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Article

A Comparative Analysis of Municipal Public Innovation: Evidence from Romania and United States

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Abstract: This paper aims to investigate innovation capacity mechanisms at a municipal level, through a comparative case study of public sector innovation labs from Boston (US) and Cluj-Napoca (Romania). We employed a qualitative approach, using as a primary tool the OECD framework for assessing the capacity of cities to innovate, and secondarily, a taxonomy of behavioral change strategies. We showed that, despite differences rooted in culture and institutions, innovation labs support the determinants of urban innovation capacity. However, the intensity of their support varies significantly, depending on organizational arrangements and the chosen methodological approach. Accepting this limitation may be an important step in re-configuring innovation labs and in moving towards a clearer agenda on sustainable urban innovation.

Keywords: public sector innovation labs; innovation capacity; urban innovation; behavioral insights

1. Introduction

Applying innovative thinking to optimize public administration processes [1], to improve public services and products [2], or simply to create public value [3,4] is a growing contemporary trend. The need for innovation in the public sector has been increasingly recognized in the last decade [5–10], but still requires more clarity in order to move beyond the buzzword perception of [11] “magical concept” [12,13] or “public chic” characterizations [14]. Only recently, has the evidence-based approach gained momentum [15], the rise of public sector innovation (PSI) labs [9,16] being such an example. Their global proliferation, or “labification” of the policy [17], has developed in line with more autonomy to innovate for public managers, and the view of citizens as customers and co-creators of public services [18]. These dynamic transformations have attracted a lot of scholarly attention, and naturally many questions remain yet unanswered in an equivocal manner. One such research gap refers to the extent in which PSI labs manage to sustainably build up an innovation culture and an innovation capacity, within the context in which they operate [19]. Our paper aims to contribute to this debate by analyzing how the resources of municipal innovation work in two cities, Cluj-Napoca (Romania) and Boston (USA), through two such PSI labs: The Cluj-Napoca Urban Innovation Unit (UIU) and Boston’s Mayor’s Office of New Urban Mechanics (MONUM). The main purpose is to better understand how PSI labs, under different shapes and organizational formulas, contribute to increasing the capacity for conducting urban innovation at a local level, as a natural response to the governance challenges faced by municipal administrations. This is a top-down approach, focusing on how the administration should be aware of these mechanisms in order to perpetuate successful innovation projects. Secondly, the paper tracks the role of behaviorally informed interventions in supporting innovation and innovation capacity,

with behavior change. This matches a bottom-up approach, of tailoring public services and products based on people's preferences, by acknowledging the role of social norms and other psychological factors in shaping choice architectures.

To answer these type of "how" questions, the article pursues the recommended case study method [20], and employs two analytical frameworks: (1) the Organisation for Economic Co-operation and Development (OECD) framework [21] for assessing the capacity of cities to innovate, and (2) the behavior change taxonomy proposed by the House of Lords Science and Technology Select Committee [22]. Similarly to Timeus and Gasco [23], we believe that the use of such frames of reference is a good strategy for avoiding the normative overtones of innovation, spotlighting instead the role of organizational capabilities. Moreover, including a Romanian dimension in our case study further balances the mainstream discourse, currently dominated by a Western mindset. For example, the city of Cluj-Napoca does not have a formal strategy for innovation, even if its local development strategy 2014–2020 highlights innovation and citizen participation as core pillars for achieving the city's mission of "delivering high-quality of life" [24]. This stands in contrast with the "innovation first" philosophy applied in Boston, and provides a rationale for the comparative analysis: to put into perspective, by clearly emphasizing differences, the institutional and cultural factors that act as barriers and facilitators for innovation.

The remainder of this article is organized as follows: We start by briefly examining the development of innovation labs and the use of behavioral insights as a research strategy within these units. The following section introduces our qualitative research strategy. Subsequently, we build up our case studies, and discuss the results and main implications. We conclude with recommendations and future research directions.

2. Theoretical Foundations

Public innovation [25], and especially responsible innovation [26], has become of paramount importance, as the contemporary perspective of public sector institutions has made explicit their mission of creating value for the public. What was traditionally viewed as the rationale for the private sector, creating added value and the role of innovation for enabling that, has, in the last decade, also shifted towards the public sector mindset. However, while for private organizations innovation is easily linked to competitive advantage and organizational performance [27], the importance of innovation for public organizations is not that easy to pin down, beyond demonstrative agendas.

Innovation labs can be portrayed as one of the inherent responses to contemporary changes in society. They are new organizational arrangements, providing coping mechanisms for institutions and supporting their capacity to innovate [23], from creating the premises for it, to delivering innovation as an output. In this paper we look at four streams of theory that have tried lately to capture the idiosyncratic nature of the innovation capacity of public sector labs.

What are public sector innovation labs?

In the public domain, innovation labs go by many names; public sector innovation labs, policy innovation labs, public sector innovation units, government innovation labs, or i-teams. While their role seems to be in general beneficial to the public, a coherent theoretical foundation for PSI labs is still missing [28]. Thus, there is no surprise that innovation labs are actually defined through other concepts, as being similar to, or a combination of, think tanks, social enterprises, research and developments units, or even charitable organizations [17]. To date, they are considered a promising addition to the set of public policy tools, standing next to, but not replacing, established practices [16]. A prevalent characterization positions innovation labs as change agents in the public sector [29], even if it is acknowledged that their autonomy in actually generating behavioral change may vary considerably. One reason is that PSI labs are located at all levels of government; city, regional, and national [30]. Another definition equates PSI labs with "design-for-policy-entrepreneurs" [8]. This highlights design thinking as a core strategy within PSI labs, as an alternative to the rational choice models and classical [31] consultations: "PSI [. . .] represent the vanguard of design thinking

in the public sector” [8]. More creativity and less determinism are among the main features of this philosophy, thus feeding intensive innovation processes. Other similarities with the entrepreneurial setting can be traced to the structure and lifespan of PSI labs; usually they have small teams, up to six to seven members, and their rate of survival is of 3–4 years, on average [31]. Beyond that, the local public sector culture plays a tremendous role in shaping the labs, and there is no unique organizational model.

