How European public sector agencies innovate: The use of bottom-up, policy-dependent and knowledge-scanning innovation methods

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ABSTRACT

Factor and cluster analysis are used to identify different methods that public sector agencies in Europe use to innovate, based on data from a 2010 survey of 3273 agencies. The analyses identify three types of innovative agencies: bottom-up, knowledge-scanning, and policy-dependent. The distribution of bottom-up agencies across European countries is positively correlated with average per capita incomes while the distribution of knowledge-scanning agencies is negatively correlated with income. In contrast, there is no consistent pattern by country in the distribution of policy-dependent agencies. Regression results that control for agency characteristics find that innovation methods are significantly correlated with the beneficial outcomes of innovation, with bottom-up and knowledge-scanning agencies out-performing policy-dependent agencies.

1. Introduction

The public sector contributes to between 20% and 30% of GDP in economically developed countries (Eurostat, 2012). Given its economic weight, there is growing policy interest in how to encourage public sector innovation in order to improve productivity, the efficiency of service delivery and the quality of public services. This interest has led to government support for surveys to measure public sector innovation in the UK (Mulgan, 2007; Hughes et al., 2011), Australia (Arundel and Huber, 2013), Scandinavia (Bloch and Bugge, 2013) and Europe (European Commission, 2011). Most of these surveys have been inspired by the Oslo Manual's (OECD/Eurostat, 2005) recommendations for measuring innovation in the private sector, with questions on innovation inputs, activities and outputs.

The goal of measuring public sector innovation is to inform policies to improve the innovation capacity and outputs of agencies (for simplicity we replace 'public sector organization' with 'agency'). An important step is to determine if there is heterogeneity in how agencies innovate, as observed for the private sector in studies using data from innovation surveys or specific innovations (Pavitt, 1984; Veugelers and Cassiman, 1999; Leiponen and Drejer, 2007).

If there is heterogeneity in the innovative capabilities of agencies, there should be opportunities for learning which approaches to innovation produce the best outcomes such as improvements to service quality or process efficiencies.

An evaluation of differences in how agencies innovate depends on how innovation is defined. Major disruptive innovations such as the introduction of national healthcare programs require political legislation. Yet other types of disruptive innovations, such as replacing mailed tax returns or government surveys with automated online versions may or may not depend on legislation or directives. In addition, many incremental innovations such as efficiency improvements to service delivery or administrative processes could be developed and implemented at the agency level. New governance structures were introduced in many developed countries from the 1980s to encourage managerial initiatives to introduce efficiency-enhancing innovations and more recently there has been interest in other forms of governance to encourage innovation (Hartley et al., 2013).

In this article we use the results of a large survey of the innovation activities of European public administration agencies to determine if there are systematic differences in how agencies innovate and the nature of these differences. The survey followed the Oslo Manual in using a broad definition of innovation that encompasses incremental innovations through to major disruptive innovations, with innovation broadly defined as 'a new or

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significantly improved service, communication method, or process/organizational method'. We evaluate three research questions.

First, are there differences in how agencies innovate and if yes, how do these approaches vary? Second, do differences in how agencies innovate vary in a consistent pattern across countries, perhaps in response to different bureaucratic or cultural traditions? Our analyses for these first two research questions identify three different methods that agencies use to innovate: 'bottom-up', 'knowledge-scanning', and 'policy-dependent' methods. The prevalence of the first two methods varies consistently across European countries, while there is no consistent difference for policy-dependent innovation. Of note, these analyses are largely exploratory, due to the absence of a developed theory and previous research on heterogeneity in the innovative methods used by agencies.

The third research question is if these three innovation methods are linked to innovation outputs or outcomes, such as the novelty of innovations and the benefits of innovation. The results indicate that the 'bottom-up' and 'knowledge-scanning' methods are correlated with better outcomes than the 'policy-dependent' approach. To the best of our knowledge, this is the first empirical study of the first and second research questions and the first study to use survey data for multiple countries to examine the link between how agencies innovate and innovation outcomes.

2. Heterogeneity of the innovative activities of public sector agencies

There are several reasons why we would expect agencies to exhibit heterogeneity in their innovative activities, both within countries and across countries. These include differences in governance, cultural factors, and the discretionary power given to managers.

