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Innovation labs in the public sector: what they are and what they do?

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ABSTRACT

This article is a first comprehensive attempt to globally map and analyse innovation labs (i-labs) in the public sector. The article analyzes theoretical reasons why i-labs are created in the public sector and tests these assumptions in practice. During the empirical study, thirty-five such organizations all over the world were identified. The research is based on a two-step approach: first, a comprehensive survey was carried out followed by an extensive in-depth interview with the managing figures of i-labs; eleven i-labs responded. The article finds support for the assumptions of external complexity, technological challenges, emulation, and legitimization as reasons behind the creation of i-labs.

KEYWORDS Innovation labs; public sector; organization theory; experimentation

1. Introduction

Innovation labs (i-labs) are becoming increasingly popular in the public sector. In 2013, Parsons DESIS Lab (2013) (the New School for Design) published the 'Government Innovation Labs Constellation 1.0' covering sixteen such innovation outfits. Subsequently Nesta and Bloomberg Philanthropies published a report on public-sector i-labs that covered twenty such units around the world (Puttick, Baeck, and Colligan 2014).[1] While these reports have been informative in nature, there is very little research on public-sector i-labs beyond descriptive – and at times normative – overviews. Mostly i-labs are described as versions of existing organizations: as hybrids of think tanks, digital RD labs, social enterprises, and charitable organizations (e.g. Williamson 2014). The nature, organizational structure and need for such units within the public sector are largely unexamined.

With this article, we will try to take a first systematic step to fill this gap in academic literature. In this paper, we describe the foci and parameters of i-labs to explain the existence of such organizations within the public sector. As i-labs deal with change, we will first look at how organization theories have conceptualized change in the public sector and, especially, why these new forms of organizations are created. The article argues that any singular organization theory alone is not able to explain the emergence of i-labs and thus, their existence can add considerable value

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to the theoretical debate. The emergence of i-labs can be seen as one of the elements in the ongoing public-sector innovation discourse and related reform attempts. Public-sector innovation as a phenomenon is much less understood and discussed than its private-sector counterpart (Pollitt 2011; Lynn 2013; Kattel et al. 2014), nevertheless one can witness an emerging public-sector reform trajectory across the world where governments try to reorganize their innovation processes that are driven by technological change (ICT) and user- and citizen-centric governance and management ideas. In the context of i-labs, what is relevant is that such organizations see innovation in the public sector – however defined and understood – as their main task and indeed their raison d'être. I-labs are a specific activity of the public sector to create organizations for innovations. In effect, studying i-labs – why do such organizations emerge – is one way to try to better understand what innovation in public sector is and how it takes place.

The theoretical discussion is followed by an empirical account of eleven i-labs across the world to illustrate how and why i-labs are created, what role they play and how they have persisted in the public sector. An integrative data analysis method is adopted for the empirical analysis triangulating data from in-depth interviews, document analysis and a survey of i-labs. The article ends with a discussion about what i-labs tell us about change in the public sector and how previous theoretical approaches could be complemented.

2. Theoretical overview: origins of organizational change

The theoretical and conceptual explanations on public-sector change are plenty, yet they tend to be loosely linked (Pollitt 2009). There are many organization theories that explain the origin of organizations, from modern organization theories to evolutionary approaches. We know that organizations change, and this change can be rather drastic,

- e.g. from scientific management (Taylor 1911) to the rise of the network organizations (Baker 1992). Reviewing prior organizational theories – various strands of modern organizational, institutional, teleological, life-cycle, dialectic and evolutionary approaches – different core assumptions can be drawn (Table 1). However, the lack of explanatory power of these theories regarding the emergence of new organizational forms becomes evident. Thus, most of these theories do not outline how change is introduced to the system or environment. For example, most modern organization theories assume that environmental changes cause organizations to adapt, while more institutional approaches, as mentioned above, rely on the idea of emulation as part of the diffusion process of new organizational forms (never really explaining the real impetus for change to begin with). More teleological organizational approaches are in essence introspective and assume that the change in organizations originates from within – through learning, especially during the search for more efficient forms of management and work organization – and represent a utility-centred perspective. Thus, according to the rational perspective (epitomized by, e.g. delegation, principal–agent and bureau-shaping theories) involved stakeholders focus on the utility of dedicated structures and the consolidation of expertise in the former (James and

Table 1. Selection of organization theories explaining organizational change*.

Theory	Main contribution	Hypotheses	Limitations
Strands of modern organization theory			
Systems theory (Boulding 1956; Katz and Kahn 1978)	Organizations are (open) systems influencing and being influenced by the environment they are in. The theory focuses on organizational structures, relationships and interdependence between elements. Elements of social systems are autopoietic (capable of reproducing and maintaining itself).	Internal complexity is created to deal with external complexity. Organizations change, because they adjust to fluctuations from the environment.	The theory does not specify how new interdependences within a system emerge that lead to organizational change. Boundaries of systems are difficult to draw. Overestimates the role of management in controlling systems.
Contingency theory (Lawrence and Lorsch 1967; Burns and Stalker 1961; Mintzberg 1979)	Different organizational structures are suitable for specific environmental conditions. Variation in organizational structures is explained by situational differences or contingency factors (e.g. size, strategy, environment and technology). Organizations adapt their structures to maintain a fit and perform within the above contingencies.	During environmental change organic organizational structures are most appropriate. Boundary scanning functions in organizations are needed to respond to environmental demands. Managerial functions (incl. conflict resolution) need to be differentiated to monitor change in varied aspects of the environment.	The theory does not explain complex relationships between organizations and contingency factors (i.e. organizations are assumed to have no significant influence over situational variables). In the bounds of the theory it is difficult to relate structure to performance.
Sociotechnical theory (Mayo 1946; Trist 1978)	Experts are seen as agents of change, who design more efficient work and workplaces considering human, social and organizational factors	For the adoption of new solutions both social and technical factors need to be taken into account. Legitimacy of experts is the driving force behind organizational change.	Change usually addresses only work design, but not the processes of change itself. Sociotechnical design methods are rarely used in reality.
Institutional approaches			
(New) Institutional theory (DiMaggio and Powell 1991)	The theory is focused on the movement towards isomorphic institutional environments. External institutions permeate internal structures through coercive, mimetic or normative isomorphism.	Organizational emulation leads to the adoption of new structures	'entrate on forces changing institutional environments
Teleological approaches			
Functionalist organizational theory (Child 1972; Donaldson 1987)	Purposiveness of the actor or unit is seen as the motor for organizational change: human intention is considered to be the origin of new organizations. Functional consequence (feedback from desired organizational performance) helps new structures to persist.	When desired outcomes are not achieved through existing organizational structures, it triggers the formation of new organizations	Positivist approach which does not account for a variety of organizational structures and also complex (irrational) change factors

(*Continued*)

Table1. (Continued).

Theory	Main contribution	Hypotheses	Limitations
Strands of modern organization theory			
Theory of adaptive learning (Cyert and March 1963, March 1981 and March 1991)	Organizations change, because agents modify their behaviour as a result of experience. Organizations are governed by dominant coalitions' mental frameworks and organizational routines they create.	The change of organizational structures is dependent on how information in organizations is acquired, interpreted and processed	It is an excessively broad approach. Traditional approaches focus on the individual level and less on organizational learning systems.
Theory of generative learning (Argyris 1977; Senge 1990)	Organizations change through organizational learning processes and individuals' learning activities. In addition to adaptive learning processes (single-loop learning), organizations can also have generative learning processes (double-loop learning): continuous experimentation and feedback.	Organizations usually cope with problems within existing structures in single-loop-learning processes; through double-loop learning also the broader organization can change	Concentrates traditionally on the individual level (behavioural psychology); however, the theory acknowledges the importance of change on the system level. Does not explicitly explain the emergence of new organizational forms.
Social construct theory (Berger and Luckmann 1966)	Organizational change is based in human interaction, complex responsive processes. Organizational change happens through common sense-making.	New organizational structures emerge through interactions and changes in group knowledge and subsequent praxis	The theory discounts the effect of external factors; especially downplaying the effect of technological determinism.
Dialectic/organization behaviour approaches			
Conflict theory (Collins 1974)	Conflict is seen as a form to socialize change. Conflict is needed for the formation and perseverance of social structures.	When there are conflicting approaches challenging organizational structures, organizations need strong promoters for effective conflict management	Conflict theory does not explain organizational stability
Agency theory (Eisenhardt 1989)	Division of principals and agents drives towards organizational specialization and autonomy	Clearly delineated organizational structures, roles reduce transaction costs and create the reputation of expertise. Insulating agencies from third-party influence advances their fiduciary logic: politicians are able to show credible commitment to the issue, thus diminishing political transaction costs.	Does not account for the effect of external factors (incl. technological change) in organizational change
Life-cycle approaches			
Organizational development theory (Lewin 1947; Schein 1996)	'nments change.	Flexible organizational structures only exist temporally	Focuses on group formation and not organizational change. Assumes a linear process of change. The theory does not account for non-temporal nature of change not accounted for (possibility of no refreeze).

