; and established a reference group with participants from Ånge, Sundsvall and Härnösand to share ongoing experiences and knowledge. Finally, the Förståelseinriktad Skola (a project to enhance pedagogical quality in schools based in Timrå) involved massive data gathering to leverage the experience and capabilities of educators, university researchers and other municipalities.

Inside-Out Process

While the outside-in process focuses on leveraging external knowledge internally, the core characteristic of the inside-out process is the external exploitation of internally developed innovations and ideas. As previously noted this process was not heavily implemented in the studied organizations, however there were a limited number of specific projects in which this process could be recognized. Municipalities are willing to promote the external exploitation of their own ideas and efforts as a means of improving the municipality's 'brand' and attracting new migration and business. Internal ideas are brought to the 'market' in many ways, e.g. promotion through networks like eGovforge.org, e-Ringen or Sambruk. Through such networks, the municipality can gain from other municipalities' adoption and further development of their innovations.

One illustration of the inside-out process can be found in the previously described ECHOES project; specifically the posting of ECHOES to the eGovforge.org repository, the use of ECHOES in other municipalities, and indeed downloads of the product by school systems in other parts of the world such as Canada and Bangkok. Similarly, the output from the 'Pensiostorm' project (a web portal for elderly also driven by the municipality of Sundsvall) is being prepared for open source distribution through eGovforge.org. Finally, the educational innovations emerging from the Förståelseinriktad Skola have been disseminated widely through conferences, the websites of Timrå and the National Agency for School Development, and through activities within other municipalities.

Coupled Process

Although the coupled process archetype involves both inflows of external knowledge and outflows of internal innovation, it is primarily characterized by the formation of ongoing collaborative alliances. While the study revealed the most present activity within the outside-in archetype, the coupled process was identified as the fastest growing "open" strategy and the most effective means of meeting the emerging strategic challenges. Such activity takes place not just at the regional level but at the national and international levels as well.

The ECHOES project, which we have used to demonstrate both the outside-in and inside-out archetypes, also provides a solid example of the coupled open innovation process. The project involved the long-term day-to-day collaboration between Åkroken Science Park, the Child Service and Education Office at the Municipality of Sundsvall, the CITIZYS Research Group at Mid Sweden University and a private IT consultant company as partners. Additionally, the members of this collaborative network engaged with the various open source communities who had provided key components for the system, both during the development process, and throughout the testing and evaluation period. The release of the final product under an open source license enables this collaboration to continue into the future. Similarly the 'Pensiostorm' project involves the ongoing collaboration of Åkroken Science Park, Municipality of Sundsvall, CITIZYS Research Group, The National Government Employee Pensions Board (SPV) and the IT consultant company WM-Data (LogicaCMG).

Another example of the coupled process can be seen in the Digital Age in Rural and Remote Areas (DARRA) project, an international program to exchange experiences, create benchmarks and transfer good practices concerning public e-business services. The project involves the municipalities of Härnösand, Timrå, Sundsvall and Ånge, as well as Mid Sweden University, The Association of Local Authorities in the county of Västernorrland, private companies, and similar partners from Finland, Ireland and Norway.

The Impact on Business Models

While our first research question focused on the ways in which various open innovation processes are leveraged by municipalities to meet new strategic challenges, our second question examines the impact of these open innovation activities on the business models of the participating municipalities. The study revealed that participation in open

processes had an effect, to greater or lesser degrees, on every aspect of the business model (as characterized by Osterwalder *et al.* (2005)) in all of the municipalities studied. These effects are summarized in Table 5.

