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Iuliia Iliashenko

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Iuliia Iliashenko

ABSTRACT

Lecturer

*Department of Entrepreneurship
and Business Administration
Beketov National University,
Kharkiv (Ukraine)*

Corresponding Author:

Iuliia Iliashenko

*Department of Entrepreneurship
and Business Administration
O.M.Beketov National University
of Urban Economy, Kharkiv
(Ukraine)*

iuliia.g.iliashenko@gmail.com

The nature of the entrepreneurial behavior exhibition within public organizations has become an important theoretical perspective in public management research. Based on the literature review in this domain we derive that prior research goes beyond the public sector entrepreneurship, providing the implication of corporate entrepreneurship concept in the public domain, excluding such an important tool as entrepreneurial mindset formation.

However, the cognitive processes of the “entrepreneurial” element incorporation into public organizations are still needed to be addressed. We focus on the assessment of the legitimacy of the entrepreneurial mindset adjustment in the public context, emphasizing reasoning and causality relationships of entrepreneurial behavior manifestation with respect to the likelihood to be engaged in innovation. We introduce the framework of the entrepreneurial mindset formation in public organization as an effective toolkit to foster innovation activity. Identifying determinants of the entrepreneurial mindset and its corresponding implications in the public context, we conceptualize revealed relationships within introduced framework into PROPOSITIONS, we also provide some clues for further its testing discussing directions for future research.

La natura del comportamento imprenditoriale all'interno delle organizzazioni pubbliche è diventata un'importante prospettiva teorica nella ricerca sul management pubblico. Sulla base della revisione della letteratura in questo contesto, deriviamo che le ricerche precedenti vanno oltre l'imprenditoria del settore pubblico, fornendo le implicazioni del concetto di imprenditorialità aziendale nel pubblico dominio, escludendo però uno strumento così importante come la formazione della mentalità imprenditoriale.

Pertanto, i processi cognitivi dell'elemento "imprenditoriale" incorporato nelle organizzazioni pubbliche devono ancora essere affrontati. Nell'articolo ci concentriamo sulla valutazione della legittimità dell'adeguamento della mentalità imprenditoriale nel contesto pubblico, enfatizzando le relazioni di ragionamento e causalità della manifestazione del comportamento imprenditoriale rispetto alla probabilità di impegnarsi nell'innovazione. Introduciamo il quadro della formazione della mentalità imprenditoriale nell'organizzazione pubblica come uno strumento efficace per favorire l'attività di innovazione. Identificando le determinanti della mentalità imprenditoriale e le relative implicazioni nel contesto pubblico, concettualizziamo le relazioni rivelate all'interno del quadro introdotto in proposizioni, forniamo anche alcuni indizi per ulteriori test che esaminano le direzioni per la ricerca futura.

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1 – Introduction

The propensity of public sector enterprises to be engaged in innovative activities attracts considerable scholarly attention which is reflected in the growing number of publications devoted to the conditions conducive for public sector innovation (Bernier *et al.*, 2015; Demircioglu and Audretsch, 2017). Highlighting the gap within researches on innovation between those which are based on the private or public organizations experience, recent findings demonstrate that public sector organisations are innovative “*introducing new approaches to provide quality public services and better respond to society’s needs*” (Innovation Policy Platform, 2018; see also: Aschhoff and Sofka, 2009; Bysted and Hansen, 2015; Mahoney *et al.*, 2009; Nissen *et al.*, 2014; Pittz and White, 2016; Reijonen *et al.*, 2016; Wise, 1999; Bloch and Bugge, 2013; Bugge and Bloch, 2016; Edquist and Hommen, 2000; Rolfstam *et al.*, 2011). These studies put emphasis on the exploration of the reasoning, why some public agencies innovate while others do not, i.e. on the different managerial conditions.