(*Continued*)

Table1. (Continued).

Theory	Main contribution	Hypotheses	Limitations
Strands of modern organization theory			
Evolutionary approaches			
Population ecology (Hannan and Freeman 1989)	The Darwinian approach argues that resource constraints and the resulting competition determine the survival of superior organizational structures. Selection of various organizational structures is a purposeful managerial choice.	Experimentation is institutionalized to achieve variation in organizational structures. New organizational structures are retained via standardization and institutionalized controls.	The ability of organizations to influence the environment is ignored
Punctuated equilibrium theory (Tushman and Romanelli 1985)	Change occurs when the system has evolved away from equilibrium. Organizational evolution is not an exponential growth model, but caused by exogenous factor (s) in the organizational environment. Organizations are usually stable.	New organizational structures evolve in smaller, protected populations. Clear stimulus from environment is needed for organizational change.	Discounts the importance of incremental changes. Loses sight of some contextual factors (including geography).
Theory of disruptive innovation (Christensen 1997)	Disruptive technological innovations create new functionalities, markets and organizational forms. Traditional organizations have difficulties adapting to changes due to established client bases and routines.	Technological change explains the need for flexible organizational structures	Concentrates specifically on the private sector competitive market context. Disruptive change has been used too broadly and the concept has become dissolute.
Theory of techno-economic paradigms (Perez 1983; Freeman and Perez 1988).	Organizational evolution is explained by a mismatch between socio-institutional and techno-economic paradigms	Organizational structures adapt to the logic of new techno-economic paradigms. Fluid, experimental periods precede the emergence of dominant organizational designs.	The theory assumes a high level of technological determinism

Source: Authors.
*Some ideal types of organizational models from Van De Ven and Poole (1995) were used in the overview to categorize organizational theories.

Van Thiel 2011; Pollitt 2004). While different in their assumptions, both strands assume that during the process of change some flexibility in organizational structures must exist to accommodate external complexity or internal learning. Somewhat differently, population ecology, organization development theory and also evolutionary approaches assert that these new forms of organization have to be protected from the traditional environment.[2] Evolutionary organization theories put an additional focus on competition between the best organizational structures and highlight the importance of technology. While not evolutionary per se, both Weber's (2009) charismatic organization and Mintzberg's (1979) adhocracy can be seen as part of the former approach.

Nevertheless, most organization theories are developed in the private-sector context, assuming, in effect, an environment of market economy and high levels of competition. Taking into account the contextual characteristics of public-sector organizations, we can discern six reasons from classical organizational and evolutionary theories why i-labs could be created: external complexity (environment), technology, competition between old and new structures, emulation, consolidation of expertise and learning (Figure 1). And, by proxy, we can argue that these six reasons for organizational change also help to explain public-sector innovation and related reform patterns.

Figure 1 shows schematically that the explanatory factors derived from different theories do not systematically follow boundaries of the traditional (ideal-type) division of organizational theories (didactic, evolutionary, teleological, etc.). The emergence of new organizational forms that could explain the existence and role of i-labs is a side topic in traditional organizational theories, and thus, the assumptions fluctuate between and within different theoretical approaches. Table 2 pulls together the main theoretical propositions from the material presented in Table 1 and Figure 1.

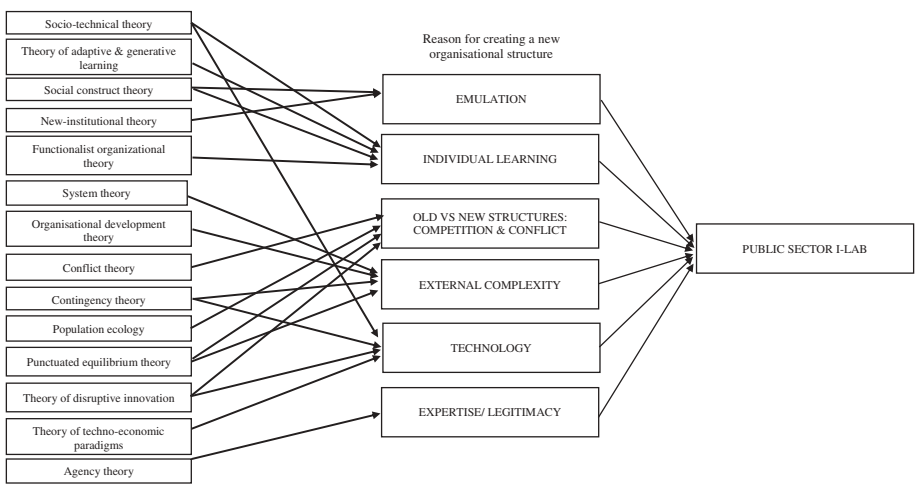

Figure 1. Schematic representation of theoretical expectations behind the creation of i-labs*. Source: Authors.

Table 2. Propositions.

Propositions	Theories
Proposition 1. I-labs are created in the public sector to cope with external complexity (e.g. the rise in user-led expectations; austerity)	Systems theory, contingency theory (*modern organizational theories*), organization development theory (*life cycle*), and all *evolutionary approaches*
Proposition 1.1. I-labs are specifically created to cope with ICT demands on the public sector	Contingency theory (*modern organizational theories)*; theories of disruptive innovation and techno-economic paradigms (*evolutionary*)
Proposition 2. I-labs are created in the public sector to cope with internal learning (e.g. search for productivity gains)	*Teleological approaches*: functionalist organizational theory, theory of adaptive and generative learning, social construct theory; also socio technical theory (*modern organizational theories*)
Proposition 3. I-labs are created in the public sector to shield new, change-oriented structures from internal competition within tradition organization structures	Conflict theory (*dialectic*) and *evolutionary approaches*: population ecology, punctuated equilibrium theory, theory of disruptive innovation theory
Proposition 3.1. I-labs are created in the public sector to legitimize change through specialization and the concentration of experts	Agency theory (*dialectic/organization behaviour*)
Proposition 4. I-labs are created in the public sector due to (private sector) emulation and information exchange	*Institutional approaches* plus social construct theory (*teleological*)

Source: Authors.

Contextual factors (proposition 1), such as the economic crisis and the resulting fiscal austerity, seem to pressure public-sector organizations to search for more efficient public-service delivery mechanisms. For example, new public governance and public-sector innovation literatures emphasize the need to incorporate service-technology principles into public management and administration (Osborne and Brown 2013). Here collaboration with outside stakeholders is seen as key (Pärna and Von Tunzelman 2007; Kim 2010). Hence, the existing literature on i-labs seems to suggest that the surge of i-labs also in the public sector can be tied to (lead) user-centred approaches (e.g. co-creation, co-design and co-production) (Bason 2013; Mulgan 2014) – meant to cope with external complexity – powered by the popularity of 'open' innovation models during the previous decade (Chesbrough 2003).

As mentioned above, under evolutionary approaches the theory of disruptive innovation and techno-economic paradigms tie organizational change directly to radical change in technology. This in broad terms is also an environmental contingency, but the theories assume that radical change in technology causes a cumulative change in the sociotechnical system (proposition 1.1.). While this might be critiqued for being overly deterministic, it has garnered a wide response from management scientists, who see it as a central factor on how private-sector organizations change (e.g. Rogers 1995; Tushman and O'Reilly III 2002; Christensen and Raynor 2003; Christensen 2006); yet, these assumptions have been underutilized in public-administration literature (Pollitt 2010; Margetts and Dunleavy 2013). Thus, we cannot ignore the role of information and communication technology (ICT) as an independent variable in the process. With the specifics of the technology and more access to data, public services are becoming more modular and open to outsourcing and decreasing the need for middle management (e.g. Langlois 2007) and thus, open to incremental, intra-service changes without the direct need to rearrange the service system. Nevertheless, these learning effects do not have to be only exogenously motivated (i.e. due to

technology, austerity), but they can also be caused by internal processes – e.g. search for efficiency gains – which may also be a reason to create i-labs (proposition 2).

On the whole, the existing literature proposes that i-labs are foremost created to foster ICT-enabled user-driven service production logic in the public sector as well as to cope with external changes (ICT change, austerity, demand for individualized services). It is assumed that i-labs represent islands of experimentation where the public sector can test and scale out public-service innovations. In the same vein, we can use March's classic dichotomy of explore and exploit here: i-labs could be described as organizations established to explore new opportunities (i.e. innovations) in existing services or creating entirely new ones (see March 1991 on explore and exploit). It follows logically that experimentation assumes some level of autonomy from the existing structures and institutions (Coriat and Weinstein 2002), and one can understand i-labs as an attempt to create independent change champions (experimental organizations) within the public sector (proposition 3). For this some form of legitimacy (from expert knowledge, specialization) is needed (proposition 3.1). Moreover, in many ways the approach to create new organizations within the public sector rather than reforming the existing ones or calling on private organizations represents an attempt to mimic the market context, where innovations spread through new types of organizational routines replacing the old ones (proposition 4).