How to build up innovation in a sector characterized by conflicting organizational cultures and risk aversion?

Innovation is generally defined as “a new or improved product or process that differs significantly from the unit’s previous products or processes, and that has been made available to potential users (products) or brought to use by the unit (process)” [14,32]. While this view rather favors two types of innovation, namely process innovation and product/service innovation, the recent literature further proposes categories like governance innovation and conceptual innovation [33]. In all cases, dealing with the disruptive nature of innovation, as opposed to the also needed continuous change [15], seems to be more challenging in the public domain, perceived, at least conventionally, as having a risk-averse culture [34,35]: “innovation does not thrive in a risk-averse culture in which error is frowned upon and even penalized” [36].

A subtler caveat from experts signals the specificity of public sector innovation in terms of comprehension area: not only the black and white view of unique new ideas, but also new contexts of application for existing ideas [37]. The novelty of the institutional public contexts also brings forward positive aspects for supporting innovation: government intervention and structured innovation programs, as opposed to unpredictable innovation or innovation by chance, common in private environments [36]. This view also accommodates the importance of rules and procedures, and thus of a certain level of bureaucracy that does not inhibit creativity and flexibility, coined under the term “green tape” [38]. To a large extent, PSI labs may well fit under this umbrella, and play the role of institutionalizing innovative practices, next to innovation networks, innovation schemes, or innovation prizes.

What factors enable and sponsor innovation capacity?

Both theoretically and empirically, the question of identifying what effectively supports and enhances a public organizations’ efforts to innovate stands out as a central challenge of the field, and as a defining feature of the current stage of public innovation [18], succeeding to the new public management (NPM) movement.

Simply put, innovation capacity is composed of those foundational conditions for innovation, either in a passive (e.g., creating a fertile ground for its apparition) or in an active way (e.g., triggering or stimulating innovation). However, the multitude of factors contributing to the innovation capacity translates into a multi-level (individual-organization-network) and multi-faceted construct, composed of connective, ambidextrous, and learning capacities [39]. The multiple layers framework is instrumental in understanding the diversity of practices labeled as innovative, but mostly in fostering those mediating and stimulating mechanisms that could potentially boost public performance. The status quo point of view seems to align with the view of Walker [40], in accepting the preeminence of internal antecedents over external ones, but there have also been some attempts to incorporate open innovation practices into the public sector [41–43], and to further account for the role of the environment [44].

What is the role of behavioral insights within PSI labs?

Shafir [45] underlines the essential role played by behavioral change mechanisms when designing public policies, challenging both the black box view of the process, similar to other experts in evaluation research [46], and the rational actor approach. In this context, we posit that behavioral science is an important dimension shaping the empirical strategy of innovation labs. As the comprehensive analysis of Olejniczak and colleagues [16] reveals, the use of behavioral insights, categorized as evidence-based methods, stands as a significant pattern in the activity of PSI labs. The focus is on the identification of the factors that may obstruct behavioral change, followed by experiments and potential nudges as part of the proposed solution.

Looking at the existing case studies on PSI labs, we observed that preferences for methods vary depending on the region. The analysis made by Lewis and colleagues [8] for labs in Australia and New Zealand reveals that behavioral insights, next to experiments, randomized control trials, and surveys, occupy the second position in terms of frequency use, after the human centered design paradigm. The trend is similar for the case of the Northern Ireland Innovation Lab [47], with a similar gap in the ranking of methods implemented in actual projects. McGann and colleagues [9] also identified a single French lab from the 20 units analyzed that could be categorized purely as evidence based, “Fonds d’expérimentation pour la jeunesse”, along with four others that use mixed methods.

In general, what seems to determine the choice of behavioral insights as the second best research alternative in PSI labs is the need for a higher level of expertise in developing such behavioral and experimental designs, higher research costs, and more resources in general. Beyond that, there is also the similar major trend of units dedicated solely to one behavioral economics tool, namely nudges, “choice-preserving approaches that steer people in a particular direction, but that allow them to go their own way” [48], thus nudge units. The typology of nudge units varies even more than that of PSI labs, with private and public organizational forms, at national and international levels, along with a higher media exposure and associated political debate [49]. Therefore, it is understandable that behavioral insights do not play a central part in PSI labs, even if they are relevant for a wide range of urban challenges, as reflected by the work of behavioral design teams in cities like New York, Philadelphia, and Chicago [50].

3. Methodology

The purpose of our research is to extend the current understanding on the relationship between public sector innovation labs and cities’ innovation capacity. Since both constructs, PSI labs and innovation capacity, are still in a crystalizing conceptual state, with many nuances unveiled by looking at effective practices, we align with the trend for qualitative inquiry, considered dominant in public innovation studies [2]. Specifically, we rely on the case study method as the approach recommended for contemporary phenomena [20], namely a dual case study, since it is likely to yield more robust insights than a single case [51]. In addition, case studies are effective in displaying how particular routines and procedures are developed in specific organizations and, therefore, help refine theory [52]. The units considered in our research framework are in a leader–follower relationship, matching their choice made on conceptual and not representative grounds [53]: Boston’s Mayor’s Office of New Urban Mechanics (MONUM), as a well-established PSI lab, with a significant lifespan of 10 years, and The Cluj-Napoca Urban Innovation Unit (UIU), as a young PSI lab, created by taking MONUM as a reference point. The two PSI labs have been in close contact from 2017 onwards, just a few months before the UIU was established, building on both parties’ openness for partnerships. To our knowledge, this is the first approach of its kind; to design the architecture of a new public structure dedicated to innovation, based on direct collaboration with a functional lab. This perspective allows not simply to admire the success of MONUM but to observe the value of a benchmark practice, and to analyze more effectively how a new public environment may support innovation. Table 1 summarizes the characteristics of the two analyzed units.