While the vast majority of studies are concentrated on the identification of the particular managerial conditions in the public sector context which are to support the innovation processes (Sahni *et al.*, 2013; Demircioglu and Audretsch, 2017), the cognitive processes, which are behind pursuing of the opportunities which ended up with innovation in the public sector, as well as its impact on the likelihood of the innovation activity remains unrevealed. The identification of novel opportunities was considered by Scott (2016) as one of the powerful trigger for public sector entrepreneurship “*to speed the pace of technological progress and the opening up of altogether new areas of science and technology*” (Link, 2016, p. 355). Along with the growing scholarly concern on the issues of corporate entrepreneurship elements in a public context (Kearney *et al.*, 2007; Kuratko *et al.*, 2014; Sadler, 2000; Sakhdari, 2016), the issues related to the development of the theoretical framework of the innovation activity stimulation (from the standpoint of opportunity concept) and its correlation to the entrepreneurial behaviour in the public domain still need to be addressed.

The issues devoted to the entrepreneurial mindset in public context remains completely neglected, it is slightly touched by stating that for public managers is inherent to behave entrepreneurially under particular circumstances. In the sense, the conceptualization of the public sector innovation processes can hardly be isolated from the analyses of the manifestations of the entrepreneurial behaviour phenomenon. In order to provide a systematic approach to the consideration of the cognitive processes mentioned above, we seek to consider this phenomenon in terms of entrepreneurial mindset formation. In addition, we state that such an approach will provide an ability to include the process of opportunity exploration and exploitation into consideration of public sector innovation. Further, we focus on the entrepreneurial mindset as on the set of processes that requires managers and employees within public sector organization apply entrepreneurial approach within usual work, i.e. “*to think beyond or re-organize existing knowledge structures and heuristics, promoting adaptable cognitions in the face of novel and uncertain decision contexts*” (Haynie *et al.*, 2010, p. 217).

This paper is aimed to fill this gap in academic literature providing an attempt to deepen the comprehension of the interrelation between the formation of conducive conditions to innovate and the dynamic process of the exploration and exploitation of the opportunities to be engaged in innovation activity. Suchwise, to shed light on the interrelations mentioned above, the purposes of this paper are to provide a theoretical framework for the assessment of the effects of the entrepreneurial mindset formation on the likelihood of innovative activities within public sector organizations.

The paper is structured as follows: Section 2 provides a theoretical basis for understanding of the entrepreneurial mindset concept and the peculiarities of its applications with respect to innovation in the public sector. More in detail, the first subsection encompasses a review of the researches which discovers the patterns of the entrepreneurial behaviour displays within the public organisation with respect to the innovation activity engagement. The next subsection is devoted to the intrapreneurship phenomenon within public organisations, distinguishing its determinants and corresponding implications at different managerial levels. The third subsection considers peculiarities of the entrepreneurial mindset formation and adjustment in public context. The last subsection discusses the cognitive processes of opportunities enactment in the public sector context with respect to its effect on the likelihood to innovate. Each subsection is summarized by suggestions for further development of indicators for subsequent testing. Section 3 discusses the ways how research seeks to contribute to a better understanding of the entrepreneurial mindset role in innovative processes within public organisations as well as to the theory of entrepreneurship in general. Also, it highlights possible trends for further research and briefly presents guidance for further testing of the PROPOSITIONS formulated in section 2. Section 4 ends up with the conclusive statements.

2 – Entrepreneurial mindset concept in public context

To trace the academic experience of the exploration of an entrepreneurial mindset foundation with regard to the propensity of the public sector enterprises innovation activity, first, it is reasonable to provide some clarification to the sense of “public context” term. The public sector environment due to its internal peculiarities, mixed types of ownership and high dispersion of the centralization level of management has complex dimensions with respect to innovation activity treatment. It was explicitly shown by Rainey (2015), who classified these dimensions in two large groups:

(i) the distinctive characteristics of public organizations (e.g. goal ambiguity, organizational structures, decision-making processes, and incentive structures);

(ii) environmental components of public enterprises (e.g. the political economy of public institutions, performance criteria for government organizations, and different actors with political authority and influence over public organizations) (Rainey, 2009).