3. Methodology

I-labs, both in the private and public sectors, are very heterogeneous – in terms of their activities, scale and organizational structures – making them difficult to map and analyse. An integrative data analysis method is adopted for the empirical analysis, triangulating data from in-depth interviews, document analysis and a survey of i-labs. In the two-step approach, first, a comprehensive survey was carried out, directed at the management of i-labs, followed by an extensive in-depth interview with the same managing figures of i-labs. The survey is based on long-term and large-scale research into public-sector organizations in Europe – the COBRA research project. Based on the proven structure and logic, the COBRA questionnaire addresses the autonomy of agencies towards their political and administrative principals on different dimensions.[3] This is a useful starting position for studying i-labs as they represent experimental organizations that almost by definition assume autonomy from existing institutions (Coriat and Weinstein 2002). However, due to the specific nature of i-labs, the questionnaire had to be significantly updated to fit our purposes of the research.[4] The survey was followed by an in-depth, semi-structured interview (with both deductive and inductive questions) reflecting on the results of the survey and specifically focusing on the reasons behind the creation of the lab, team characteristics, main tools, network partners, activities and goals, outcomes and steering and control. The interviews were recorded and transcribed, and additional notes from the authors were used to analyse the data. The research design was tested prior to use with the representative from Mindlab, Denmark.[5] To encourage i-labs to be as frank as possible, their answers were anonymized, and direct references to individual labs will only be made when the information was obtained from the desk research.

Based on prior reports by Nesta, IBM (Puttick, Baeck, and Colligan 2014; Burstein and Black 2014), Parsons 'Gov Innovation Labs Constellation 1.0' and web-based

searches, we identified thirty-five i-labs in or directly funded by the public sector.[6] Most of them could be found in Europe and North America, although Asia is also showing a growing number of such labs. In developing countries, these labs (primarily social i-labs) are usually found in the third sector and, thus, outside of the scope of this research. Furthermore, i-labs established under the United Nations (including the UNDP Public Service Innovation Lab) were not considered for this research.

Prior to the survey and interviews, we made a profile for all i-labs in our sample based on document analysis. From the aforementioned thirty-five i-labs, we were able to find direct contact information for twenty-five of the labs, from which sixteen answered our initial interview request. In the end, eleven i-labs joined the full study (filling out the questionnaire and participating in the interview), of which three had closed down by the time of our in-depth study (see the list of interviews in the Appendix).[7] Our study includes six i-labs from Europe, four from Northern America and one from Australia. The study does not aim at a representative sample of public-sector i-labs, as our goal was to reach the greatest possible amount of information on the phenomenon of i-labs and contribute to theory-building (see Flyvbjerg 2006 on this methodological issue).

4. Innovation labs in the public sector

General characteristics

I-labs in our sample were established between 1999 and 2013; however, seven of the i-labs were established after 2010. From the total sample of i-labs (thirty-five) around one-third were established on the municipal level, while others were created on the state or federal level. Approximately half of the i-labs in our sample had their own legal personality separate from their parent organization (both vested in public and private law). At the same time, others were identified as independent parts of a ministry or municipal department (e.g. DesignGov, Laboratorio para la Ciudad) or did not exist in the formal organization at all, which was the case for one of the most well-known i-labs – Helsinki Design Lab – in SITRA.

The i-labs in our sample of eleven employed between two and seventeen people, with an average team size of six to seven persons. While it was difficult for some i-labs to differentiate their own budget from the overall budget of the organization, the maximum budget in our sample was 1.5 million € in the previous financial year (with an average budget of 0.8 million and a minimum budget of 0.6 million €). For over 60 per cent of the teams the primary source of income was self-generated (for more than half of the labs this constituted more than half their budget – see Figure 2), closely followed, however, by direct budgetary transfers from the government. In many cases, the internal funding (in addition to operating costs) came from specific projects or programme partners within the public sector. This structure of finances was seen as important by i-lab executives: while the internal funding encourages ownership of projects inside the public sector, external funding gives i-labs the flexibility to try new things: '*We always leave some money to explore new possibilities, for skunk works.*'

This also gives an indication of the power and control relations (autonomy) that separate these teams from the rest of the public sector: self-generated income and

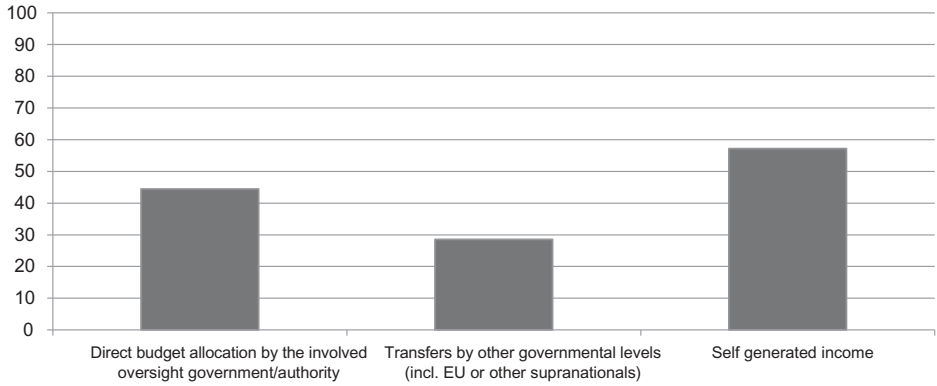

Figure 2. Source of income that provides more than half of the total budget (% of i-labs). Source: Authors.

low-operating budgets mean that most i-labs do not elicit strenuous performance evaluations, nor the need to collect quantitative metrics to make the output of the labs measurable. Figures 3 and 4 show that traditional performance-related measures and results-based planning are not used in the context of i-labs.

Usually formal indicators are used to communicate results monthly or quarterly between parent organization and i-labs, while more ethnographic methods (description of activities, video diaries, blogging, etc.) are used internally and to communicate results to the wider network of lab partners. The latter is more to legitimize lab activities in the eyes of the general public. Goal attainment is usually evaluated inside the organization itself, and there are no direct performance rewards for results (apart from the possible increase in budget in few of the reviewed cases). While the impact of labs can be measured on different levels – the lab itself, the spin-offs it creates, the innovations and innovators it supports and the innovation discourse it helps to establish (Tiesinga and Berkhout 2014, 106) – soft outcomes (networks, discourse change, etc.) – are easier to achieve according to the account of i-labs themselves.

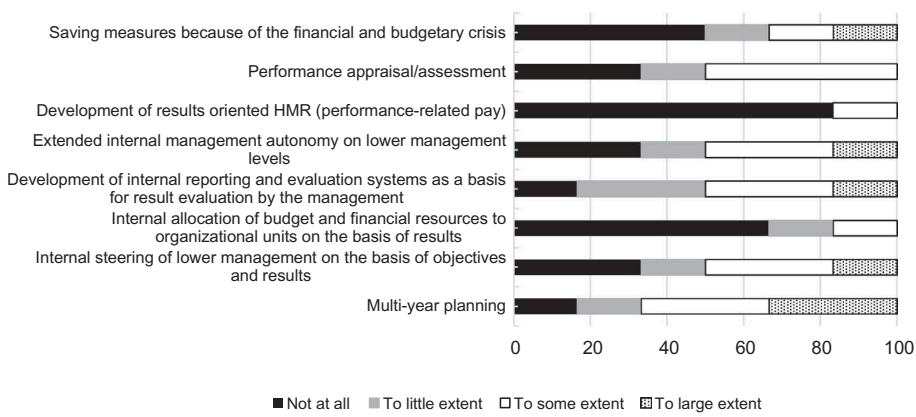

Figure 3. Selected activities characteristic to i-labs: planning and reporting. Source: Authors.

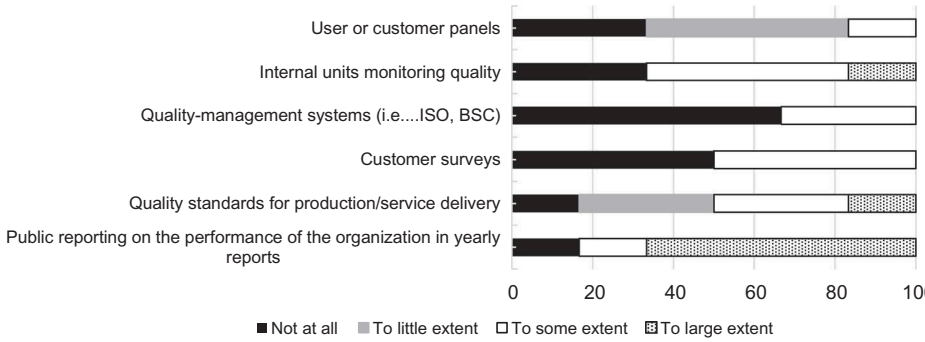

Figure 4. Traditional evaluation modes (%). Source: Authors.