At core, the case study is based on longitudinal participatory data since one of the co-authors currently acts as a director of UIU. Nonetheless, we collected data from different sources: archival data from a workshop with the two PSI labs (internal documents such as agendas, working drafts, and presentations), websites, news articles, online interviews, and follow-up emails. The triangulation process of data sources has proved to be efficient in increasing the accuracy of information, as the theory recommends [53,57]. The comparative approach embedded in the dual-case study imposes a certain level of standardization for the inquiry instruments. Therefore, we have settled for two such standard instruments: the OECD tool for evaluating the innovation capacity of cities [21] and a behavioral interventions taxonomy provided by the 2011 Behaviour Change report of the House of Lords Science and Technology Select Committee [22]. They are described at length in Table 2.

Table 1. Main features of UIU and MONUM.

PSI Lab	Founding Date and General Organizational Characteristics	Mission and Approach	Team	Public Policy Focus
The Cluj-Napoca Urban Innovation Unit (UIU)	2017 UIU is a research and development program on urban innovation jointly developed by Cluj Cultural Centre (CCC) and Cluj-Napoca Municipality, Romania. UIU acts as a capacity building mechanism, both for the local public authority, and for other city actors in order to co-design a sustainable organizational arrangement for innovation. From 2022, inside the municipality UIU was known as Cluj Innovation Fund between 2017–2018 (its pilot phase).	To bring together ideas, knowledge, and resources from civil society, the academic sector, the cultural sector, the business sector as well as the public administration, in order to propose alternative solutions to the strategic challenges of the city [54].	Four full-time members covering roles of coordination, program design, stakeholder engagement and evidence-based policy making 4 part-time members working on strategic partnerships, communication, graphic design and finance Several project-based collaborators for areas of like data processing, spatial analysis, technology deployment and curricula development. All the staff of UIU is hired through CCC. Although UIU works closely with several key staff from Cluj-Napoca Municipality, their job descriptions have not been changed formally to cover municipal innovation tasks.	Urban mobility, future of work, urban resilience, and housing. These four areas are deemed by the local stakeholders as the most pressing issues that the city’s needs strategic responses to, as well as strong collective actions. Cluj-Napoca has experienced in the last decade a constant growth, which is imposing pressure on its housing market and urban mobility options. Additionally, although the city has successfully managed to diversify its economy and encourage several knowledge-intensive sectors such as ICT, the nature of jobs remains highly vulnerable to relocation options of foreign companies. The city is also experiencing growing socio-economic disparities and needs to build its social resiliency capabilities.
Boston’s Mayor’s Office of New Urban Mechanics (MONUM)	2010 MONUM is the municipal city innovation team and it was one of the first municipal innovation teams in the world, and, in hindsight, one of the most consistent ones in terms of core team and mission [30]. Initially known for its use of technology for “civic hacks” [55], MONUM’s approach evolved over the years to embrace a holistic perspective and a system-thinking approach, with an emerging emphasis on “design justice”.	To create the future for the city’s public services through experiments or prototypes that offer the potential to significantly improve the quality of life for residents. MONUM’s projects follows three core phases in order to be considered “prototyped”: explore, experiment, and evaluate. While wide engagement and inquiry is encouraged in the first phase, an experiment can only happen if it is specific enough, can be done with limited financial resources, and has as delivery partners at least one other municipal department, as well as an external partner (sometimes a residents’ group, an artist, a startup, or a university). The evaluate phase marks a reflection on the results or experiences prompted by the experiment and a decision for next steps, which can include ending the experiment, deeming the experiment a failure, or a success that can be transferred to the department within Boston municipality which can oversee its medium term development.	The current team of 10 members is led by two co-chairs, one of them also being one of the original co-founders. Team members’ roles match either the long-term thematic projects of MONUM on housing or mobility, while other roles are transversal, dealing with technology and civic engagement.	The themes of MONUM’s projects are aligned with the Mayoral priorities’ areas of intervention, and the key strategic documents of the city, such as Imagine Boston 2030, the city’s overall development plan and Go Boston 2030, the city’s long-term transportation plan. A recent review of MONUM’s projects conducted in 2019, found a total of 46 prototypes in the following areas: social relationships, ICT, built environment, procedures and policies, urban visioning and planning, mobility, health and safety, and business [56].

Table 2. Research frameworks.

Instrument	Dimensions	Description
OECD framework for evaluating the innovation capacity of cities	Organizational arrangements	The first category refers to how the formal and informal institutional structure of municipalities can either foster or hinder innovation. Specifically, this accounts for various innovation resource assets (e.g., human resources, financial resources) that may become transformative in time, building up an innovation capability [58]. Political and administrative leadership is a common ingredient of this dimension. This comes either from the rhetoric of public discourses or informed more from business experience, where innovation leadership significantly enhances firm performance by cultivating the strategic fit of the organization with its environment [59]. Only recently, it has been shown that leadership also has a bigger effect on public innovation capacity, by comparison to the rest of the usual determinants (e.g., processes, structures, context) [8].
	Data management capability	The second pillar follows up on aspects like the capacity to collect and analyze data, and access to technology. When applied to cities, this factor is congruent with the view that smart cities are part of urban innovation. At the same time, an essential distinction appears, highlighting that smart city governance is not exclusively a technological issue [60,61]. For instance, Lember and colleagues [62] explicitly discuss technological capacity, illustrating for the case of Estonia how it is interlinked with administrative capacity in public organization.
	Openness to partnership	Finally, the partnership focus includes interactions with different stakeholders: citizens, private sector, and non-profit organizations. This embraces the open and collaborative approach, much praised in the pursuit of societal challenges [33,63]. The role of trust and social capital are paramount in ensuring successful collaborations and a functional, thriving network governance.
A taxonomy of behavioral interventions; the 2011 Behavior Change report of the House of Lords Science and Technology Select Committee	Provision of information	In order to consider provision of information as an effective technique for behavior change, beyond the rational choice models, it must possess the distinctive characteristics of accuracy and a just-in-time availability (e.g., the type of leaflets showing nutritional values of food exactly when it is consumed, the energy use of our households in relation to appliances etc.)
	Persuasion	This technique appeals to both conscious and unconscious thinking: through logic and arguments, counseling, and educational campaigns, but also more traditional marketing.
	Changes in physical environment	This method is closely related to better designs that would support better decisions (e.g., bigger red stop lights or more carefully positioned, bigger fonts on different announcements etc.)
	Changes in default policy	The method is largely based on framing a choice either as an opt-in or as an opt-out possibility. For rather complex decisions, inertia appears in both cases for most of the population, but the outcomes in terms of participation are empirically proven, and radically different: lower rates for the opt-in and higher rates for the opt-out (e.g., the organ donation study is one of the most cited examples for the power of defaults).
	Changes in social norms	The technique is a refined version of information provision with a much narrow focus: the information provided refers to the behavior of other specific and comparable situations.

