



Open innovation and public administration: transformational typologies and business model impacts

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Abstract

Extant research demonstrates that e-Government initiatives often fall short of achieving innovative forms of government and governance due to a techno-centric focus that limits such initiatives to minor improvements in service delivery. While it is evident that innovation is central to modernising and transforming governmental organisations, and that the co-creation of services by public authorities and community groups is an essential component of realising the benefits of investment in information and communication technology, there is little research focusing on the nature of innovation in transforming governmental organisations and services. Addressing this gap in the literature, this paper explores how open innovation strategies can transform public administration by examining how a network of municipalities in Sweden transforms value creation and service delivery by collaborating with each other and with external parties to accelerate the creation and exploitation of innovation. Using a case study with embedded units of analysis, four emerging typologies of governmental transformation based on open innovation are identified. The paper illustrates how these open innovation typologies (i) transform the organisation of the municipalities and (ii) help them deliver high quality co-created services to citizens. By examining the strategic and operational aspects that facilitate such activities, the analysis reveals the impact of open innovation on the business models of public authorities. The paper concludes that open innovation practices represent a more radical manifestation of transformational government than previously envisaged; signalling not only fundamental change in the nature of value creation and service delivery by public authorities, but potentially in the nature of their organisation.

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Introduction

The past decade has seen a variety of efforts to modernise public administration and transform the delivery of public administration services in many countries (Bekkers, 2007; Foley & Alfonso, 2009). The majority of the efforts centre on improving the efficiency and effectiveness of internal government operations, communications with citizens, and transactions with individuals and organisations, by making information and services available on the Internet (Warkentin *et al.*, 2002). e-Government is the widely accepted term used to describe this

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phenomenon, and has the ultimate aim of achieving innovative forms of government and governance through the use of (information and communication technologies) ICTs (Castelnovo & Simonetta, 2007; Foley & Alfonso, 2009) and a holistic transformation of the management of human, technological, and organisational resources and processes (Jansen, 2005). However, such transformation is a complex process characterised 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 U.K., Canada, and Australia) have a highly developed technical infrastructure, a broad range of e-services, and a high penetration of information technology (IT) among the population, but have not been able to achieve the desired levels of transformation of public administration (Bekkers, 2007). 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 (cf. Bekkers, 2007; Cordella, 2007; Foley & Alfonso, 2009).

e-Government has attracted attention from policy-makers, the private sector, and the research community. In particular, researchers from informatics, computer science, economics, management, sociology, political science, and communication have addressed the cooperative use of municipal e-services (Goldkuhl *et al.*, 2007), inclusion and exclusion (Kvasny & Trauth, 2002; van Dijk & Hacker, 2003), techno-philosophical issues (Lindblad-Gidlund, 2005; Mosse & Whitley, 2009), ethics (Svensson & Wood, 2004), political and organisational implications (Barber, 1999; Richard, 1999; Ilshammar & Åström, 2001; Grönlund, 2003), and economic questions (Kessler & Kelley, 2000; Wyld, 2001).

It is clear that innovation is central to modernising and transforming governmental organisations (cf. Bekkers, 2007), with the co-creation of services by public authorities and business/community groups an essential component (Edwards, 2006; Bekkers, 2009). Such trends reflect the experience of private sector organisations in relation to e-business, where the need to innovate and to create new value propositions and customer relationships, rather than simply mirroring existing (analogue) services has long been recognised as central to success (cf. Rayport & Sviokla, 1995; Dutton & Eynon, 2009; Morgeson III & Mithas, 2009). Likewise, they reflect the increasing dependence of private sector organisations on external entities to improve innovation processes and outcomes (Tether & Tajar, 2008; Lundell *et al.*, 2010) – that is, open innovation (cf. Chesbrough, 2006).

This paper explores how open innovation can transform public administration by examining how one network of Swedish municipalities transforms value creation and service delivery by collaborating with each other and external parties to accelerate the creation and exploitation of innovation. The next section presents the

conceptual grounding for the study. This is followed by a description of the research methodology employed. The findings illustrate the strategic changes taking place at a national level and the characteristics of the municipalities studied. The analysis reveals four typologies for transforming public administration using open innovation; labelled *aggregation*, *syndication*, *consumption*, and *co-creation*. The paper examines how each of these typologies represent transformations in the value creation and service delivery competencies of the municipalities, and discusses the challenges the municipalities face as a result of such transformation. Drawing from this analysis the paper examines the implications for the business models of the municipalities. The paper concludes by examining how open innovation practices represent a more radical manifestation of transformational government than previously envisaged; signalling fundamental change in the nature of value creation and service delivery by public authorities.

Background and conceptual grounding

Governmental modernisation refers to 'the ability of government to adapt to developments in different political, socio-economic, technological and cultural environments in which a government organization operates as well as the ability to respond to and anticipate the needs of different stakeholders in these environments, such as citizens, companies, societal organizations and other government organizations' (Bekkers *et al.*, 2006, p. 10). In the 1970s, the concept of 'government reinvention' sought to repackage longer-term processes of public sector reform aimed at improving the performance of public sector organisations. The need for a change was evident from (i) unsustainably large and/or unsustainably increasing public expenditure, (ii) inefficiency in the conversion of public expenditure into public services, and (iii) the belief that the public sector was not delivering what it should (Heeks, 1999).

Twenty years later 'New Public Management' (cf. Bellamy & Taylor, 1998; Fountain, 2002; Heeks, 2002) focused on privatisation of public services, performance management and on improvement of public services (cf. Noordhoek & Saner, 2005; Bekkers, 2007; Welp *et al.*, 2007). By this time, the growing use of ICT and the Internet among the population, as well as the spread of e-business technologies in the private sector, contributed to a widespread confidence in the possibilities to use the new technology to improve public administration, often referred to as electronic government or 'e-Government' (Heeks, 1999). However, one of the major differences in the introduction of electronic business and electronic government is that the citizen-governmental relationship is mandatory rather than voluntary (Warkentin *et al.*, 2002). The concept e-Government includes:

- (i) e-administration, which refers to the improvement of government processes;

- (ii) e-citizens, describing the connection of citizens in order to consult and engage with citizens for increased democracy and improved public services;
- (iii) e-services for providing online services to citizens; and
- (iv) e-society, which focuses on building interactions with citizens, companies, and organisations to develop better cooperation with business, communities, building government partnerships and building society (Heeks, 1999).