However, in terms of finances, outside control over i-labs is more rigorous: meaning that investment and annual budgets have to be coordinated with the parent department or the financial department. Most are subject to external audit concentrating on financial issues and legality and rule compliance. One-third of i-labs found that the use of resources is evaluated to a very great extent and another third to some extent. Nevertheless, measurable targets are usually not tied to budget allocation, and the former are set in most cases for internal use only. Used indicators usually describe activities and task performance, measuring the quality of services, and are both qualitative and quantitative in nature. However, when the budgets get higher and the activities become more visible, calls for more precise control and 'meaningful' performance measures emerge (see in the case of the OPM lab in GAO 2014).

This is also the reason why, as mentioned above, most executives saw the small size of i-labs as key to the success of their activities, otherwise the centre of control would go elsewhere and the steering of the i-lab would become more standardized, invariably influencing the core activities of the lab itself. This makes most i-labs small and agile: the lean, start-up type structure enables much quicker communication and forces labs to do things '*quick and dirty,*' because there are not enough people nor the budget to draw out the processes. When projects become too big, then invariably i-labs run against existing structures (e.g. IT departments and ICT architecture) and procurement rules. This was seen as a cause for the loss of momentum as '*existing standards override everything.*' This indicates a strong disparity between old and new organization structures in terms of doing things, while also limiting the effective autonomy of i-labs that is needed to challenge the old norms and institutionalize innovations on a large scale.

Usually i-labs are built around a particular user-design-led method, such as human-centred design (MindLab), the 'Friendly Hacker' method (La 27e Région) or the four-step Innovation Delivery model (New Orleans Innovation Delivery Team) (see further Puttick, Baeck, and Colligan 2014). However when it comes to specific analysis techniques and skills, i-labs use a variety of approaches: randomized control trials, ethnography or action research to work directly together with the people impacted (see also Bellefontaine 2012; Puttick, Baeck, and Colligan 2014). Thus, i-labs usually bring together heterogeneous teams of researchers, designers and stakeholders to discover and analyse problems from different angles and develop, test and improve prototypes for their practical application. Our interviews showed

that i-labs employed both people from backgrounds generally new to the public sector – design, anthropology, ethnography, social geography – and people with more traditional skill sets – political science, sociology, communication, etc. What was striking was that while these labs are often associated with new ICT solutions and hackathons, there were not that many IT engineers present in the labs that were in our sample – these skills were acquired from outside partners. In some sense, this can be seen as an attempt to make technology subservient to social change rather than letting the technology be the catalyst of the latter (see also Townsend 2013 on this point). At the same time, the cause for the former can also be the fact that during the period of austerity it was not allowed to hire outside of the public sector.

Reasons behind the creation of i-labs and their main activities

In general, the interviewed executives argued that i-labs were created to enable cross-disciplinary and citizen-driven approaches. Thus, we found most support for the role of external complexity and technology for the creation of i-labs (propositions 1 and 1.1). The conflict between old and new organizational structures – proposition 3 – was not brought up as a specific reason (and many organizations did not have full independence or organizational segregation anyway). In general, internal learning effects were deemed subservient to external changes (proposition 2). However, both specific know-how and the autonomy of i-labs were deemed essential for the survival of the organizations (see discussion in the next section). Furthermore, the growing number of various practical guides to lab building (e.g. Doorley and Witthoft 2012; Ståhlbröst and Holst 2013; UNICEF 2012; Puttick 2014) indicated that indeed some emulation and fad of labs can be justified as a causal factor. This was also corroborated by our interviews, as the first i-labs (especially Mindlab in Denmark) caught wide media attention and thus were considered for emulation (proposition 4). This also corresponded with the fiduciary logic of specialized agencies (proposition 3.1) – hence, in many cases in our sample politicians were able to show credible commitment to innovation through the creation of public-sector i-labs.

While the aforementioned were the main reasons mentioned for the creation of i-labs in the public sector, that does not mean that these goals and logics were specifically followed later on. The activities of i-labs beyond their initial goals of creation were connected to their position and routines within the public sector. For example, while stakeholder engagement and co-production with citizens was seen as key, i-labs produced most of their work for or with the ministerial departments and other government agencies facilitating mainly inter-public-sector learning processes (see Figure 5). This is dependent on the fact that the public sector funds a large share of i-lab activities. Thus, our survey results showed that the parent organization (ministry or municipal department) and the general public influence the direction and strategy of i-labs in our sample the most, while industrial partners, corporations and private consultants and individuals the least. Depending on the level where the i-lab was established – local or national – the department of civil service played the central role in the strategy of i-labs. Consequently, while internal learning was not the cause for the creation of i-labs in most cases (proposition 2), in reality it became an important factor in what the organizations dealt with later on.

As such, the level of collaboration among the target groups change in accordance with the orientation of i-labs as well (e.g. internal public/sector processes). Burstein and

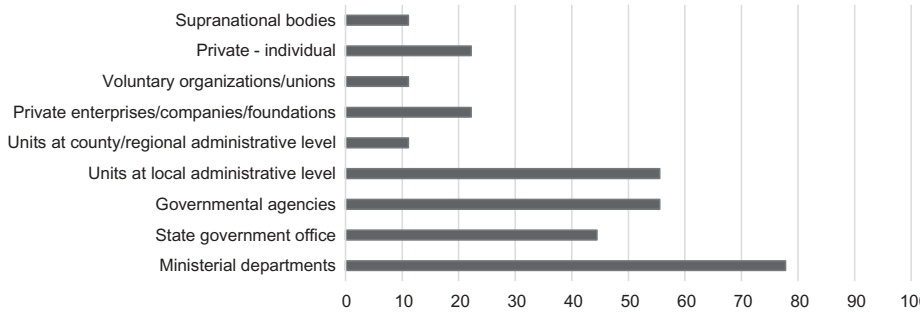

Figure 5. Target groups of i-labs (i.e. relevant users of the activities, services and/or products of i-labs; % of i-labs). Source: Authors

Black (2014) differentiate between internally and externally focused innovation offices in the US city/government context. While the latter are foremost established to engage the public in crowdsourcing projects, community data collection and experimentation, the internally focused offices are oriented towards increasing administrational efficiency (e.g. the work of most i-teams), produce an organizational culture change in larger organizations (employee innovation competitions and resident talent programmes) and implement innovation processes and protocols inside organizations. The division of labs in our sample was almost half and half for both categories with the lead of citizen-oriented, crowdsourcing initiatives. The level of collaboration is high in both cases due to the user-centred approaches that i-labs dominantly employ both in and outside of the public sector. Thus, collaboration – both inside and outside the public sector – and the ability to coordinate interdisciplinary user needs across different partners is key for i-labs. Consequently, it is not surprising that the self-reported characteristics of i-labs are a concentration of activities on building trust, individual/relational aspects, cooperation and empathy – see Figure 6. The most uncharacteristic feature the i-labs reported in the questionnaire was good financial rewards – again performance is not specifically evaluated – and the most neutral constructs were related to career development (Figure 7).

Over 60 per cent of the i-lab executives in our sample agreed with the need for the lab to coordinate with other government bodies on the national level and 70 per cent on the need to coordinate with local/regional government. Half of the i-labs saw it as necessary to coordinate their activities with supranational bodies and international organizations. At the same time, all i-labs agreed that they needed to coordinate their activities with private-sector stakeholders, interest organizations, user groups and civil society organizations. Again, this can be considered a limiting factor against effective autonomy to challenge unilaterally the existing routines of the public sector. Figure 8 illustrates the most important partners for i-labs in our sample.