The intermediary data reports were carefully scrutinized, not only by the co-author not involved in the analyzed organizations, but also by members of MONUM and UIU. This falls under the recommended practice of allowing individual researchers to study and discuss one another’s summaries [53]. Table 3 offers a detailed view of our research timeline by activity, objectives, and participants.

Table 3. Research timeline.

Time	Research Phase	Activity	Place	Participants	Objectives
September 2019	Benchmark of practices for the PSI labs	2 days exchange visit of UIU at MONUM	Boston (USA)	MONUM: one co-chair MONUM, 5 MONUM staff; UIU: three co-designers of UIU, the Mayor of Cluj-Napoca, 3 UIU collaborators	To better understand the internal logic of MONUM projects in key areas for the newly founded Cluj-Napoca UIU: urban mobility, future of work and housing. To have a clear image on the working mechanisms of both PSI labs.
November 2019—January 2020	Review of online resources	Content analysis of documents and projects (the UIU and MONUM websites, as well as published articles on MONUM’s work)	Online	n/a	To systematize the insights from the workshop and to further complement them with official public information. To contrast the existing information with the framework provided by OECD for assessing the capacity of cities to innovate [17] and with the general literature on public innovation and PSI labs.
April—May 2020	Qualitative data gathering on the capacity to innovate of the two PSI labs and behavioral change taxonomy	Online interviews	Online	MONUM: Chief of Staff UIU: Director and co-founder	To follow up on the existing gap in our knowledge of the two PSI labs. To further extend understanding by including information in line with the taxonomy proposed in the 2011 Behaviour Change report of the House of Lords Science and Technology Select Committee [18], scrutinizing measures that fall into one of the following categories: eliminate or restrict choice, fiscal incentives/disincentives, non-fiscal incentives, persuasion, provision of information, changes to default policy, use of social norms. Beyond the description of such projects, we tried to articulate how the units used the results and what lessons can be derived for other cases.
July—August 2020	PSI peer review of final draft of the article	Online interviews	Online	MONUM: Chief of Staff and co-chair and co-founder UIU: Innovation officer and the second co-chair	To review the final draft version of this manuscript.

4. Results

We present the results of our investigation in a sequential manner, by each theoretical framework and per each analyzed unit. We summarize our comparative findings at the end of each subsection.

4.1. Capacity to Innovate

4.1.1. Cluj-Napoca Urban Innovation Unit

Organizational Arrangements

The first aspect to be mentioned within the area of political and managerial leadership is that the current Mayor of Cluj-Napoca endorses UIU. The endorsement has been made through public statements in conferences, but it is not formalized in any other form. Three of the original members of the 2017 steering committee of the Cluj Innovation Fund act as the managerial leadership team and co-designers of the UIU. Two of them are from the Cluj Cultural Centre (CCC) and one is from the Cluj-Napoca Municipality. One of the co-designers from CCC is also director of the UIU,

making the executive decisions of the yearly operations, based on the plan agreed yearly by all three co-designers, and consulted by the Mayor of Cluj-Napoca.

With respect to dedicated funding, UIU appeals to the following sources: municipal public funds, grants, and private funds. The starting budget of UIU between 2017–2018 was around 30,000 euros, while between 2019–2021 the yearly budget is expected to be around 300,000 euros. This significant increase is due to the fact that UIU won a grant from the Urban Innovative Actions (UIA) scheme of the European Commission. The grant was awarded for the Cluj future of work project, designed by UIU, co-managed by UIU (CCC), and the Cluj-Napoca Municipality, and implemented with eight other organizations. The fact that the UIA grant is awarded for a three-year project, and has several elements of flexibility in terms of eligibility for expenses, has effectively enabled UIU to invest in expanding its team and building organizational practices, key for the future transfer of UIU from the CCC to the Cluj-Napoca municipality, such as a co-management practice with the local public authority.

From the perspective of human resources management policies, UIU has a strong level of flexibility and creativity in attracting highly skilled and motivated talent to work on its projects. Romania lacks specialists in fields related to municipal innovation, thus the staff members were mainly recruited based on cross-sectorial competences related to problem-solving and stakeholder engagement. As UIU aims to transfer in 2022 the working practices tested in the four policy areas during 2017–2021 to the public sector logic and organigram, it has started two processes so far: (1) drafting the job description for the chief innovation officer (CIO), and (2) working in a co-management structure, with staff from UIU/CCC and Cluj-Napoca Municipality having “mirror” roles in project implementation.

A recent survey conducted by Bloomberg Philanthropies has revealed that only 50% of cities that have an active municipal innovation portfolio have a formal job description for the CIO. UIU has organized a participatory session on drafting the profile and expectations of the CIO, with contributions received from community non-governmental organizations, technology companies, and academics. The results will be further refined during 2020–2021 in a co-design workshop with representatives of UIU and Cluj-Napoca Municipality. The resulting job description(s) will serve as the basis for the future recruitment process of the CIO inside the local public authority.

In addition to this, the implementation of the Cluj future of work project allowed for two organizational cultures to work closely together. Through the co-management structure, roles such as project coordination, finance, communication, and program transfer are covered proportionally by 70% staff from UIU/CCC and 30% staff from the Cluj-Napoca Municipality. The co-managers need to consult and take executive decisions together. So far, it has proved to be an exercise in practicing empathy, and understanding the invisible elements that contribute to trust and mistrust in public institutions. In addition to this, in 2019 the Cluj-Napoca Municipality established a new format for citizen engagement called the “Center for Imagination and Civic Innovation (CIIC)”. CIIC organizes public debates open to any interested citizen on key capital infrastructure projects, especially the ones concerning the redesign of public space. CIIC has no formal structure inside the municipality and it is mostly championed by the same staff members that also collaborate with UIU. It is possible that the profile of future CIOs will also cater to the growing need of the CIIC to have a stand-alone structure.