Table 5. Effects of the open processes within the Sundsvall Region network on participating municipalities' business models	
Business Model Pillar	
Product Innovation	Value Proposition A higher quality of delivered services as a result of the cooperation and the sourcing from externals. The joint identity changes the perceived value of the delivered services.
Customer Interface	Target Customer The core 'customers' for each municipality remains the resident citizens and companies, but the joint branding includes citizens and companies outside the region. Services are delivered to other municipalities, their citizens and other consumers.
	Distribution Channel No significant changes.
	Relationship Emergence of supplier/customer relationship between municipalities. Enhanced and deepened communication with citizens and business in co-creation processes.
Infrastructure Management	Value Configuration Activities must include sourcing and evaluating external competence and knowledge, but also managing the collaborative process.
	Core Competency Requires competence in sourcing and evaluating external competence, and in managing collaborative processes. Allows partner within networks to focus on a smaller range of specialist competence.
	Partner Network Cooperation instead of competition, requires extended collaboration with external partners (other municipalities, private companies, citizens)
Financial Aspects	Cost Structure Economy of scale from collaboration, enables cost-sharing amongst the municipalities (e.g. emergency services, education, water and sewer). Sourcing process and collaboration may increase costs (some sources of external knowledge require payment). Acquiring services may increase costs.
	Revenue Model Increased revenues due to strengthened bargain position <i>vis a vis</i> national and EU government and from raised attractiveness for new citizens and start-ups. Additional income for municipalities providing services to others. .

Product Innovation

It is evident that the open innovation process evident in the Sundsvall Region has had significant impact on the value proposition of the participating municipalities. Of particular note is how the quality of services offered to citizens and businesses has improved. The region covers a wide and diverse geographical area that includes coastal and inland areas, and both urban and rural populations, and each municipality has unique social, commercial and industrial characteristics. Value is created for citizens by leveraging the synergies between these various specialized organizations and acting as a single labour and educational market. As members of a network, smaller municipalities within the network are able to compete with larger ones in other regions for growth and sustainability, and the region as a whole is able to attract state funding and other prerequisites for the delivery of high quality services. According to the LGC of Härnösand; "We offer the same services as before, but the openness and cooperation makes it possible to keep the services at high level and in some cases with a higher quality than before". In addition,

acquisition of knowledge from external parties and the co-creation of new services with businesses and citizens have resulted in improvements in delivery of education and elderly services.

Customer Interface

We observed a growing use of IT (e.g. e-mail, web discussion boards, electronic suggestion boxes, etc.) as a means of improving service delivery, and an increased emphasis on build deeper relationships with customers (citizens and businesses) in all municipalities. The formation of the Sundsvall regional identity has resulted in the creation of a joint 'brand' with a view to increasing the attractiveness of the region to potential migration and the establishment of new ventures. This requires municipalities to target customers outside their geographical area. Thus, while the current inhabitants and businesses located within the region remain the primary target customers of the municipalities, there is an opportunity to successfully market the member municipalities to a broader customer base. The LGC in Municipality of Härnösand explains: "In pace with the on-going globalization and the EU membership there are increased efforts to 'sell' the municipality and the Region in order to attract e.g. tourists, day visitors, potential migrants and companies from both national and international locations."

Changes to customer relationship were most significant where municipalities had to develop customer relationships with other municipalities as a result of procuring competencies from them. For the municipality procuring the competency, this can result in fewer opportunities to interact with their own customers; thus changing the relationship. However, the emphasis on involving the consumer of the service in its design resulted in the need for enhanced communication and interaction; thus strengthening and deepening the customer relationship.

Infrastructure Management

The services delivered by individual municipalities are no longer limited by the need to locate all relevant activities and competencies internally. A number of the municipalities' tasks and services require specialist activities and competencies, which could be costly for a small municipality; particularly since many of these tasks are periodic in nature. However, with cooperation, competencies can be applied to various service tasks more effectively without the need to have the activity done by the municipality. As the LGC1 of Timrå notes, "We are a small municipality so we can't have our own competency in all areas. Today we buy competence from Sundsvall for handling alcohol errands. Together with other public authorities we have a joint organization for purchasing, which makes it possible for us to manage without our own competence in all areas." As well as sourcing competencies, municipalities can significantly enhance their value creation and service delivery (without needing additional competencies) through the acquisition of knowledge and innovations from external parties and the co-creation of services with citizens and businesses. However, these require changes in the value configuration and core competency as municipalities need activities and expertise to (i) specify what they require from external parties, (ii) evaluate what they are offered, and (iii) manage the innovation acquisition and/or co-creation process. The LGC2 in Timrå points out that "All our IT activities are run by a contractor today. Mostly it is positive but one problem is that we lack competence for purchasing in this area".