Despite the investment in e-government, 'research into the effects of ICT in public administration shows hardly any general effects and changes' (Bekkers, 2007, p. 106). In 2005, the British Government introduced the term t-Government by publishing the plan 'Transformational Government – Enabled by Technology', which focus on exploitation of the investments in e-Government (Cabinet Office, 2005). This change in focus from 'electronic' to 'transformational' is 'the result of a logical realisation that the IT trajectory of legacy e-Government systems and programs will not solve the lingering problems with public service delivery' (Irani *et al.*, 2007).

The three features of t-Government (customer-centric services, shared services and professionalism cf. Irani *et al.*, 2007) echo the growing realisation that government requires a service perspective built upon an engagement with service users and other citizens (Jones *et al.*, 2007). This reflects a trend internationally that innovation in the public sector is a 'processes of co-production between public agencies, nongovernmental organizations and community-based organizations' (Edwards, 2006, p. 176). In particular, citizens – as actors and recipients of the e-services – play a very important role in the transformation of public sector service delivery, and may thus be regarded as external customers who use or procure a public sector service. This makes the relationship between public authorities and citizens crucial for success (Jones *et al.*, 2007).

The realisation of the importance of external parties to the development of governmental e-services is not surprising as innovation is fundamentally the result of combining different knowledge sets (cf. Nonaka *et al.*, 2003; Tidd *et al.*, 2005), and such knowledge is frequently to be found outside organisations (cf. Chesbrough, 2006; De Wit *et al.*, 2007). Nevertheless, despite the importance of co-operative inter-organisational networks in relation to acquiring products and services (Okamura & Vonortas, 2006), organisations (both private and public) have been slow to harness the same type of external cooperation in relation to innovation (Lane & Probert, 2007). Indeed, with the exception of notable examples of collective invention (cf. Allen, 1983; von Hippel, 1987), organisations have been slow to engage in *open innovation* (cf. Chesbrough, 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). Differentiating between observable manifestations of open innovation based on the directionality of information flows (inbound, outbound, and bi-directional), Gassmann & Enkel (2004) propose three open innovation process archetypes, namely:

1. The *outside-in process*: increasing an organisation's innovation capacity by integrating knowledge from external parties with the internal knowledge base.
2. The *inside-out process*: increasing an organisation's exploitation capacity by transferring internal innovations to external parties.
3. The *coupled process*: a combination of the *outside-in* and *inside-out processes* characterised by the formation of enduring alliances with complementary external partners (Gassmann & Enkel, 2004).

In seeking to understand how open innovation might transform government, this study draws on the archetypes identified by Gassmann & Enkel (2004) to bound the phenomenon of interest, namely open innovation activity within public administration. We argue that, whether in the private or public sector, the changing loci of innovation and exploitation that emerge from applying open innovation processes have implications for both an organisation's strategic direction and its operational activities. We thus extend our conceptual grounding by utilising the architecture that represents the business logic connecting strategic and operational activities – referred to as a business model (cf. Osterwalder *et al.*, 2005). The use of this lens is additionally justified by the need to understand the business model implications of engaging in open innovation (cf. Chesbrough, 2004; Chesbrough & Appleyard, 2007; Chesbrough & Schwartz, 2007). Indeed, moving towards open innovation necessitates a shift towards business models (Chesbrough & Schwartz, 2007) that utilise 'both external and internal ideas to create value, while defining internal mechanisms to claim some portion of that value' (Chesbrough, 2006, p. xxiv).

This study utilises the work of Osterwalder *et al.* (2005) to examine the business model aspects of open innovation. Drawing on the work of several researchers, Osterwalder *et al.*, propose a business model ontology that focuses on four aspects of an organisation: product innovation, infrastructure management, customer interface, and financial aspects (see Table 1).

The value configuration aspect of the business model ontology is essential to understanding value creation, and, as a fundamental aspect of the three tenets of transformational government, is worthy of further consideration. Stabell & Fjeldstad (1998) argue that the value chain framework proposed by Porter (1985) is best suited to describing the activities of a traditional firm but is less

Table 1 Business model pillars and components

<i>Pillar</i>	<i>Building block</i>	<i>Description</i>
<i>Product innovation</i>	Value proposition	Gives an overall view of a company's bundle of products and services.
<i>Customer interface</i>	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.
<i>Infrastructure management</i>	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 commercialise value.
<i>Financial aspects</i>	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.

Source: Adapted from Osterwalder *et al.* (2005).

Table 2 Overview of alternative value configurations

	<i>Value chain</i>	<i>Value shop</i>	<i>Value network</i>
Value creation logic	Transformation of inputs into products	(Re)solving customer problems	Linking customers
Primary technology	Long-linked	Intensive	Mediating
Primary activity categories	Inbound logistics	Problem-finding and acquisition	Network promotion and contract management
	Operations	Problem-solving	Service provisioning
	Outbound logistics	Choice	Infrastructure operation
	Marketing	Execution	
	Service	Control/evaluation	
Main interactivity relationship logic	Sequential	Cyclical, spiralling	Simultaneous, parallel
Primary activity interdependence	Pooled	Pooled	Pooled
	Sequential	Sequential	Reciprocal
		Reciprocal	
Business value system structure	Interlinked chains	Referred shops	Layered and interconnected networks

Source: Adapted from Stabell & Fjeldstad (1998).

appropriate when analysing the activities of other types of organisations. They propose alternative internal value configurations as shown in Table 2. This table illustrates that value shop and network configurations differ from their value chain counterparts in relation to primary organisational activities, as well as in relation to the logic that combines these activities to provide customer value.

Research method

The objective of this study is to explore *how open innovation strategies can transform public administration* by studying how one network of Swedish municipalities transforms value creation and service delivery by collaborating with each other and with external parties to accelerate the creation and exploitation of innovation.