Data Management Capability

One of the first actions of UIU in 2017 was to map existing data streams for urban mobility and, based on them, identify real-time challenges in the city, such as places where accidents frequently happen or where traffic congestion rates are high or areas that are underserved by public transportation. The process revealed a strong capacity of the public administration to collect data, but a low level for making data available in digital format, or correlated with location information. Moreover, the data analysis capacity was low, as well as access to the enabling technology to do so. The awareness of the importance of data for decision-making has been growing at local level, but there were no particular staff assigned with this task. However, data scientists and technologists from academia and local companies were frequently involved by the municipality in various steering committees,

concerning innovation or urban planning, and exchanges of information were highly encouraged. Moreover, since 2018, a group of academics from Babes-Bolyai University has been pushing for an open data partnership, which is still under development.

Openness to Partnership

Since 2014, Cluj-Napoca has strongly embraced a culture of partnerships with different actors outside the public sector, in line with the strategic direction described in its local development strategy. In fact, its local development strategy was developed pro bono by the Faculty of Political, Administrative, and Communication Sciences within Babes-Bolyai University. It was a substantial effort of citywide engagement with 15 working groups on various policy areas. This practice still remains outside of the norms for other Romanian cities, offering Cluj-Napoca a strong advantage in building a shared vision for development in its community. Examples of processes championed by Cluj-Napoca Municipality for city and citizen interaction are the Center for Imagination and Civic Innovation (CIIC), and the neighborhood centers offering basic public services and information. Moreover, for the interaction with the private sector, the city has established the Council for Innovation, while for non-profit interaction, the city has a culture and creative sector grants scheme, as well as direct mechanisms for investing in multi-stakeholder partnerships.

4.1.2. Boston's Mayor's Office of New Urban Mechanics (MONUM)

Organizational Arrangements

The political and administrative leadership variable is illustrated directly since the Mayor directly leads MONUM as a department. It is important to note that Boston city government is considered a "strong Mayoral system", wherein the Mayor acts as the chief executive officer of the city. Within this context, the team reports to the two MONUM co-chairs, who, in turn, are in direct contact with the Mayor's staff. This relatively high-placed hierarchy in the municipality's structure enables and signals the cross-department nature of MONUM's work. In its decade of existence, MONUM has successfully transitioned through a mayoral changeover, and has been able to preserve a high degree of autonomy for testing new tools and projects. This reality was possible thanks to the explicit positioning of MONUM to take accountability for failures, while giving credit for the successes to the Mayor or the technical department involved. This way of working recognizes that other departments cannot traditionally take the risks that MONUM can, and that learning from failures is a process that needs to be nurtured. This is why, team members are encouraged to take risks and allow enough reflection for uncovering the different nuances of failure [64].

MONUM's main sources of funding are the municipal budget and grants. The prototypes conducted by MONUM should use limited financial resources, generally around 5000 euros per project. After the initial prototyping, if a project is successfully transferred to another municipal department, it is subsequently funded from that department's budget. Sometimes, a prototype is initially funded by the technical department's budget from the beginning. The team approaches funding sources on a case-by-case basis. MONUM is also actively seeking grants in order to further develop its municipal innovation work. Among others, it has been the recipient of the Bloomberg Philanthropies Innovation Team Grant, which allowed the creation of the Housing Innovation Lab (iLab) in 2015. Additionally, a grant from the Knight Foundation allowed the team to expand its "smart cities" work, which is largely interrogatory and skeptical of the current model of "smart cities", as seen in its Beta Blocks project.

Finally, as part of the human resources sub-dimension, MONUM has its own chief of staff, who enables greater cohesion among the team. MONUM can actively recruit new staff members and operates its own open calls, for fellowships, public space competitions, and requests for information (RFI). It also welcomes interns through its the city hall's summer and yearlong fellowship programs, and has a documented track record of extending the involvement of summer interns beyond their

internship period, some of them becoming over the years hired team members, or continuing to support the technical departments with whom they are paired for their fellowship on a contract or individual-study basis.

Data Management Capability

MONUM’s team members have the capacity to analyze and visualize data and have access to emerging technologies in order to test their civic purposes, such as drones. Over the years, they have co-developed and improved civic engagement apps and digital communication tools, and are also actively collaborating with municipal departments that collect data to ensure those practices are “right-sized” (that is, that the local government is not collecting more data than it needs to, that it is transparent about who has access to the data and for how long, etc.). MONUM has also supported the city’s efforts and commitment for open data protocols.

Openness to Partnership

Some of MONUM’s core work, and a pre-condition for designing its experiments, is exploring possible partnerships and nurturing relationships that go beyond rigid department or organization affiliations. Over the last decade, MONUM has become one of the municipality’s “front doors” for partnerships with academic, business, and civic partners [65]. Much more than working at the intersection of public, private, academic, and civic sectors, MONUM’s activity has been recently described as being able to hold “a ‘fuzzy area’ of creativity and supported a horizontal collaborative approach to social innovation” [56]. Interviews revealed, however, that this powerful social innovation capability is still difficult to transfer into overall organizational practices, remaining strongly connected to individual practices and motivation.

Table 4. A comparative checklist of the innovation capacity’s dimensions.

	Innovation Capacity		
	Organizational Arrangements	Data Management Capability	Openness to Partnerships
UIU	Outside the municipality, hosted in a public-private organization.	Collaborations with data scientists in academia.	Strong, sustained also by the city’s strategic directions.
MONUM	Inside the municipality.	Collaborations with data scientists in the public administration, and some data analysis and visualization capability within the MONUM team itself.	Strong, reinforced by MONUM’s one decade experience.

As expected, the innovation capacity’s dimensions are shaped reasonably differently in the two-PSI labs, also revealing some points of similarity, as mentioned in Table 4.