The acquisition of competencies and knowledge from external parties requires changes in the nature of an individual municipality's partner network. In particular, other municipalities are seen as key allies within the partner network, and the network of allies now also includes other external parties such as private companies and universities, and sometimes citizens and other consumers of services. It should be noted that municipalities have tried to keep participation in such networks dynamic. According to LGC in Härnösand; "We are not locked-in in any network; instead we work with different partners around different questions or areas".

Financial

The open innovation processes examined in this study have had several impacts on the financial affairs of the participating municipalities. They can lower costs through economies of scale and cost sharing. However, some open innovation processes change the cost structure in a way that increases cost for many municipalities. For smaller municipalities, open innovation can mean higher quality and more reliable services, but at a higher cost (at least in the short-term). The HM in Timrå states "it costs us more to buy the services from Sundsvall, but it guarantees our need of competence and makes us less vulnerable". Similarly, acquiring knowledge or competencies from external parties such as private companies results in additional expenses, while the new activities and competencies required

to specify requirements, evaluate the knowledge/innovation offered, and manage the innovation acquisition /co-creation process also requires new expenditures.

The greatest opportunity for increasing revenue results from the joint branding of the region. Revenue, which is mainly based on taxes and State grants, is directly dependent of the size of the population and the labour market. Municipal leaders believe that the Sundsvall Region's increased attractiveness for companies, visitors and tourists is likely to increase mobility within the region, and consequently bring benefits to all the municipalities. The SI in Sundsvall reveals: "The municipality's revenues are more or less fixed and hard to influence. Today 73 % of the municipality's revenues comes from the municipality tax, 5 % from general state grants, 10 % from fees and 12 % from other sources (e.g. directed state grants, dividends from the municipality's own companies). The way for us to increase our revenues is to make the municipality attractive so people settle here, but also to facilitate the establishment of companies within the municipality."

Conclusions

The case study reveals that the growing movement towards more open innovation processes in Swedish public administration is being driven by the changes in national strategic objectives and resource constraints (limited budget/internal availability of relevant capabilities) under which the municipal authorities must operate. We have seen evidence of all three open innovation process archetypes described by Gassmann and Enkel (2004). It is evident that in the early stages of moving towards this process, these organizations are most receptive to the outside-in and coupled approaches. However, we do see an increasing use of the inside-out process, some with significant success (e.g. the ECHOES project). Additionally, participation in open innovation processes (particularly coupled processes) has led to concrete business model changes for the participating municipalities.

We conclude that the impact of open innovation processes on the business models of municipalities is best reflected in the changes evident in the value configuration of the municipalities; specifically, we perceive the need to view municipalities not as a stable value chain (c.f. Porter, 1985) but in a more dynamic way. Increasingly, the authorities can be seen as flexible organizations engaged in a changing 'market' best described in terms of the 'value shop' in which the "selection, combination, and order of application of resources and activities vary according to the requirements of the problem at hand. ... while [the value chain] performs a fixed set of activities that enables it to produce a standard product in large numbers, the shop schedules activities and resources in a fashion that is dimensioned and appropriate to the needs of the client's problem" (Stabell & Fjeldstad, 1998). In these emerging administrative value shops, openness and networking facilitate the municipalities' efforts to find and deliver solutions to changing customer needs. Consequently, public authorities seeking to transform their value creation and service delivery in a sustainable fashion, must (1) maintain a productive relationship with other public authorities and other external parties; (2) easily and safely exchange knowledge, competencies and expertise with others in order to improve internal processes and deliver citizen services; and (3) engage with citizens and other stakeholders to co-create new services.

The present work has focused on characterizing the collaborative processes emerging in this context, and on describing some of the significant business model changes associated with the use of open innovation processes. The work raises two implications for future research. First, the work to date represents initial analysis of the implications of open processes for the product, customer interface, infrastructure management and financial aspects of the public administration business model. However, we recognize the need for both a deeper investigation of these open processes, and also comparative data from other public administration contexts to complement the present, exploratory, research. Second, we found some evidence that collaborative IT platforms such as those used by open source communities (and deployed in the eGOVForge repository) have the potential to address coordination challenges within these networks. The enabling role of IT for open innovation process is therefore an important issue emerging from the present work and worthy of further investigation.

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