To understand the impact of open innovation practices on public administration we utilise the work

of Gassmann & Enkel (2004) on archetypes of open innovation. These archetypes allow us to bound our study and to focus on three distinct types of activities: (1) shifting the locus of innovation to outside of the organisation; (2) shifting the locus of exploitation to outside of the organisation; and (3) engaging in active collaboration with external organisations to innovate/exploit innovation.

As our objective is to understand how open innovation activities transform both an organisation's strategic direction and its operational activities, we require a conceptual model for describing such transformations that incorporates both strategic and operational dimensions. As the central tenets of the t-government concept (customer-centric services, shared services and professionalism) focus on the creation of value, any such model must also enable us to analyse the value creation

and capture process. We therefore utilise the work of Osterwalder *et al.* (2005) on business models as an analytical lens, which enables us to describe both the interplay between strategy and operations and the configuration of value creating activities.

This study is exploratory in nature and requires the identification of the processes, events and outcomes that are shaping open innovation strategies in public administration. In addition, the research is classified as exploratory as there is a scarcity of empirical research on open innovation in public administration. In such exploratory studies, Marshall & Rossman (1989) propose that case studies or field studies are suitable research approaches, with participant observation and in-depth interviewing being appropriate data collection techniques. Within exploratory studies, the need to

map or document phenomena in order to gain empirical evidence from a wide variety of sources is recognised. Corbitt (2000) advocates the need for qualitative methods in studying information systems (IS) issues. Case studies are regarded as the most commonly used qualitative research method in IS, and are especially useful for studying organisational aspects of IS (Benbasat *et al.*, 1987). Given the exploratory nature of this research, and the need to obtain rich data in a complex inter-organisational context, a case study approach, with embedded units of analysis, was considered appropriate.

'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), as here. The method adopted is consistent with the case study approach of Benbasat *et al.* (1987) and Yin (2003) in that the study focuses on the phenomenon in its natural setting, employing multiple data collection methods to gather information from a few entities, without employing experimental control or manipulation. This approach is in the tradition of Eisenhardt (1989) and Madill *et al.* (2000) as it seeks to reveal pre-existing, relatively stable and objectively extant phenomena and the relationships among them.

The focus of the case study was the 'the Sundsvall Region', with six participating municipalities as embedded units of analysis. 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 embedded units of analysis (individual authorities) (cf. Yin, 2003). Interviews with key informants were conducted during the period January to July 2008 (see Table 3). Interviews were conducted using a semi-structured interview guide (cf. Patton, 1980). Each interview was approximately 50–60 min, and was conducted in Swedish either in person or by telephone. The interviews focused on the experiences of the authorities

Table 3 The informants

Public authority	Position
Municipality of Härnösand	Local Government Commissioner (LGC), Project Leader (PL)
Municipality of Timrå	Head of Municipality (HM) Local Government Commissioner (LGC 1), Local Government Commissioner (LGC 2), Head of Childcare and Education Board (HCEB)
Municipality of Sundsvall	Strategic Investigator (SI), Chief Information Officer (CIO) Head of Public Trustee Board (HPTB)
Municipality of Ånge	Head of Municipality (HM), Investigator/Organizational Developer (IOD)
Municipality of Nordanstig	Head of Municipality (HM), Local Government Commissioner (LGC)
The Association of Local Authorities in the county of Västernorrland	Project Leader (PL)

Table 4 Municipalities in the 'Sundsvall Region'

Municipality	Population	Population/km ²	Area (km ²)	Primary labour sector	Character
Härnösand	25 227	24	1064.5	Care/welfare	Small towns
Timrå	17 747	23	788	Manufacturing	Small towns
Sundsvall	94 044	29	3208.7	Trade/communication	Large city
Ånge	10 692	3	3068.1	Trade/communication	Rural
Nordanstig	9847	7	1380.1	Manufacturing	Rural
Hudiksvall	37 004	15	2497.5	Care/welfare	Small towns
Total/average	194 561	16	12 006.9		

vis-à-vis eight initiatives (described in the findings section, see Table 5) designed to achieve transformation of public administration.

All interviews were transcribed and translated into English. Follow-up e-mails and telephone calls were used to clarify and refine issues that emerged during the transcription/translation process. The interview transcripts were supplemented with 30 official documents provided by the interviewees. The interview data were also triangulated with data gathered from policy statements and project reports published by the municipalities and by various national governmental authorities.

Content analysis was carried out on both the interview and document data sets. A two-phase coding system using meta-matrices (cf. Miles & Huberman, 1994) was derived using the conceptual frameworks provided by Gassmann & Enkel (2004) and Osterwalder *et al.* (2005). During the first phase, each segment of the interview/documentation data was summarised and labelled, according to the conceptual frameworks. This was followed by a pattern coding process, utilising the same conceptual lenses, in which the segments of data were organised, analysed and synthesised within the themes/concepts embedded in the conceptual frameworks. While the emphasis of the first phase was on description, the pattern coding process during the second phase focused on explanation. During both phases, data gathered from the different municipalities were compared to distinguish between network-wide and authority-specific phenomena.

Findings and analysis

This section presents the findings of the study, beginning with a discussion of the strategic changes taking place at a national level, the characteristics of the municipalities studied and the general shift towards greater openness within the studied region. It then examines how the municipalities leverage outside-in, inside-out, and coupled open innovation processes and describes four typologies for transforming public administration using open innovation that were revealed by the study. For the purpose of this study, these are labelled *aggregation*, *syndication*, *consumption*, and *co-creation*. After examining how each of these typologies represent transformations in the value creation and service delivery competencies of the municipalities, and discussing the challenges faced as a result of such transformation, the section describes the implications of these typologies for the business models of the municipalities.