The organizational arrangements dimension, considered a crucial antecedent of any innovation process [2], illustrates a major distinction. The fact that the UIU was constituted outside the municipality should be interpreted contextually, in light of the fact that such a structure is a pioneer one in the country, and that urban innovation remains a latent area for Romanian local public authorities, despite its growing role in the global public innovation movement.

Thus, a peer-to-peer exchange, such as the one between UIU and MONUM can significantly improve the capacity for conducting local urban innovation. This is achieved based on the creation of new strategic reference points, between practitioners and for public administration in general, acting as competitive determinants of organizational risk-taking attitudes [66]. It further allows for an international comparison of capabilities and context for innovation, rather than a mere focus on comparing project results.

The second pillar, on data management capability, reflects how both PSI labs operate in several parallel frameworks, with different networks and aspirations, depending on constituents, but also on the level of internalization/externalization for services like data analysis.

Our case study has revealed that the openness to partnerships of both entities enabled the initial informal sharing of perspectives and resources. Due to a good match of values and aspirations, the exchange between UIU and MONUM grew organically from 2017 onwards, with few prerequisites on what it should look like, but relying on the motivation of staff members from both PSI labs. At an international level, both labs focus and use the experiences of peers to communicate specifically about the work and aspiration of the lab. At a local level, however, communication is mostly around results and lessons learned, and less about the lab per se. Combined with the fact that both labs have broad missions, this fuels a level of vagueness around their work for other municipal departments, and the necessity of scaling this new way of working. However, in both labs, this has been a conscious choice, as they would not get sufficient local political and technical support, unless their aspirations were inclusive and vague enough.

4.2. Behavioral Insights for Increasing Urban Innovation Capacity at a Local Level

In order to discuss any behavioral intervention, the first step is to identify the desirable behavior change the intervention is targeting. The first part of the results showed how the portfolio of projects for each lab contributes, at the aggregate level, towards the objective of increasing urban innovation capacity at a local level. Nonetheless, it is also equally important to track the specifics of this objective in the mission of each unit, as reflected in the desired behavioral change. As such, our interviews with both PSI labs revealed this to be a change towards a collaborative, decentralized, and non-hierarchical way of working across municipal departments and city stakeholders that builds the trust of academia, businesses, civic groups, and public administration in collective action. This dimension is not captured in the OECD methodology assessing innovation capacity of municipal units, as it focuses on the performance and structure of each PSI lab, rather than its progress towards its overarching goal. Thus, we provide in the following section a comprehensive account of the behavioral interventions developed and supported within each PSI lab.

4.2.1. Cluj-Napoca Urban Innovation Unit (UIU)

Persuasion

Between 2017 and 2018 UIU developed a new process where teams of neighbors could apply for funding and guidance on how to improve the public space in the neighborhood. The two teams that were awarded the grant after a selection process were invited to further refine their implementation plan together with the technical staff they requested from the Cluj-Napoca Municipality during a two-day workshop. This proved to be an innovative way of working, as until then technical staff from the green spaces and parking departments had never interacted face to face with activists or volunteers [67]. Following the workshop, the teams worked for 8 months to put their ideas into practice, and proposed to the local public authorities ways to make some of the changes permanent. UIU organized throughout the implementation process several workshops, aiming to bring together community stakeholders to reflect on their work, and discuss what future steps could look like. Following this process, in 2019, Cluj-Napoca Municipality put on their public space improvement agenda in both areas where these community pilot projects took place, and opened up tenders for implementation. By mid 2020 one of the areas was already rehabilitated, while the other is still in the design phase. However, the organizations that won the tenders in the actual rehabilitation phase did not actively involve community groups, a fact which left room for concerns about how their initial ideas were put into practice [68].

Provision of Information

At the end of 2017 UIU established the Mobility Pact, a steering committee composed by technical staff from strategic planning, ITC, and communication departments within Cluj-Napoca Municipality, ITC companies, and academia aimed at improving the decision-making processes around urban mobility.

The Pact focused on piloting a new way of working at a local level based on evidence. For this, it used for the first time new data sets provided by Cluj-Napoca Municipality and the municipal transport company, related to public transport use in the city to employ the capabilities of the data scientist part of the group. By providing this type of information and leaving room for structured dialogue between the stakeholders, the members of the steering committee improved their understanding of the possibilities and limits of action of each of their contributions. The recommendations put together by the Pact were subsequently implemented by UIU in their future mobility projects, while the Cluj-Napoca Municipality also started collaborating with data scientists on a regular basis [69]. Another unexpected spillover of the process was the development of a new research institute by the data scientist involved in the process. The Interdisciplinary Center for Data Science within Babes-Bolyai Foundation has since conducted several evidence-based appraisals of local public policy proposals.

4.2.2. Boston Mayor's Office for New Urban Mechanics (MONUM)

Provision of Information

MONUM strives for engaging Bostonians and collaborators from academia and companies in earlier and more frequent feedback processes. In the "Digital Trust in the Public Realm" prototype, stickers printed with open-source iconography describing aspects of digital technology were placed directly next to sensors the city wanted to try out in a public right of way (ROW). Usually, these sensors are installed without much fanfare or announcement, as they are often part of a pre-project phase of data collection to inform a future implementation. In partnership with the Streets Cabinet, MONUM has been testing whether it is beneficial for building trust and interest among residents to put more information about these data-collection sensors in a more public place, that is, right where the sensors are installed. This is related to the team's ongoing "Smart Streets" work, where informative signs were installed in areas where sensors were collecting information in the public realm. Another example is the "Urban Housing Unit Roadshow", where a real-scale example of a tiny home experience was taken from neighborhood to neighborhood to collect "user perspectives" from Bostonians of diverse backgrounds. While there were several economic and environmental reasons for considering housing with a smaller square footage and increased efficiency, the roadshow was an interactive and iterative consultation with residents whether such a solution would be optimal for Boston, and if so, who would it benefit? The lessons learned from the process have since been used to inform public debates on zoning and urban planning, as well as public tenders and contests from the Boston Municipality, as well as the Boston Society of Architects and the Boston Society for Architecture Foundation [70].