In this research, in terms of public context, we focus mostly on the first dimension, which reflects the nature of public products or services. Here, public context is considered as a common denominator that permits to concentrate attention on the internal dynamic processes inherent for enterprises which provides public goods and public services. The need for innovation is urgent within all types of public organization due to the unity of pressure sources that is social needs and interests, etc. The problems that need to be addressed are becoming increasingly complex and continuous in its nature (from energy-saving technology promotion to the provision of equal access to the public services and goods, etc.). As León, *et al.*, (2012) states: innovation in the public sector is predominantly seen as a means to address either growing budgetary pressures, through more efficient administration or service delivery, or new societal demands, through different and more effective services. This is consistent with the statement provided by Demircioglu and Audretsch (2017), according to which “public organizations need to be efficient (i.e. reducing costs), effective (i.e. improving quality of services), and satisfy citizens”. Hence, according to the approach adopted in this paper, “public context” covers public organisations, public-private partnership or mixed-owned organizations which provide public goods or services and still bare public risks (Xiaobo, 2016) regardless ownership and management issues (Mella, 2014; Papagiannis *et al.*, 2018).

Since the central issue to be addressed in this section is to assess the legitimacy of the entrepreneurial mindset concept application in the public context, it is reasonable to provide a literature review to disclose samples of this concept application within public organizations, more precisely with its effects on the likelihood to explore opportunities to innovate in public context. To provide a precise identification of the “entrepreneurial mindset” as a category, we follow the definition provided by Ireland *et al.* (2006):

Entrepreneurial mindset is a way of thinking about opportunities that surface in the firm’s external environment and the commitments, decisions, and actions necessary to pursue them, especially under conditions of uncertainty that commonly accompany rapid and significant environmental changes.

The entrepreneurial mindset adjustment is considered as a conducive condition for public organisations to be engaged in innovative activity due to its’ central attribute “*to increase the ability of organizational actors to sense opportunities and mobilize the resources and knowledge required to exploit them*” (Ireland *et al.*, 2006, p.16). Thus, by incorporating the category of an entrepreneurial mindset in public context we obtain the new perspective for assessing the propensity to innovate (more precisely, the likelihood to pursue an opportunity to innovate within public organisations). Such kind of approach allows deepening of the comprehension of the internal processes of innovation activity in the public sector.

2.1 – Review approaches

This review encompasses researches on the entrepreneurial behaviour exhibition in a public context that refer directly or indirectly to the innovative activities. We include publications that explicitly cover the following issues: entrepreneurial practices, internal and corporate entrepreneurship in the public sector, and entrepreneurial orientation among employees within public organisations. Such variety in key words allows us to capture different entrepreneurial dimension involving innovativeness, risk-taking and pro-activity that provide evidence on the existence of a certain correlation between entrepreneurial environmental variables and the likelihood of exploration and exploitation of opportunities to innovate. The review doesn’t include papers considering public enterprises explicitly as a policy instrument or privatization context.

The sample used for the review covers papers from the journals (number of papers): Public Administration (9), Research Policy (5), Entrepreneurial theory and practice (4), International Public Management Journal (4), Public Management Review (3), International Journal of Public Sector Management (3), International Entrepreneurship and Management Journal (2), Journal of Enterprising Culture (2), Structural change and economic dynamics (2), International Journal of Entrepreneurial Behaviour and Research (1), The Journal of Entrepreneurship and Regional Development (1), International Journal of Entrepreneurship and Innovation Management (1), The Service Industries Journal (1). The following step was based on the investigation of the selected papers’ citations. This technique allowed selecting 41 additional papers, including journal publications and book chapters on entrepreneurial and innovative practices within public organisation. The current achievements with respect to the issue under consideration draw on researches mostly across the fields of public management and entrepreneurship with vast domination of qualitative analysis (interviews, case studies, participant observations). This is supposed to be explained by the scarcity of datasets with valid and appropriate quantitative variables and the consequent issues of measurement techniques. It should be noticed that a slight shift in the fields’ diversity has occurred since 2013 when papers studying processes of innovations in public agencies from the standpoint of entrepreneurial dimensions (risk-aversion, organisation knowledge, etc.) were published in journals such as Research Policy (Arundel *et al.*, 2015; Roper *et al.*, 2017; Torugsa and Arundel, 2016) and Innovation Reviews

(Sahni *et al.*, 2013) with increasing frequency. Providing a definition of public sector entrepreneurship as “

... the promulgation of innovative public policy initiatives that generate greater economic prosperity by transforming a status-quo economic environment into one that is more conducive to economic units engaging in creative activities in the face of uncertainty (Leyden and Link, 2015, p.54).

has re-opened entrepreneurial attributes of the public organisation environment which is efficient and enabling with respect to its innovativeness.