Strategic changes

Since the late 1980s, the Swedish public sector (the largest public administration in the western world) has undergone a substantial amount of reorganisation, characterised by the decentralisation of a previously centralised bureaucracy (Sköldberg, 1994). Traditionally, Swedish public authorities have had a monopoly position on providing services to citizens. The concept of *Folkhemmet* or 'The People's Home' (Tilton, 1990, p. 125) has been an

Table 5 Initiatives aimed at transforming public administration

Initiatives	Description
Sundsvallsregionen	An administrative project in which six neighbouring municipalities (Härnösand, Timrå, Sundsvall, Ånge, Nordanstig and Hudiksvall) cooperate under a joint identity for the purpose of branding and marketing the region. Experiences from other municipalities were integrated during the planning.
Föräldramötet [ECHOES]	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.
Pensiostorm	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.
Elektronisk inköpsprocess i Ånge kommun	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.
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.
MittSverige Vatten AB	A cooperative project where the three municipalities of Sundsvall, Nordanstig and Timrå established a joint company for water supply. Experiences from other municipalities were integrated during the planning of the company.
Överförmyndarkontoret	A project regarding the Public Trustee Office where the Municipality of Sundsvall acts as a service supplier for the municipalities of Timrå and Nordanstig.
Miljöanpassad upphandling i Västernorrlands län	A project where all municipalities in the County of Västernorrland cooperated with each other and with the County Council in procurement processes. Experiences from other municipalities and other public administrations and agencies were integrated during the project.

important principle underlying the building of the welfare state. This principle has resulted in a mentality where the State 'takes care of you', with no one profiting from providing products/services to citizens. The model is built on a broad-based taxation system; characterised by high taxation and income redistribution (Andersen, 2004). Commercial organisations are not considered suitable for delivering public services as they place their profit motive ahead of public interest.

In serving the public interest, 'transparency' and 'decentralisation' are important in the Swedish public administration system. Consequently, responsibility for activities and decision are localised at the community level; making it possible to adjust activities to local conditions. It is, thus, not surprising that municipal administration accounts for approximately 70% of all Swedish public administration (Government Offices of Sweden, 2007). All 290 Swedish municipalities are organised in a similar way. A Municipality Council is the highest decision-making body, with a Municipal Executive Board and a number of other Boards responsible for various areas of activity. Council representatives are elected every 4 years, whereas Board members are politically appointed representatives. Each Board has a team of civil servants charged with implementing the Board's decisions, and is allocated a budget, which must, by law, balance. The Municipality Council makes decisions concerning the Municipality's budget as well as municipality taxes/fees. (Swedish Government, 2001).

The Swedish public administration system has undergone a major overhaul in recent years. Legislation introduced in 2000 (cf. Swedish Government, 2000) outlined the ambition that Sweden should become 'the first information society for all', with consequential demand that public authorities become 24/7 operations. Other pressures to reform public administration stem from (i) escalating costs, (ii) an ageing (and, in many areas, decreasing) population, as well as (iii) increasing globalisation and mobility. As a consequence of such change, several municipalities have formed networks with the aim of sharing ideas, experiences, expertise, and software components. Many of the activities within such networks can be seen as open innovation initiatives 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 & Crowther, 2006, p. 2).

The study focused on *Sundsvallsregionen* ('The Sundsvall Region'), founded in 2004 as a cooperative network of six regional Swedish municipalities. The key concept underlying cooperation in the Sundsvall Region network is that synergies will strengthen the ability of both the individual municipalities and the region to provide services, improve sustainability and achieve growth. The six participating municipalities vary in terms of population size, land area, the level of municipal tax, the provision of higher education, hospitals, and the nature of the labour market (Table 4). The largest municipality in the network

(from the perspective of population and labour market) is the Municipality of Sundsvall. However, even this municipality would not be able to compete on its own with southern cities such as Göteborg or Stockholm.

How the municipalities leverage outside-in, inside-out, and coupled open innovation processes

Major change initiatives in Swedish Public Administration have focused on 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) rationalise 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. In addition, 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.

Traditionally, Swedish public authorities have been more receptive to the idea of outside knowledge flowing into the organisation, 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 representatives of the municipalities studied agree that ongoing changes in Swedish society, necessities enforced by an economic reality, and directives from the Government towards a coordinated public sector with integrated e-services, all call for more openness and cooperation. This move has been characterised by one official as *We can't win anything by being closed to our surroundings; instead we have everything to win by cooperating* (LGC in Ånge).

The shift towards greater openness has manifested in many ways. For example, recent changes in attitude towards the outsourcing of operational activities are notable. In contrast to traditional Swedish public administration values, all of the municipalities were amenable to the idea of outsourcing; in the extreme, the LGC in Härnösand argues: *We work hard to outsource 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*. This increased cooperation and openness was evident in eight specific initiatives aimed at transforming public administration (see Table 5).

The analysis of the initiatives in Table 5 reveals that they were representative of the three open innovation process archetypes identified by Gassmann & Enkel (2004). Furthermore, the analysis revealed that the manner in which these open innovation processes were

used to transform value creation and service delivery was distinctly evident in three aspects of the business models of municipalities: (i) value configuration; (ii) relationships with partners, including other municipalities; and (iii) relationships with citizens. This analysis thus reveals practical manifestations of how outside-in, inside-out, and coupled open innovation processes result in the transformation of public administration value creation (through the value configuration of authorities and relationships with partners) and service delivery (through relationships with partners and citizens).

Following the logic of Kumar & van Dissel (1996) and Mitchell & Shortell (2000) on, respectively, typologies of inter-organisational interdependence and typologies of collaboration, we use the distinctions in relation to value creation and service delivery to delineate typologies for transforming public authorities through open innovation. This approach to characterising a phenomenon by delineating distinct observed manifestations is also consistent with the work of Napier et al. (2009). Focusing on the transformation in value creation and service delivery, we labelled the four typologies as: (i) *Aggregation*; (ii) *Syndication*; (iii) *Consumption*; and (iv) *Co-creation*.

Aggregation: transforming identity The *aggregation* typology (Figure 1) represents a transformation of (a) the way the authority views itself; (b) the way it views other authorities; and (c) the ways in which it interacts with its stakeholders. Specifically, the typology represents an innovation in internal processes in which the authority moves from viewing itself as being in competition with other authorities to being a member of a cooperative network. This manifests in the formation of both short- and long-term alliances (i.e., coupled processes), through which authorities act externally and use a joint identity for procurement, advocacy, marketing, and other purposes. However, there are a number of challenges with

making the *aggregation* approach work. These are: (a) making the municipalities ‘act as one’, while also maintaining their unique identities; (b) handling joint systems; (c) motivating staff at all levels to support the aggregation; (d) handling political changes within the network; (e) uniting around common efforts and goals; (f) putting political decisions into practical action; and (g) complying with laws and regulations concerning authorities’ activities and affairs.