Persuasion

MONUM has consciously invested time in addressing complaints and integrating feedback received. While MONUM can only dedicate a limited bandwidth to a project after its experimentation and evaluation phases, it has recognized the importance of providing evidence-based information in order to justify some of the actions that seemed controversial for some of its stakeholders. For example, the price increases for parking in the "Performance parking" pilot project prompted negative feedback from Bostonians, annoyed that they were made to pay more for parking, instead of the municipality providing more parking space [71]. The replies offered by the MONUM team were meant to bring context to the measure, reference the commitments made by the City of Boston towards sustainable mobility in its strategic documents and increasing safety for pedestrians, as well as outline the plan of how the revenue collected in this manner will be used, and what other gains Bostonians could expect in terms of less waiting time for finding parking and cleaner air. Moreover, MONUM has made a conscious choice in most of its communications to use aspirational language, and to reference the vision outlines in the City's strategic documents, as a reminder that in order to achieve them, bold and disruptive steps are needed.

Changes in the Physical Environment

MONUM changed the outline of its office space, implementing an open office plan and “open doors” policy. Staff from other departments were encouraged to drop by and work from MONUM’s meeting room or join team meetings. The space itself has whiteboards, posters, collages, artifacts, and relics from old prototypes. Overall, the space encourages visual brainstorming and collective writing.

Change in Default Policy

MONUM discovered that one of the city’s apps, Citizens Connect (now called BOS:311), launched in 2009, aimed at residents for reporting non-emergency issues to the right people in the Boston Municipality, was initially being used by city workers themselves. City workers were lacking the tools for collaborative interventions and the fast signaling process that the app offered. Thus, MONUM changed the default hypothesis on which Citizens Connect was built, that of catering to residents, into one of serving the city workers themselves. After several iterations, in 2011, Boston launched the City Worker 2.0 App. Simultaneously to the development of City Worker, Citizens Connect went through a series of exploratory iterations (including an SMS version (instead of the app) and a state-wide version called Commonwealth Connect) [72]. The process workflow that contains both the staff-facing City Worker app and the resident-facing Citizens Connect (now rebranded as BOS:311) app thus allowed city workers to submit, close, and re-assign to other city departments reports in real time, based on verification of the actual work on site, as well as provide documentation and closure to the resident submitting the case.

MONUM has made both failure and play part of their default narrative [64,65]. MONUM explicitly reveals that their department is willing, and able, to take risks that other traditional departments in a city hall cannot. It acknowledges that other departments, for example firefighting, cannot afford the degree of flexibility and radical thinking that is needed for a prototype in the exploratory and experimentation phases. In order to reinforce risk-taking as the default option, the modus operandi entails that if the project is a failure, it is MONUM’s responsibility, but if it is a success, then it is attributed to the City of Boston and the technical departments. Moreover, MONUM changed the default policy of local government, of transmitting information and guidelines towards its employees through local laws and protocols, to transmitting information about its values, approaches and recent experiences through games and play. For example, the onboarding process of new team members includes sharing knowledge on MONUM’s core values and institutional memory through oral history and storytelling, instructive games such as a MONUM version of the U.S. game “Taboo” (essentially a deck of learning cards for new staff to understand the context of partners, projects, and policies), and the hands-on experience of presenting MONUM’s work to partners outside the Municipality.

Table 5 summarizes the use of behavioral insights categories by each lab for achieving their desired collaborative and trust-building way of working.

Table 5. A comparative checklist of behavioral insights categories.

	Behavioral Insights Categories				
	Provision of Information	Persuasion	Changes in Physical Environment	Changes in Default Policy	Change in Social Norms
UIU	Yes	Yes	n/a	n/a	n/a
MONUM	Yes	Yes	Yes	Yes	n/a

The heavy insertion of MONUM within the behavioral insights paradigm is quite evident, while UIU portrays the beginner stage, of cautiously adopting a more informed style, combined with marketing interventions. Specifically, it emphasizes the weak adherence of the Romanian lab to a research approach that has offered a considerable number of positive outcomes around the world. This can even be labeled as a type of resistance to methodological innovation, a position that

matches the still fragile penetration of behavioral economics ideas in Romania, both in academia and in practice [73]. This is further amplified by the tendency to use methods dependent on the competencies of the team, a team that is rather small in the case of UIU and PSI labs in general.

5. Discussions and Implications

The aggregate response to our main research question on how PSI labs contributes to innovation capacity in cities, as is echoed in the presented case studies, converges on a main central idea: urban innovation can be both a means and an end. The qualitative analysis shows a contrast with respect to the latter component, in the sense that urban innovation is an explicit goal only for MONUM, and not for UIU. Furthermore, the findings of the comparative investigation of UIU and MONUM follow the methodological lines emphasized by Pickvance [74]: to explain differences and similarities between the two-PSI labs, and to explore potential underlying causal patterns for innovation capacity.

With respect to the first goal, the comparison between organizational arrangements reflects upon the difficulty to formulate a unique and comprehensive definition for PSI labs, acknowledged in the literature [8,9]. Nonetheless, the specifics of each case do converge on the characterization provided by [75] of “trans-disciplinary collaborative spaces”, with emphasis on the “common orientation to achieve public innovations aimed at solving social problems, through the use of massive data, application of experimental and agile methodologies, openness to collaboration with citizens and other organizations, and prototyping solutions to real problems in specific contexts” [76]. The novelty resides not on the side of existing differences, but rather on how these differences are positioned in the theoretical frameworks of OECD’s innovation capacity, and the typology of behavioral insights.