Most of the reviewed labs worked across government departments or agencies, some were established under different ministries (such as Mindlab). However, due to the nature of their activities and the methods they use, they are generally not understood in traditional (e.g. urban planning, engineering or IT) departments. I-lab managers acknowledged that organization culture was difficult for them to change (or even impossible under conditions of siloed public services and negative attitudes from public-sector managers) and the solution to move forward was to

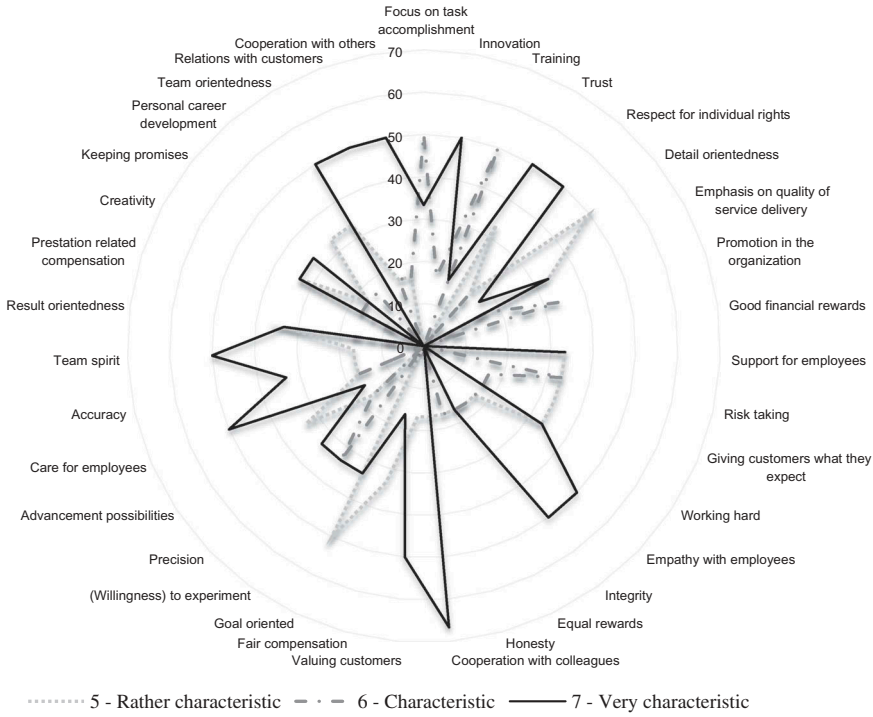

Figure 6. Characteristic self-reported features of i-labs (%).

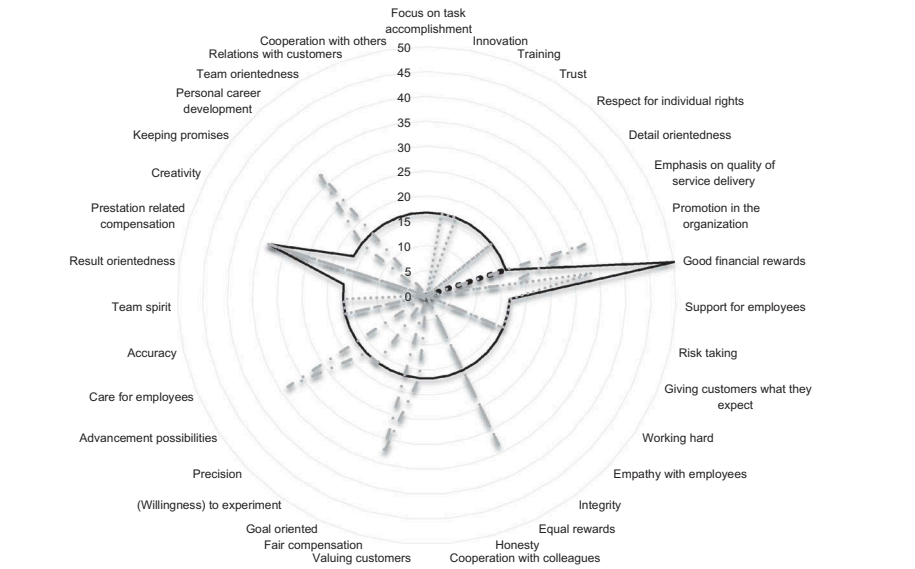

Figure 7. Most uncharacteristic self-reported features of i-labs (%).

Figure 8. Most relevant participants in networks outside of the organization of origin (% of i-labs). Source: Authors.

target individual staff and get them to lead and take ownership of specific ideas, programmes and practical solutions. One of the i-lab executives called this the '*Trojan horse strategy*.' Hence, informal networking (coffee tables, etc.) and being present and seen in partner organizations was seen as very important ('*when we are building a relationship, we never ask people to come to us – we always go to them*'). While it was much easier for i-labs to include stakeholders from outside, they used personal relationships (both in- and outside of the public sector) as leveraging tools to guarantee support to projects and the organization.

The dilemma of autonomy, control and survival

One of the most important aspects of i-labs is the level of organizational autonomy, which should allow the units to pursue discontinuous and disruptive innovations without the direct interference from the traditional organizational structures (proposition 2). The survey outlined that most i-labs in our sample were indeed characterized by high levels of autonomy with most units taking most of the decisions themselves with the minister/parent department only slightly involved. Half of the surveyed i-labs considered their autonomy sufficient to a degree, others found it totally sufficient or hard to evaluate. When we look specifically at different factors of autonomy, we can see that two-thirds of the labs had control over setting salaries and appointing and evaluating most of their staff. Furthermore, most organizations set their goals themselves with only one-third of the i-labs having to consult their parent organization regarding the former. The same also holds true for negotiations with external actors from the international level.

Here it is important to outline sources of such high-level autonomy. As exemplified by decades of discussion over principal–agent problems in the context of agencification, a high level of autonomy is typically not readily accepted in the context of the public sector. The in-depth interviews gave an idea of how this leeway is granted within the public-sector context: the key source of the autonomy is the support of the high-level civil-service executive or politician (minister, mayor, etc.). Consequently, our survey showed a reportedly high level of support to the organization from the minister or head of the local administration. It seems that politicians

indeed have a fiduciary relationship with the i-labs, and they reap some rewards from the public involvement and recognition of lab activities (in this regard lab activities can be associated with the newly defined conspicuous politics; Tõnurist, Kattel, and Lember 2015). In general, i-labs both in public and private settings are supposed to hold disruptive potential for the existing organization, so the existing routines, norms and organizational culture would not be able to immediately work against change. Thus, Bason (2013) descries these labs as '*authorizing environments,*' and some of these teams enjoy high media support (e.g. John 2014).

While public-sector i-labs try to legitimize their activities to the general public by their active presence in the media or through broad-based networks (e.g. through social media), the latter did not prevent the close-down of i-labs in the three cases in our sample (HDL, DesignGov and the Studio). The most significant factor of survival in these cases – and also identified by working labs – was chief executive support. When the former was lost (through the political process or change in leadership), the debate surrounding the '*hindrance or benefit*' of these units started to emerge. Hence, the conflict between old and new structures is inherent. The core characteristics of the lab – smallness, (physical) separation, autonomy and also the lack of concrete performance measures – start to work against the labs without the presence of an organizational sponsor: '*we were not large enough to make it harder for us to close down; the rest of the organization didn't understand what we did; we weren't entwined with the system.*'

There are various reactions to this: some i-labs saw their existence clearly as temporal (some interviewees cited their own results from their scoping works of similar i-labs highlighting that the average lifespan of such units was on average 3–4 years, basically '*a lifetime of a high-level CEO*'), realizing that in the long term they would have to change too much to fulfil their initial task, or more institutionalized forms of collaboration would not be of interest to the people involved (designers, architects, videographers), especially in the case when an outside lead to the lab was brought into the public sector to build up the i-lab (e.g. Laboratorio para la Ciudad). Some innovation units have started their existence with a sunset clause (e.g. the BIT unit in the UK) but managed to surpass the initial review due to rigorously documenting their output and developing metrics to substantiate it (which for most current i-labs would mean change; see, e.g. in the case of Nesta in Puttick 2014; and renew their political mandate; while some in different conditions have not; e.g. DesignGov in Australia). Thus, for a longer-term survival i-labs would probably need to change their organizations and engage the public sector in more broad-based activities (examples here could include Nesta in the UK or even Mindlab in Denmark, which has had different waves of activities). When it comes to small-scale 'labbers,' they see i-labs more as a format of '*guerilla warfare*' or '*guerilla army*' of Pro-Ams (professionals-amateurs) to expand the political space (e.g. Leadbeater and Miller 2004, 59) and hence, temporality is not a problem.

However, what is surprising in the context of the aforementioned – autonomy created by high-level political support and the antagonistic nature of their activities in terms of the prevailing organizational culture – is that i-labs in general do not (nor did they in our interviews) acknowledge the '*political*' nature of their existence and rather emphasize the '*objective*' or '*neutral*' nature of their activities. This has been previously called the '*political blind spot*' of i-labs (Kieboom 2014). Nevertheless, most lab activities were to some or a great extent connected to

policy development or making proposals thereof; however, when it came to political tasks (providing council to a minister or mayor or helping draft policy documents), these were usually outside of the scope of i-labs. The '*political blind spot*' might indeed be a format of a survival strategy, as well. When things come under high-level political scrutiny or there is conflict between ministries – '*it is altogether a different ball game*' – i-labs tend to disengage from the projects or deem them possible failures. The interviewed executives partially acknowledged that political patronage is sometimes accompanied by politically defined projects that are not well thought through and proposed because of the relationship between the ministry and the social partners. When the former do not succeed, there is more scrutiny towards i-lab activities, and the more policy driven the activities become, the more resistance do they encounter in- and outside the public sector.