The study revealed that the formation of short-term alliances was used mainly for the joint procurement of goods and services. The data showed that such alliances (i) aggregate the demand of multiple authorities, and (ii) allow the authority with the strongest competency in procurement to lead negotiations with suppliers; resulting in a stronger bargaining position for all participant authorities. The strengthened bargaining position does not only result in lower costs due to economies of scale, but also enables the authorities to make other demands on suppliers. For example in the *Miljöanpassad upphandling i Västernorrlands län* project, the strengthened bargaining position was used to increase the provision of environmentally friendly products.

While purchasing alliances are short-term (forming in response to a particular purchasing need and dissolving once negotiations are complete), long-term alliances are evident in the ways in which municipalities deal with ongoing negotiations with national and EU government agencies. These long-term alliances are used to strengthen bargaining in relation to grants and investments. The Head of Municipality (HM) in Nordanstig argues that *the cooperation gives us a strong position when we argue for investments in roads, railroads and broadband ... One result of the cooperation within the Sundsvall Region is the new building project on the European Highway, E 4. I think it was because that we acted as a region that made it possible to start this project now*. In addition, such alliances also serve to

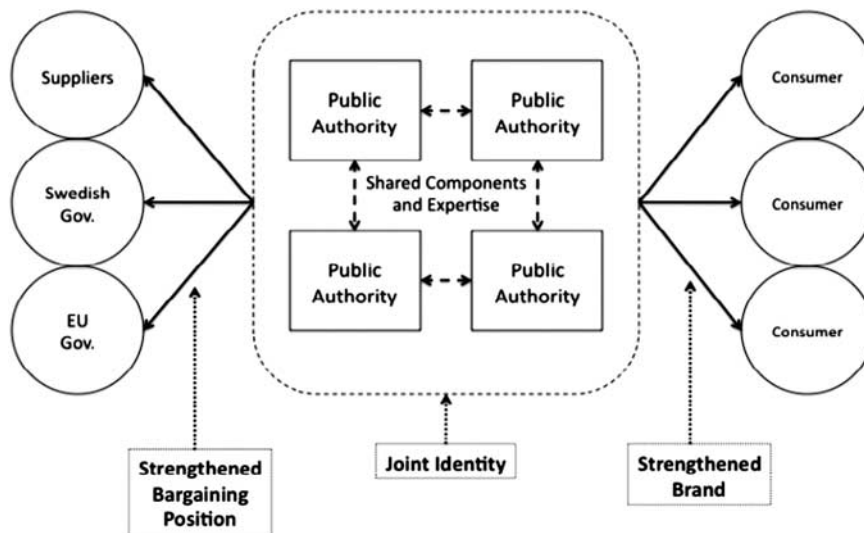


Figure 1 The aggregation typology.

improve the internal processes of authorities by formally facilitating the exchange of experiences amongst authorities. Consequently, such alliances are characterised by high interdependency between the partners and a formal structure regulated by agreement. According to the Project Leader of the *Miljöanpassad upphandling i Väster-norrlands län* joint-procurement project: *The procurers in the county's municipalities have a lot of contacts between each other ... They have meetings now and then to share experiences and to discuss questions related to the procurement process. The minor municipalities, which may only have one procurer, often get advice and support from the others in the network.*

Long-term alliances are also used for branding and marketing the services of the authorities to citizens. The vision for the *Sundsvallsregionen* 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 ... [Consequently], the Sundsvall Region, the biggest labour market in northern Sweden, with its own university, is in many ways the best alternative to the metropolises. (Sundsvalls Kommun, 2006, p. 4)

Syndication: transforming competencies The syndication typology (Figure 2) represents a fundamental transformation in how authorities manage competencies, offering (a) new ways for an authority to exploit its core competencies;

and (b) new ways for an authority to source competencies for value creation; and (c) new ways to deliver services to citizens. Syndication represents an innovation in the provision and acquisition of value creating processes and service delivery mechanisms, in which the authority either can act as a service supplier to other authorities and its consumers, as a customer to another authority, or become a stakeholder in a joint entity for service delivery. However, the data revealed a number of challenges with making the syndication approach work. These include (a) fulfilling demands for equal access to services; (b) maintaining the quality of the competence being provided (providing municipality); and (c) gaining acceptance for outsourcing core competencies (acquiring municipality).

From the point of view of authorities with a significant competence in a functional area, syndication provides a mechanism to capture value through providing that competency to either another authority or that authority's consumers. For the supplying authority there is evidence of strengthened internal competence, higher quality in the delivered services, and an additional source of income. According to the Head of the Public Trustee Board in Sundsvall, *The number of employees is now higher as we also handle other municipalities' services. It has also led to a raised competence among the staff. For the citizens this cooperation has brought greater accessibility, extended opening hours, and shortened waiting time on the telephone.* For smaller authorities, key competencies can be sourced by purchasing the services provided by other authorities rather than maintaining their own staff, or by outsourcing to the private sector.

In addition, groups of authorities with mixed competencies can pool their resources to establish joint companies or other types of partnerships. There are