Following the theoretical thread on innovation capacity determinants, the works of Borins [77] and Crosby and Bryson [78] argue explicitly the importance, not only of individual agency, but also of the “innovation sponsor” who (at the political and/or organizational level) provides the mandate and space for innovative activity, including the risks that it involves. Our study reveals that in the case of UIU, the innovation sponsor was Cluj Cultural Centre, an organization that was flexible enough to accommodate the uncertainty associated with the construction of a PSI lab. While MONUM’s innovation sponsor was the municipality itself, the risk associated with prototypes has been explicitly communicated as the PSI lab’s responsibility, not the sponsor’s. In terms of general frameworks (and sponsors) supporting municipal innovation, it is noteworthy to acknowledge their focus on individual agency. Bloomberg Philanthropies has supported so far the creation of over 20 municipal innovation teams [79]. Their support was primarily focused on building the position and role of the chief innovation officer (CIO), and increasing the capacity for using human-centered design methodologies. The risk of this approach is that it silos innovation, enhancing the perception of innovation falling under the responsibility of only one person, or department. In reality, the core of what municipal innovation implies is a systematic change across departments and city stakeholders, namely not a hero-innovator but distributed heroism [80]. This issue further reflects the literature mainstream, questioning how innovation can thrive in a risk-averse environment like the public sector. Despite the differences, our findings confirm the gist of cooperation networks ensuring sustainable change and urban experimentation [81,82], especially in light of the data management field.

As in other recent comparative cases, our PSI labs are “internally different in design and operations, but externally different due to varying political and socioeconomic contexts” [83]. The analysis around the typology of behavioral insights serves the second goal of our comparative study, that of identifying potential underlying causal patterns for innovation capacity. The unbalanced comparison on the use of such insights, much weaker on the Romanian side, can also be interpreted as a sign of a generic and problematic issue encountered even in more experienced labs: how much of the focus is on achieving long term and sustainable behavior change versus a superficial version of temporary and contextual change. Without a clear objectiveness on the matter and consequent longitudinal studies to track progress, this remains a sensitive topic, enhanced by the closure of some established labs

(e.g., Denmark, Mexico etc.) and the recognition that “maintaining and sustaining an innovation lab is a challenge that goes beyond well-meant intentions” [84].

Another not-settled area, with impressive potential, is the unmapped change in social norms. As Bicchieri [85] explains in her work, correctly diagnosing if a behavior is driven by a descriptive or social norm, can lead to insightful designs for social change. Most of the work of PSI labs diversifies the tools traditionally used by the public sector (interdictions and fiscal instruments), making use of different behavioral insights categories as mentioned in Table 5. For social norm creation, Bicchieri describes that it is important to create a new normative expectation around a behavior, effectively coordinate change in order to make explicit the new normative expectations, then stabilize the change through introduction of sanctions, which would in turn lead to a new empirical expectation. Norm-nudging in this sense still has little evidence in urban policies of effectively closing this full circle of change, and achieving a new empirical expectation. Neither UIU, nor MONUM have yet embarked on this level of transformation for desired behaviors. In Romania this could generate paradigmatic shifts on multiple levels. Just to give one example, according to the findings of Valsan and colleagues [86], as the perception of noncompliance grows within the population, the level of tolerance towards tax evasion and the informal economy decreases. Thus, understanding the social norms around tax compliance and non-compliance would constitute a strategic move. Similar in purpose but on a completely different front, in light of recent events in the USA with anti-racism protests, MONUM has pledged to review its work so far, including past projects, partnerships, and work processes, to understand what norm changes they should conduct in the future for ensuring racial equity [87].

A last but equally important thread for discussion is the link between municipal innovation and public open innovation. Since public innovation open intermediaries, either public or private firms, are considered instrumental for advancing towards a higher level of innovativeness in cities [88,89], it is only natural to ask if PSI labs may fit well under the innovation intermediary category: “external organizations and individuals that support companies in their innovative activities by gathering, developing, controlling, and disseminating external knowledge by providing various resources and regulating the innovation networks” [42]. Among the further characterizations of this bridging position, the capacity to build organizational networks seems to be primordial [90], mirroring to a large extent the openness to partnership pillar from the OECD framework, and a substantial body of knowledge from triple, quadruple, and quintuple-helix theories [91]. However, despite the context-sensitivity of open innovation practices [92], those in the public sector tend to follow the standards provided by the private sector. Thus, it is not surprising that we find more stable clusters of such good practices in developed economies (e.g., the US, UK, Australia, or Singapore), in different development stages and with different typologies [93]. This reveals again the role of environment in supporting innovation [44], and namely of a culture of open innovation dynamics [94] that will also apply to the public sector [95], channeling benefits not only for the growth of companies and economies [96], but for cities and societies as well [97,98].

6. Conclusions, Limitations and Further Research

Our paper explores how urban innovation is implemented at a municipal level through the relatively novel structure of PSI labs. The comparative case study between MONUM, the unit responsible with innovation in Boston, and UIU, its counterpart in Cluj-Napoca, aimed to provide a novel perspective on how to potentially scale up the role of PSI labs, through a type of horizontal expansion of good practices. In order to create a shared understanding about the mechanisms at play for such a process, we based our analysis on two frameworks: determinants of innovation capacity, and typology of interventions inspired by behavioral insights.

The fact that we identified major differences reflects the idea that there is no “McDonald’s vision for Labs” [40], even when one of the labs served as a benchmark model for the other. However, the adaptation to the local culture and local public sector does not elude the need for strategic reference points. On the contrary, we believe that developing new PSI labs in a closer mentorship scheme with

already functioning structures could be extremely helpful in identifying the drivers of successes and failures in innovation projects. As a practice, co-designed and co-generated peer-to-peer exchanges could play the valuable role of the innovation sponsor.

In a similar vein, the differences registered for adopting behavioral insights are explained by the popularity of the field in the local academia. We consider that the evidence-based philosophy contributes significantly to urban innovation, especially in projects involving changes to the physical environment, which appear so often in cities, and when addressing the opportunity of changing default options.

The main limitation of the case study approach that also applies to our research is the lack of generalizable conclusions. We internalize this aspect rather as an opportunity to focus on uncharted areas of PSI labs, like Romania, and to provide an illustrative example that enriches the literature by both confirming some patterns and reflecting on new regional challenges. An extended multiple-case study framework may be a follow-up solution, not so much to generalizability but rather, to an increased confidence in the match with the underlying theory. We appreciate that shifting the view of innovation as a “one man/woman show” towards a systematic change across departments and city stakeholders is one promising area of further research. To this purpose we plan to further investigate how the duality of individual agency and innovation sponsors has supported the long-term capacity of conducting local municipal innovation.

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