Role of i-labs in the public sector

The discussion above shows that i-labs by their nature exist in turbulent and conflicting environments (be it in terms of technological change and accompanying user-led expectations or contradictory organizational cultures), and i-labs themselves have to justify their existence and are subject to change. Thus, it is not surprising that many i-labs are struggling to find a place in the policymaking infrastructure (Bason 2013). As mentioned above, the primary tasks of the organizations were service-centred (developing prototypes, helping to scale new solutions and building capacity and networks outside of the public service; see also Figure 9), especially for those i-labs on the municipal level dealing with social innovation. Thus, the role of i-labs can differ in the extent to which they are called to experiment and redesign existing services and processes relishing the skunkworks[8] mentality or primarily empowering citizens and enterprises to bring forth change – innovation through the public sector – in an open innovation mentality. The last are exemplified by very lean budgets, crowdsourcing and lightweight structures.

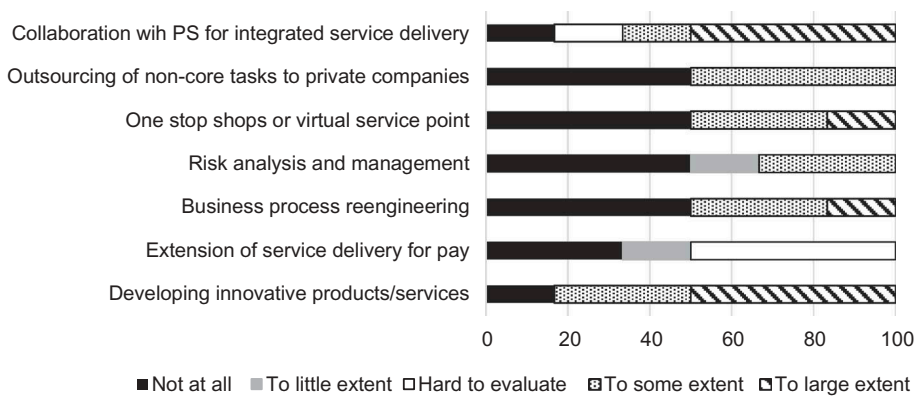

Figure 9. Selected activities characteristic to i-labs (%). Source: Authors.

In general, i-labs consider their tasks in the public sector to be unique without any unit or organization similar to them in terms of tasks, output and role in the public sector. At the same time, our survey showed that they identify competition for their tasks both from inside the public sector and from private enterprises (e.g. consultancies, think tanks). However, in most cases the internalized i-lab perspective was preferred – meaning that public sector i-labs should not be set up as publicly funded consultancies. The main benefits that were discussed during the interviews pertained to specific public-sector experience and access to knowledge and decision makers that otherwise would be more difficult for the i-lab to attain. However, its link to the reasoning behind the creation of the i-lab was not clearly marked. Furthermore, some feared that the learning effects accompanying experimentation and development inside the public sector would not be as great if the model was externalized. Those with prior public-service experience also emphasized a public-service-specific motivation compared with financial motivation that had taken over in some cases and started to interfere with the goals of the i-lab as members in the lab collaborating closely with outside partners.

While usually the goals that were mentioned during the interviews referred to complex challenges (both social and technological) that require systems change, the activities were usually directed at singular programmes, projects or services. In cases where the i-lab was supposed to work on higher-level policy change, the organization was not successful. Only a third of the i-labs in our sample engaged in implementing tasks. Thus, they primarily took up rapid prototyping and were less interested in long-term engagement, although scalability is one of the most stressed aspects in the new social innovation solutions (see Kieboom 2014). Thus, in this sense simple solutionism (*rapid prototyping, quick and dirty approaches*) takes hold, while complex system dynamics can be underestimated – this can hurt (social) innovation where in most cases long-term engagement is important to have a real impact (Mulgan 2009). Thus, i-labs try to capitalize on the growing trend of open-data-based civic apps, as more complex political changes are outside of their control. While most i-labs did not measure the long-term effects of their activities, evaluating their results and impact 3–6 months after the projects, several executives acknowledged that the prototype and accompanying change may only manifest itself after some years. Hence, in many cases there are high lead times between the project and the implementation. At the same time the question remains how apt i-labs are in facilitating system-level change (challenges from technology, external environment) or whether there role in the public sector is more connected to specific projects as examples and legitimizers (playing to emulation, expertise/legitimacy-related goals) of further change in the other parts of public-sector organizations.

5. Discussion and conclusions

We started this article by asking why public-sector i-labs are created and how their existence helps us to explain organizational change in the public sector. I-labs, as they are created today, are rather unique in their mission, expected to act as change agents within the public sector and enjoy large autonomy in setting their targets and working methods. Thus, they definitely mirror the flexible structures characterizing organizational change in many theories outlined in Section 2. Specifically, we found support for

the role of external complexity (proposition 1), technological challenges (proposition 1.1), emulation (proposition 4) and legitimization of public-sector i-labs in the creation of i-labs (proposition 3.1). While other factors – learning (proposition 2), conflict and competition (proposition 3) – were important for the survival of such units, the empirical cases did not show that i-labs grew out of internal learning processes nor direct conflicts between old and new organizational structures.

Nevertheless, these factors were important in the functioning of public-sector innovation: i-labs are typically structurally separated from the rest of the public sector and expected to be able to attract external funding as well as 'selling' their ideas and solutions to the public sector. However, depending on context their organizational build-up can differ considerably. As a rule, i-labs have no authority over other public-sector structures, thus their effectiveness depends heavily on their ability to communicate and persuade other units through informal networking. This provides the i-labs the autonomy as well as the incentive to experiment with new solutions and processes. Furthermore, typically i-labs have relatively low budgets and are generally small, fluid organizations and are, thus, dependent on the resources (funds, human resources) they are able to co-opt to their activities externally.

Yet, this kind of set-up also limits the ability of i-labs to catalyse and push through public-sector-wide changes. I-labs tend to be small structures, specializing on quick experimentations that usually lack the capabilities and authority to significantly influence upscaling of the new solutions or processes. The main capabilities of i-labs lie in their ability to jump-start or showcase user-driven service redesign projects, whereas the ability to do so often builds on an antagonistic attitude of the staff, who are motivated by the opportunity to prototype rather than standardize new solutions. Moreover, a small size is even preferred by i-labs as it enables them to maintain agility and autonomy, as with larger budgets the hierarchical control and institutional barriers tend to increase. Interestingly, IT capabilities seem to be not that obviously present in the studied i-labs.

> I-labs, although prominent in many modern public-management strategies, are yet far from becoming an organic part of the public sector and its change. The main source of autonomy as well as survival is high-level political and/or administrative support, meaning that once an i-lab loses its sponsors the survival chances diminish radically. This has created an interesting paradox – smaller i-labs are easier to close down, whereas larger i-labs face the risk of losing flexibility and the freedom to act. One of the consequences of this paradox has been rather short lifespans of experimental i-labs.

Comparing the empirical results with theoretical expectations, we can argue that: First, the initial creation of i-labs can be tied to challenges created by external complexity (user-driven innovations, economic crisis, etc.) and technology (ICT) – propositions 1 and 1.1 – giving credence to assumptions from evolutionary and life-cycle theories and more traditional system, organizational/development and contingency theories. Thus, technology plays a central role in the formation of i-labs and should be brought out separately among other complexity variables. Many of the tasks i-labs carry out are directly or indirectly related to developing ICT-based solutions for the citizens as well as the public sector. As such, i-labs do represent an attempt to make sense of increasing external complexity that is related to rapid technological change in addition to fiscal and democratic challenges.

Second, the spread of public/sector i-labs could be seen as a fad or a fashion after media success and publicity in policy circles of some of the earlier i-labs (e.g. Mindlabs) in accordance with the emulation proposition (4) coming from the new institutionalist theory. In other words, public/sector organizations change by emulating from what is allegedly seen as international best practice. At the same time, i-labs across the world are very different – there may be some models that are isomorphic (e.g. the city-innovation delivery teams in the US), usually the small units are dependent on the labbers and the specific skill sets and interests they have. Thus, we call for future studies to examine in parallel both reasons behind the creation of new organization structures within the public sector and their survival. Specifically to the growing phenomena of i-labs, future work should analyse the different typologies of these organizations and the contextual factors that play a role in their diverging forms.