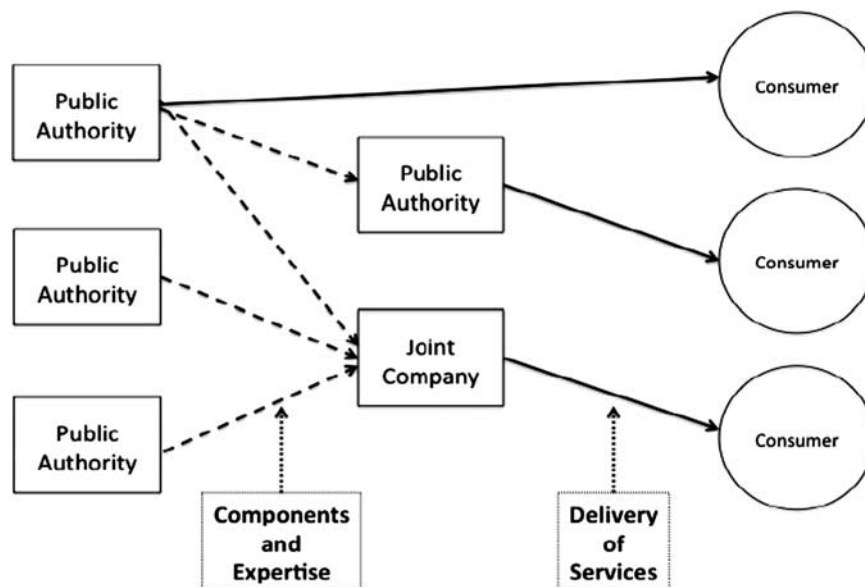


Figure 2 The syndication typology.

examples of this kind of joint venture in 'technical areas', for example, the provision of water, sewage, and emergency services. It is evident that securing the competencies for such service delivery is the main driving force, but the additional cost sharing is also important. According to the CEO of MittSverige Vatten AB; *by concentrating the activities in one company and cooperating across the municipality borders we become stronger and more effective. The foundations for long-term cooperation both with maintenance and development are very good and our ambitions are high.*

The syndication typology includes manifestations of all three of the Open Innovation archetypes. The 'inside-out process' is evident in the activities of the supplying authority; the 'outside-in process' in the supplied authority, and the 'coupled process' can be seen in the formation of joint companies. Syndication is characterised by high levels of partner interdependency. However, in alliances where one partner acts as supplier to the others, the time horizon for the interdependency is limited by the length of the contract, while the joint companies have a more permanent character.

Consumption: transforming knowledge The consumption typology (Figure 3) represents a transformation of the way the authority secures knowledge. The typology represents an innovation in the authority's development processes, and is characterised by the inflow of external knowledge, competence and components, which are used for in-house development of services and processes. In contrast to the other typologies, in the consumption typology network allies are kept at 'arms-length' and external resources are engaged only as they are needed. The interdependencies between the authority and external parties are therefore low. However, while consumption gives

the authority the ability to direct and control innovation, municipalities are frequently very dependent on the external parties for success. The key challenge is therefore changing internal routines and attitudes to cope with the degree of external dependency.

The analysis of the data revealed that *consumption* was used for innovation projects to transform the nature and delivery of services, as well as internal processes. The main sources of external knowledge were universities, consultants and networks of public authorities. In addition, other authorities and national agencies were used to support the internal development process. The Head of the Child Care and Education Board in Timrå revealed; *We have engaged people from the university and some consultants who work with pedagogical questions at a national level. The competence from outside has been used as discussion partners and as coaches for our staff. Consumption is thus a manifestation of the 'outside-in' process archetype, where the authority integrates external knowledge into their organisation to strengthen the internal competence base needed for the actual innovation process.*

Co-creation: transforming development The co-creation typology (Figure 4) represents a transformation in how the authority manages the development process, and includes (a) how the authority sources complementary external partners for development; and (b) organises the service development process. In particular, the data showed that the typology supports service innovation through openness and co-creation with external partners. The challenges evident in the data included effectively organising and managing the collaboration, and handling the resulting intellectual property.

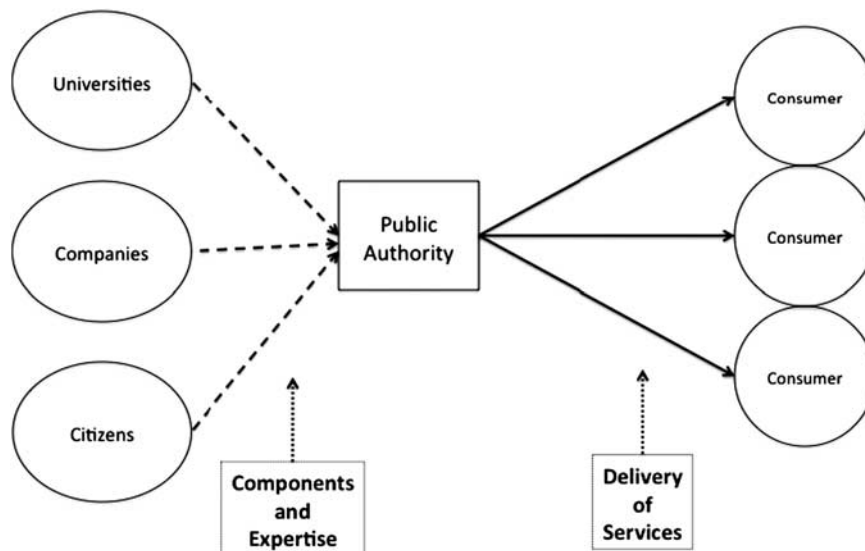


Figure 3 The consumption typology.

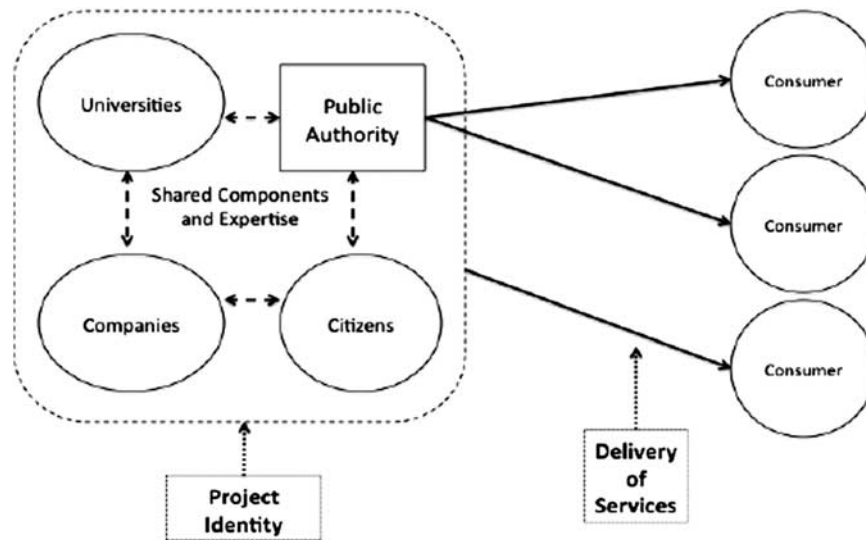


Figure 4 The co-creation typology.