The traditional governance structure for the public sector limits innovation to a 'top down' process driven by political decisions (Hartley, 2005; Walker, 2006), although senior managers may have some room to influence how legislated change or ministerial directives are implemented. Due to concerns that this approach stifled innovation, New Public Management (NPM) was introduced in many countries in the 1980s to give managers greater responsibility for implementing efficiency-enhancing innovations, but Hartley et al. (2013) argue that NPM discouraged knowledge sharing across organizations and consequently acted to hinder some types of innovations. Failures with some of the main features of NPM, such as splitting up government hierarchies, competition markets, and incentive systems also encouraged the development of alternative governance methods (Dunleavy et al., 2005; Moore and Hartley, 2008), such as 'organizational entrepreneurship' which encourages 'bottom up' processes that involve both middle managers and front-line staff in innovation, 'whole of government' or 'joined up government' systems that stress collaboration across agencies, and 'lateral innovation' where agencies adapt good practices in use by other agencies (Hartley, 2005). Christensen and Laegreid (2007) also identify methods in which agencies develop innovations through 'networked governance' that includes collaboration with both other agencies and non-governmental organizations. Sorensen and Torfing (2012) refer to a new 'governance network method' for public sector innovation that draws on the expertise of front-line staff, managers, private businesses, users and others.

These different governance structures are likely to diffuse at varying rates across countries. NPM was first adopted by Anglo-Saxon countries and later taken up to varying degrees by European governments (Hartley et al., 2013). We would expect similar differences in diffusion rates for methods based on organizational entrepreneurship or lateral innovation.

2.1. Contextual factors: organization and culture

Contextual factors create the environment in which agency managers operate (Walker, 2006). In addition to differences in governance, there is some evidence that national differences in how work is organized, the national culture, and organizational conditions can influence how agencies innovate.

Research using the European 2000 Survey of Working Conditions found large differences among 14 European Union (EU) countries in the level of responsibility given to private-sector employees (Arundel et al., 2007). In Sweden, Denmark and The Netherlands over 50% of employees worked in 'discretionary learning' organizations that provide staff with high levels of responsibility to solve problems, while in Greece, Italy, Spain, and Portugal less than 30% of employees worked under these conditions, with an above average share of employees working in Taylorist or traditional organizations where work is either routine or involves low levels of problem solving. The study found a positive correlation between the national share of employees working in discretionary learning organizations and the share of highly innovative firms.

If working conditions in the public sector partly reflect conditions in the private sector, we would expect higher shares of public sector employees working in 'discretionary learning' agencies in Scandinavia than in Southern Europe. These working conditions could also support agency activities to develop innovations, as suggested by the results for the private sector. Conversely, agencies in Southern Europe could partly replicate the traditional organizational structures of their private sector counterparts, resulting in fewer opportunities for employees to think of and suggest innovative solutions of relevance to their workplace.

A related factor that could create national differences in how agencies innovate is the national culture. Hofstede's (2011) four dimensions of power distance, uncertainty avoidance, individualism versus collectivism, and masculinity versus femininity have been found to be correlated with several indicators of innovation, such as per capita patent application rates at the EPO (Kaasa and Vadi, 2010), the willingness of individuals to buy innovative products (Steenkamp et al., 1999) and the innovative output of firms (Rosenbusch et al., 2011). In general, innovation is negatively correlated with power distance, uncertainty avoidance and masculinity and positively correlated with individualism. A high level of power distance, or a more hierarchical society, is expected to reduce information sharing and consultation with employees, high uncertainty avoidance to create fewer incentives for developing novel ideas, and high masculinity to reduce collaboration, with these factors depressing innovative activity. Conversely, high individualism is thought to support novelty-seeking behavior that increases innovative activity. Societies with low power distance and high individualism, such as in Northern Europe (Kaasa, 2013), could also be more likely to have a higher percentage of workplace environments that give employees greater responsibility to develop innovative solutions to problems.

Other conditions that are common in the public sector could impede innovation. Regulatory requirements could limit opportunities for innovation in the delivery of health, taxation or security services (Borins, 2006; Mulgan and Albury, 2003; Koch and Hauknes, 2005). In addition, strong bureaucracies and high levels of red tape can create organizational cultures that are unreceptive to innovation (Boyne, 2002), management aversion to risk-taking (Osborne and Brown, 2011; Potts, 2009), or professional and management resistance to change. In a study of 125 successful innovations in Britain (NAO, 2006), the most frequently cited barrier to innovation was a reluctance to 'embrace new ways of working'. Other impediments include 'reputational' and 'technological' risk which were frequently cited barriers in a study of successful public sector innovations in the UK, Denmark, Finland