Third, one of the tasks of such semi-autonomous spaces is indeed to catalyse and legitimize change in the public sector by bringing in a new kind of expertise (agency theory; proposition 3.1). Granting i-labs sufficient autonomy, providing them the incentive to specialize in user-driven experimentations and forcing them to develop respective capabilities has made the i-labs useful change agents in the public sector. Yet, as argued above, the risk of diminishing autonomy and the lack of supportive culture and authority to routinize new solutions limit the potential of i-labs to enact the change-agent's role. It follows from the research that i-labs as they are at the moment lack sufficient resources to outcompete or challenge the existing structures. Thus, the organizational autonomy alone is insufficient to challenge existing routines in the public sector. However, this is not only a one-sided critique but also the quality of the work i-labs produce should be studied in detail in future research, because the '*quick and dirty*' methodology may also deliver incomplete or unsuitable solutions in the wider public-sector context. Also, further studies should provide more evidence on how exactly organizations interact with other organizations in utilizing their organizational autonomy and challenging the existing norms and routines on a wider scale. Our findings indicate that instead of market competition public-sector innovation assumes inter-organizational collaboration and political processes (and respective capabilities) to play a central role here.

Fourth, i-labs tend to be public-sector units with a somewhat higher mortality rate than other types of public agencies (e.g. Verhoest et al. 2012), but the direct ties to their innovation capabilities or other factors cannot be conclusively brought out in the current research. We presume that this is connected to the loss of political patronage (legitimacy), together with conflicts between new and organizational structures (connected to propositions 3 and 3.1), rather than learning or other effects (proposition 2). However, more cases beyond the three examples of 'failed' labs in our sample need to be studied for more specific conclusions. Thus, a longitudinal analysis of the survival of these organizations and the connected factors could expand the discussion on organizational change greatly.

Lastly, many of the i-labs tend rely to a large extent on external ICT capacities, obtained either through outsourcing or crowdsourcing. Although created to catalyse change in the public sector, i-labs themselves need to survive in the public-sector context, for which relational and service-design capabilities seems to be more vital than technological capabilities.

All in all, the study contributes to the understanding of organization change processes within the public sector and helps conceptualize the birth of new organizational structures. Furthermore, the study shows that the reasons for the creation of

new organizational forms do not have to correspond with the reasons for survival or failure of such organizations. Thus, we call for future studies to examine in parallel both reasons behind the creation of new organization structures within the public sector and their survival.

Notes

1. In the current research, innovation labs (i-labs) were defined as organizations created to deal with public-sector innovation partially or entirely financed by the public sector. Organizations primarily concentrating on broader engagement (social innovation) or created by international organizations (e.g. UN) were left out of the study. Our sample of i-labs is primarily based on the two aforementioned reports (Parsons DESIS lab/Nesta and Bloomberg Philanthropies) and our own additional research. Thus, the sample is based essentially on self-identification and visibility. Clearly, however, the number of such organizations is constantly increasing globally.
2. Organization development theory goes a step further and asserts that these flexible structures are only.
3. The study covers more than fifty multiple choice and open-ended questions on organizational functions, income sources, legal basis, network, interaction with department/ministries, tasks, customers, competitors, characteristics of the organization, autonomy, evaluation, etc. More details can be found at http://soc.kuleuven.be/io/cost/survey/ (accessed 30.07.2014).
4. We are grateful to Koen Verhoest from the University of Antwerp for his help in updating the questionnaire.
5. Mindlab is one of the most well-known public-sector i-labs and is in many cases used as a blue print for future labs.
6. The i-labs were identified based on the following criteria: The unit/organization/hub focused on innovation and public-sector organization/service delivery and received its main funding from the public sector. The list and characteristics of individual i-labs is available on request. The information obtained from the survey is anonymized and available in a generalized format.
7. The dropout was due to the extensive two-step study design; but only relying on the survey information was not feasible due the complementary topics under discussion during interviews.
8. The term 'skunkworks' originates from Lockheed's World War II and has come to signify (radical) innovation projects developed in small and loosely structured teams (see further Single and Spurgeon 1996).

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References

Argyris, C. 1977. "Organizational Learning and Management Information Systems." *Accounting, Organizations and Society* 2 (2): 113–123. doi:10.1016/0361-3682(77)90028-9.

Baker, W. E. 1992. "The Network Organization in Theory and Practice." In *Networks and Organization: Structure, Form, and Action*, edited by N. Nohria and R. Eccles, 397–429. Boston, MA: Harvard Business School Press.

Bason, C. 2013. 'Design-Led Innovation in Government.' Accessed 12 November 2014. http://designthinkingsydney.com.au/sites/default/files/3.%20Spring_2013_Design_Led_Innovation_in_Government.pdf.

Bellefontaine, T. 2012. *Innovation Labs: Bridging Think Tanks and Do Tanks*. Policy Horizons Canada. Accessed 28 October 2014. http://www.horizons.gc.ca/eng/content/innovation-labs-bridging-think-tanks- and-do-tanks.

Berger, P., and T. Luckmann. 1966. *The Social Construction of Knowledge: A Treatise in the Sociology of Knowledge*. Soho, NY: Open Road Media.

Boulding, K. E. 1956. "General Systems Theory: The Skeleton of Science." *Management Science* 2 (3): 197–208. doi:10.1287/mnsc.2.3.197.

Burns, T. E., and G. M. Stalker. 1961. *The Management of Innovation*. London: Tavistock.

Burstein, R., and A. Black. 2014. *A Guide for Making Innovation Offices Work Series.Innovation*. Washington, DC: IBM Centre for the Government.

Chesbrough, H. W. 2003. *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Cambridge, MA: Harvard Business Press.

Child, J. 1972. "Organizational Structure, Environment and Performance: The Role of Strategic Choice." *Sociology* 6 (1): 1–22. doi:10.1177/003803857200600101.

Christensen, C. M. 1997. *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston, MA: Harvard Business School Press.

Christensen, C. M. 2006. "The Ongoing Process of Building a Theory of Disruption." *Journal of Product Innovation Management* 23 (1): 39–55. doi:10.1111/jpim.2006.23.issue-1.

Christensen, C. M., and M. E. Raynor. 2003. *The Innovator's Solution: Creating and Sustaining Successful Growth*. Boston, MA: Harvard Business School Press.

Collins, R. 1974. "Reassessments of Sociological History: The Empirical Validity of the Conflict Tradition." *Theory and Society* 1 (2): 147–178. doi:10.1007/BF00160157.

Coriat, B., and O. Weinstein. 2002. "Organizations, Firms and Institutions in the Generation of Innovation." *Research Policy* 31 (2): 273–290. doi:10.1016/S0048-7333(01)00141-X.

Cyert, R. M., and J. G. March. 1963. *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice-Hall.

DiMaggio, P. J., and W. W. Powell, edited by. 1991. *The New Institutionalism in Organizational Analysis*. Chicago, IL: University of Chicago Press.

Donaldson, L. 1987. "Strategy and Structural Adjustment to Regain Fit and Performance: In Defence of Contingency Theory." *Journal of Management Studies* 24 (1): 1–24. doi:10.1111/joms.1987.24.issue-1.

Doorley, S., and S. Witthoft. 2012. *Make Space: How to Set the Stage for Creative Collaboration*. Hoboken: John Wiley Sons.

Eisenhardt, K. M. 1989. "Agency Theory: An Assessment and Review." *Academy of Management Review* 14 (1): 57–74.

Flyvbjerg, B. 2006. "Five Misunderstandings about Case-Study Research." *Qualitative Inquiry* 12 (2): 219–245. doi:10.1177/1077800405284363.