Co-creation is mostly seen in the form of a temporary alliance composed for a specific project, with high levels of partner interdependency for the duration of the project. However, there are also examples of successful co-creation networks of more long-term character, which facilitate the start of new projects. Co-creation is a manifestation of a 'coupled process'. The external partners strengthen the municipality's competence base and innovation processes with the inflow of expertise, competence, experiences, and components. In the projects studied there was evidence of a 'win-win' situation, where the external partners also strengthened their competence base. For example, in the 'Föräldramötet' project (i) the municipality got a new e-service application at a low cost; (ii) the university partner could test research results in practice; (iii) the consultancy company got access to new development methods; (iv) the consumers could influence the content and design of the service; and (v) the Open Source depository e-Govforge.org got a new application to offer.

Impact of open innovation on the business models of municipalities

This section examines the impact of engaging in open innovation activities on the business models of the participating municipalities. The study revealed that participation in open processes had significant effects on value creation and service delivery in the municipalities, and this is reflected in changes in their business models. These changes are summarised in Table 6.

Product innovation It is evident that the *aggregation*, *syndication*, *consumption*, and *co-creation* typologies all have significant impacts 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. Through *aggregation* and *syndication*, value is created for citizens by leveraging the synergies between these various specialised organisations 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, the *consumption* 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. The Head of Childcare and Education Board, Timrå describes the participants in the co-creation process, noting ... *they feel proud to be a part of something 'big', and are convinced that the project will result in a better school and more pupils that will leave school with a complete school leaving certificate.*

Customer interface Although the growing use of IT (e.g. e-mail, web discussion boards, electronic suggestion boxes, etc.) as a means of improving service delivery, and the increased emphasis on keeping consumers satisfied was evident in all municipalities, the four open innovation typologies had varying impacts on the *customer interface* for municipalities. There were no

Table 6 Impact of open innovation on the business models municipalities

Business model pillar	Effects on authorities' business models				
	Aggregation: transforming identity	Syndication: transforming competence	Consumption: transforming knowledge	Co-creation: transforming development	
Product	Value proposition	Joint branding changes the perceived value of the bundle of products/services offered by municipalities.	Municipalities are able to offer higher quality services as a result of being able to source competencies from external parties.	Municipalities are able to offer higher quality services as a result of being able to co-create with external parties including citizens.	
	Target customer	Joint branding efforts are directed at citizens outside the region.	Services are delivered to other municipalities (and their citizens and businesses).	No change	
	Distribution channel	Distribution channels are branded with the joint identity.	New partnership alliances represent a new distribution channel.	No change	No change
	Relationship	No change	Emergence of supplier/customer relationships between municipalities. Some customer relationships become indirect.	No change	Enhanced and deepened communication with citizens and businesses in order to co-create new services.
Infrastructure management	Value configuration	No change	Activities must now include sourcing and evaluating competencies acquired from other municipalities.	Activities must now include managing the co-creation process.	
	Core competency	Competency in collaborating with other municipalities is required.	Allows municipalities to focus on a smaller range of specialist competencies. However, it requires new competency in sourcing and evaluating external competencies.	Requires competency in managing the co-creation process.	
Financial aspects	Partner network	Requires cooperation instead of competition with other municipalities.	Requires more collaboration with other municipalities.	Requires more collaboration with external parties (including other municipalities and citizens).	
	Cost structure	Economies of scale from collaboration and cost sharing.	Costs may increase by acquiring rather than maintaining all competencies internally.	Sourcing and collaboration process may increase costs. Some sources require payment.	
	Revenue model	Increased revenue as a result of improved bargaining position with national and EU government or from the attraction of new citizens.	Competency provision provides additional income for the 'selling' municipality.	No change	

changes associated with *consumption*, and the only changes associated with *aggregation* related to joint branding. With *co-creation*, there was a need to build deeper relationships with customers, and there were changes to all aspects of the *customer interface* in the *syndication* typology, where municipalities targeted other municipalities as 'customers'.

Business model changes in relation to how municipalities *target customers* are evident in the *aggregation* and *syndication* typologies. 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, *aggregation* creates the 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.* The need to *target customers* outside the municipality is also evident with *syndication*; where municipalities syndicating competencies to other municipalities must target the citizens and businesses in the recipient municipality. As the Head of Public Trustee Board in Sundsvall notes, 'Now the Public Trustee Office in Sundsvall gives the complete services to the citizens also in the municipalities Timrå and Nordanstig'.

In line with the changes to *target customer* evident with *aggregation* and *syndication*, changes in the *distribution channels* are also evident for *aggregation* and *syndication* where municipalities leverage the regional branding and new partnership alliances, respectively. However, despite widespread interest in digital delivery, it is recognised that many of the municipalities' services, for example education, childcare, elderly care, and social services, require personal relationships with the end consumer. Thus, a multi-channel strategy is emerging. The SI in Sundsvall explains; *Even if we develop a lot of e-services, the personal meeting is still the most important, and a necessary part in our service delivery.*

Changes to customer relationship were most significant with *syndication* and *co-creation*. With *syndication*, some 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, with *co-creation*, 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 Given the fundamental changes in value creation and service delivery associated with *aggregation*, *syndication*, *consumption*, and *co-creation*, it is not surprising that to find significant changes to the *infrastructure management* aspects of municipalities' business models. Most striking is the change to the nature of municipalities' *core competencies*, and their activities and resources as reflected in their *value configuration*.