Freeman, C., and C. Perez. 1988. *Structural Crises of Adjustment, Business Cycles and Investment Behaviour*. London: Pinter.
GAO. 2014. *Office of Personnel Management. Agency Needs to Improve Outcome Measures to Demonstrate the Value of Its Innovation Lab*. Washington, DC: United States Government Accountability Office.
Hannan, M. T., and J. Freeman. 1989. *Organization Ecology*. Cambridge, MA: Harvard University Press.
James, O., and S. Van Thiel. 2011. "Structural Devolution to Agencies." In *The Ashgate Research Companion to New Public Management*, edited by T. Christensen and P. Lægreid, 209–222. Aldershot: Ashgate.
John, P. 2014. "Policy Entrepreneurship in UK Central Government: The Behavioural Insights Team and the Uses of RCTs." *Public Policy and Administration* 29 (3): 257–267. doi:10.1177/0952076713509297.
Kattel, R., A. Cepilovs, W. Drechsler, T. Kalvet, V. Lember, and P. Tõnurist. 2014. "Can We Measure Public Sector Innovation? A Literature Review." *LIPSE Working Papers* 2: 1–45.
Katz, D., and R. L. Kahn. 1978. *Organizations and the System Concept*. New York: John Wiley and Sons.
Kieboom, M. 2014. *Lab Matters: Challenging the Practice of Social Innovation Laboratories*. Amsterdam: Kennisland.
Kim, Y. 2010. "Stimulating Entrepreneurial Practices in the Public Sector: The Roles of Organisational Characteristics." *Administration and Society* 42: 780–814. doi:10.1177/0095399710377432.
Langlois, R. N. 2007. *Dynamics of Industrial Capitalism: Schumpeter, Chandler, and the New Economy*. London and New York: Routledge.
Lawrence, P. R., and J. W. Lorsch. 1967. "Differentiation and Integration in Complex Organizations." *Administrative Science Quarterly* 12 (1): 1–47. doi:10.2307/2391211.
Leadbeater, C., and P. Miller. 2004. *The Pro-Am Revolution: How Enthusiasts are Changing Our Economy and Society*. London: Demos.
Lewin, K. 1947. "Frontiers in Group Dynamics II: Channels of Group Life; Social Planning and Action Research." *Human Relations* 1 (2): 143–153. doi:10.1177/001872674700100201.
Lynn, L. 2013. "Innovation and Reform in Public Administration: One Subject or Two?" In *Handbook of Innovation in Public Services*, edited by S. Osborne and L. Brown, 29–43. Cheltenham: Elgar.
March, J. G. 1981. "Footnotes to Organizational Change." *Administrative Science Quarterly* 26: 563–577. doi:10.2307/2392340.
March, J. G. 1991. "Exploration and Exploitation in Organizational Learning." *Organization Science* 2 (1): 71–87. doi:10.1287/orsc.2.1.71.
Margetts, H., and P. Dunleavy. 2013. "The Second Wave of Digital-Era Governance: A Quasi-Paradigm for Government on the Web." *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*. doi:10.1098/rsta.2012.0382.
Mayo, E. 1946. *The Human Problems of an Industrial Civilization*. Boston, MA: Harward Business School.
Mintzberg, H. 1979. *The Structuring of Organizations*. Englewood Cliffs, NJ: Prentice Hall.
Mulgan, G. 2009. 'Strengths, Weaknesses and a Way Forward?' Accessed 11 May 2014. http://www.socialinnovationexchange.org/designforsi/blog?page=1.
Mulgan, G. 2014. 'Design in Public and Social Innovation.' NESTA website. Accessed 11 May 2015. http://www.nesta.org.uk/sites/default/files/design_in_public_and_social_innov ation.pdf.
Osborne, S. P., and K. Brown. 2013. "Introduction: Innovation in Public Services." In *Handbook of Innovation and Change in Public Sector Services*, edited by S. P. Osborne and L. Brown, 1–14. Northampton, MA: Cheltenham.
Pärna, O., and N. Von Tunzelman. 2007. "Innovation in the Public Sector: Key Features Influencing the Development and Implementation of Technologically Innovative Public Sector Services in the UK, Denmark, Finland and Estonia." *Information Polity* 12: 109–125.
Parsons Desis Lab. 2013. 'Government Innovation Lab Constellation.' Accessed 27 June 2014. http://nyc.pubcollab.org/files/Gov_Innovation_Labs– Constellation_1.0.pdf.
Perez, C. 1983. "Structural Change and Assimilation of New Technologies in the Economic and Social Systems." *Futures* 15 (5): 357–375. doi:10.1016/0016-3287(83)90050-2.

Pollitt, C. 2004. "Theoretical Overview." In *Unbundled Government: A Critical Analysis of the Global Trend to Agencies, Quangos and Contractualisation*, edited by C. Pollitt and C. Talbot, 319–342. London: Routledge.
Pollitt, C. 2009. "Structural Change and Public Service Performance: International Lessons?" *Public Money & Management* 29 (5): 285–291. doi:10.1080/09540960903205907.
Pollitt, C. 2010. "Technological Change: A Central yet Neglected Feature of Public Administration." *Nispacee Journal of Public Administration and Policy* 3 (2): 31–53. doi:10.2478/v10110-010-0003-z.
Pollitt, C. 2011. "Innovation in the Public Sector: An Innovatory Overview." In *Innovation in the Public Sector: Linking Capacity and Leadership*, edited by V. Bekkers, J. Edelenbos, and B. Steijn, 35–43. Basingstoke: Palgrave/Macmillan.
Puttick, R. 2014. *Innovation Teams and Labs: A Practice Guide*. London: Nesta.
Puttick, R., P. Baeck, and P. Colligan. 2014. *I-Teams: The Teams and Funds Making Innovation Happen in Governments around the World*. London: Nesta and Bloomberg Philanthropies.
Rogers, E. M. 1995. *Diffusion of Innovations*. New York: Free Press.
Schein, E. H. 1996. "Culture: The Missing Concept in Organization Studies." *Administrative Science Quarterly* 41: 229–240. doi:10.2307/2393715.
Senge, P. M. 1990. *The Fifth Discipline*. New York: Doubleday.
Single, A. W., and W. M. Spurgeon. 1996. "Creating and Commercializing Innovation inside a Skunk Works." *Research-Technology Management* 39 (1): 38–41.
Ståhlbröst, A., and M. Holst. 2013. *The Living Lab Methodology Handbook*. Luleå: Luleå University of Technology and CDT. Accessed 14 April 2015. http://www.ltu.se/cms_fs/1.101555!/file/LivingLabsMethodologyBook_web.p df.
Taylor, F. W. 1911. *The Principles of Scientific Management*. New York: Harper and Row.
Tiesinga, H., and R. Berkhout, edited by. 2014. *Labcraft: How Innovation Labs Cultivate Change through Experimentation and Collaboration*. London: Labcraft Publishing.
Tõnurist, P., R. Kattel, and V. Lember. 2015. "New Leisure Class and Conspicuous Politics in Urban Regeneration Initiatives." *Working Papers in Technology Governance and Economic Dynamics* 64: 1–24.
Townsend, A. M. 2013. *Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia*. New York: W. W. Norton & Company.
Trist, E. L. 1978. *On Socio-Technical Systems. Sociotechnical Systems: A Sourcebook*. San Diego, CA.: University Associates.
Tushman, M. L., and C. A. O'Reilly III. 2002. *Winning through Innovation: A Practical Guide to Leading Organizational Change and Renewal*. Boston, MA: Harvard Business School Press.
Tushman, M. L., and E. Romanelli. 1985. "Organizational Metamorphosis: A Punctuated Equilibrium Model of Organizational Evolution." *Research in Organizational Behavior* 7: 171–222.
UNICEF. 2012. *UNICEF Innovation Labs: A Do-It-Yourself Guide*. Accessed 4 May 2015. http://www.unicef.org/videoaudio/PDFs/Innovation_Labs_A_Do-It- Yourself_Guide.pdf.
Van De Ven, A. H., and M. S. Poole. 1995. "Explaining Development and Change in Organizations." *Academy of Management Review* 20 (3): 510–540. doi:10.2307/258786.
Verhoest, K., S. Van Thiel, G. Bouckaert, and P. Lægreid. 2012. *Government Agencies: Practices and Lessons from 30 Countries*. Houndmills, Basingstoke: Routledge.
Weber, M. 2009. *Wirtschaft Und Gesellschaft. Grundriß Der Verstehenden Soziologie*. 5th ed. Tübingen: Mohr Siebeck.
Williamson, B. 2014. "Knowing Public Services: Cross-Sector Intermediaries and Algorithmic Governance in Public Sector Reform." *Public Policy and Administration* 29 (4): 292–312. doi:10.1177/0952076714529139.

Appendix

List of interviewed i-labs

(1) C. Bason, Director, Mindlab, Denmark, 7 October 2014
(2) A. Roberts, Innovation Advocate, DesignGov, Canberra, 16 October 2014 (closed down)
(3) S. Vincent, Director, La 27e Region, Paris, France, 17 October 2014.
(4) E. Barrett, Programme Coordinator, Silk, Kent, UK, 2 December 2014
(5) C. Mauldin, Director, Public Policy Lab, New York, US, 27 October 2014
(6) J. van den Steenhoven, Director, MaRS Solutions Lab, Toronto, Canada, 30 October 2014
(7) A. Calderón Mariscal, Director, Digital Nation Mexico, Open Mexico, Mexico, 10 November 2014
(8) G. Gómez-Mont, Director, Mexico City's Laboratorio para la Ciudad, or LabPLC, Mexico City, Mexico, 13 November 2014
(9) M. Kieboom, Researcher, Kennisland, Amsterdam, The Netherlands, 26 November 2014
(10) M. Steinberg, Director of Strategic Design, Sitra (Helsinki Design Lab), Helsinki, Finland, 27 November 2014 (closed down)
(11) D. Ni Raghallaigh, Director, The Studio, Dublin, Ireland, 2 December 2014 (closed down)