With *syndication*, and to a much lesser degree with *aggregation*, 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 *syndication*, 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 and for the Public Trustee Office. 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 through *syndication*, municipalities can significantly enhance their value creation and service delivery (without needing additional competencies) through the *consumption* 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 explains 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*. For *aggregation*, other municipalities are seen as key allies within the partner network. For *consumption*, this network of allies must be extended to other external parties such as private companies and universities. In *syndication*, deeper inter-municipal relationships emerge as they actively collaborate with each other and in *co-creation* this collaborative network extends to include the 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 typologies examined in this study have had several impacts on the financial affairs of the participating municipalities. While the *aggregation*

typology can lower costs through economies of scale and cost sharing, the *syndication*, *consumption*, and *co-creation* typologies change the *cost structure* in ways that actually increases cost for many municipalities. For smaller municipalities, *syndication* 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.

Other than providing additional revenues for municipalities 'selling' competencies, the changes studied have had little impact on the *revenue* of the municipalities. The greatest opportunity for increasing revenue results from the joint branding of the region (*aggregation*). 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.*

Discussion

In this study, the use of Gassmann & Enkel's (2004) archetypes of open innovation processes proved to be a useful mechanism for understanding the intra- and inter-organisational dynamics in the eight open innovation initiatives examined. Based on this analysis, we were able to derive four open innovation typologies, which represent fundamental transformations in the way public authorities manage identity, competencies, knowledge and service delivery, and were able to articulate both the outcomes and associated challenges for each typology. Likewise, the business model pillars adopted from Osterwalder *et al.* (2005) provided a holistic framework in which to understand the impacts of each typology on both the strategic positioning and operations of the public authorities studied (RQ2).

The objective of the study was to explore how open innovation strategies can transform public administration. The analysis of the findings presented in the previous section support the contention that open

innovation practices have significant potential to positively transform value creation and service delivery in public administration. However, the findings also highlight the fundamental challenges embedded in such activities, and the need for far reaching changes in all aspects of the business models of participating authorities.

This work is of scientific and practical interest for transformational government as it addresses the three features of transformational government (cf. Irani *et al.*, 2007). In particular, it illustrates practical manifestations of:

- (i) The co-creation of customer-centric services with citizens and the business community. In doing so, it builds upon the exploratory work (e.g., Edwards, 2006; Bekkers, 2009) on the co-production of services by public authorities and business/community groups, and represents a potential solution to how governments in countries with a highly developed technical infrastructure and a high penetration of IT among the population might be able to achieve the desired levels of transformation of public administration (cf. Bekkers, 2007).
- (ii) The development and syndication of shared services by independent municipalities. In doing so, this work contrasts with the dominant infrastructural and technical perspective evident in e-Government (cf. Bekkers, 2007; Cordella, 2007; Foley & Alfonso, 2009) and contributes to the growing body of knowledge on the importance of inter-organisational networks in the delivery of public services (cf. Martin *et al.*, 2009).
- (iii) The use of open innovation to improve the effective sourcing and management of IT, knowledge and skills. In doing so, it represents the first empirical study of open innovation in transforming government organisations.

Conclusions

Although this study was exploratory in nature, the analysis presented of the four typologies by which public authorities can leverage open innovation processes and the consequent impact of such activities on the business models of the authorities, suggest several possible implications for both practitioners and researchers. We conclude the paper by discussing these implications in the following sections.

Implications for practice

The study revealed four typologies by which public authorities can leverage outside-in, inside-out, and coupled open innovation processes. These represent practical changes in managing identity, competencies, knowledge, and service delivery that public authorities can take towards effectively leveraging innovation and co-production in the transformation of government.

Specifically, the typologies show the importance of transforming how public authorities:

- (i) View themselves and other authorities, and how they interact with stakeholders (Aggregation Typology).
- (ii) Exploit their core competencies, source competencies, and deliver services (Syndication Typology).
- (iii) Leverage external knowledge, competence and components in the development of services and processes (Consumption Typology).
- (iv) Utilise external partners for development and manage the service development process (Co-Creation Typology).

The analysis of the impact of the typologies on the business models of the authorities reveals key issues that practitioners must address in this area. Although the resultant increase in costs as a result of open innovation is notable, the most significant impact of open innovation processes on the business models of municipalities is evident in the changes to the *value configuration* of the municipalities. As a result of the changes in how municipalities manage identity, competencies, knowledge, and the service development process; municipalities should no longer be viewed as a stable value chain (cf. Porter, 1985). Instead, the authorities can be seen as flexible organisations 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.

Implications for research

Innovation has long been seen as central to the transformation of organisations with Schumpeter (1938) seeing innovation as central to the 'creative destruction' of old forms of accumulation. The transformation of the value configuration of the municipalities studied is clear

indication of the importance of open innovation to the creative destruction and transformation of public administration. The importance of achieving this transformation is evident by much of the criticism of e-Government initiatives, which has centred on the failure to bring about meaningful organisational change despite significant investment in ICT (cf. Foley & Alfonso, 2009). This study therefore strengthens the arguments made by prior research highlighting the centrality of innovation (cf. Bekkers, 2007), and specifically, the importance of co-production (cf. Edwards, 2006; Bekkers, 2009) in transforming government.

However, more importantly, the transformation of the value configuration of public authorities identified by this study means that authorities need to effectively aggregate external competence and components in order to deliver services. This is a more radical manifestation of transformational government than that previously envisaged (cf. Cabinet Office, 2005; Irani *et al.*, 2007) as it moves beyond services designed around the citizen/business groups and shared service to the co-production of services with citizens/business as well as the design and delivery of services by external entities. This change signals major changes for the nature of government organisations as it necessitates (1) the development of internal competencies focused on the evaluation, rather than production, of service components; and (2) a potential shift in the economics of service development and delivery in which external sources are leveraged until the cost of evaluation and aggregation becomes greater than the cost of internal production. This represents a radical departure from the traditional economic theory of organisations (cf. Coase, 1937; Hayek, 1945), and indicates that future research on transformational government needs to consider a more agile manifestation of government organisations than that which currently exists.

Finally, as this research was exploratory, there is a need for replication studies to investigate the manifestation and characteristics of open innovation in other transformations of public administration. In addition, there is a need for research on how existing and emerging ICT can be used to support the open innovation process and typologies identified in this study. Finally, with the increasing acknowledgement of the need to understand the impact of e-Government on non-government stakeholders (cf. Foley & Alfonso, 2009), there is a need to understand the implications of open innovation initiative by public authorities on business and community groups.

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