According to the aim of the paper, the results of the review analysis were organised in two general groups with respect to the managerial level to which can be attributed the investigated displays of the entrepreneurial behaviour. The first group of papers discovered abilities of public sector employees to be innovatively-oriented and what condition can be considered as necessary to enhance such abilities (Zerbinati and Souitaris, 2005; Mair, 2002; Currie *et al.*, 2008; Kim, 2010; Bysted and Hansen, 2015; Rogowska *et al.*, 2017). The second group covers studies that explored the role of public sector management, which was resulted in consideration of the entrepreneurial leadership issues and implication of corporate entrepreneurship concept in a public context (Morris and Jones, 1999). The process of combining entrepreneurial behaviours (opportunity-seeking ones – which analysed under first group – employee level) with strategic actions (opportunity-seeking within the context of a specific strategy – treated within the second group – top and middle managerial level) is vital from the standpoint of the design and successful application of the corporate entrepreneurship strategy (Ireland *et al.*, 2006). The generalization of reviewed papers' key statements is presented in Table 1. Discovering a number of elaborated concepts on corporate entrepreneurship within public organisations (Nzilano, 2016; Zampetakis and Moustakis, 2007; Kearney *et al.*, 2007; Morris and Kuratko, 2002), there is no conceptual clarity on the framework of the entrepreneurial mindset adjustment in a public context, despite the fact that it is a central toolkit for corporate entrepreneurship strategy development. This state of affairs has led to the fact that to date, most of the studies, related to the issue under consideration, do not include treatment of the opportunity pursuing processes. Thereby, the formation of the conducive conditions for the exploration of the opportunities, exploitation of which generates innovation remains uncovered. Considering the existing framework, we seek to explore entrepreneurial mindset adaptation into public context at two different levels (public employees and public managers), identifying their distinctive features in terms of pursuing the opportunity to innovate.

2.2 – Intrapreneurship within Public Organisations

Most prior studies in entrepreneurship and management literature confirm the importance of the entrepreneurial behaviours within the public organizations' internal environment with respect to its innovativeness (Demircioglu and Audretsch, 2017; Arundel and Huber, 2013, Guthrie and Farneti, 2010). These studies considers the entrepreneurial potential as the characteristic inherent for the public employees, and entrepreneurial orientation as an intrinsic characteristic of the internal organisational environment within public context. (Rogowska *et al.*, 2017; Kraus, 2013; Fernandez and Pitts, 2011; Kim, 2010). In general, entrepreneurial behaviour within existing organisations is defined as “... a set of activities and practices by which individuals at multiple levels, autonomously generate and use innovative resource combinations to identify and pursue opportunities ...” (Mair, 2002). Considering the displays of the entrepreneurial behaviour in public context through the Mair's perspective, we suggest the critical influence on public sector engagement in innovation activity provided with the entrepreneurial orientation of internal organisational environment.

Table 1 – Entrepreneurial mindset structure within public organisations

Context	Entrepreneurial mindset		Reflected concepts
	<i>Determinants</i>	<i>Cognitive implication</i>	
Public employee as entrepreneur	<p>– Entrepreneurial orientation:</p> <ul style="list-style-type: none"> ○ the entrepreneurial potential of public sector employees with respect to the past experience of the acting entrepreneurially (Rogowska, et al., 2017); ○ employees' empowerment: participatory decision making; professional development activities (Fernandez and Moldogaziev, 2013); ability to respond promptly to external changes and concerns (Kim, 2010); <p>– Entrapreneurial self-efficacy:</p> <ul style="list-style-type: none"> ○ perceived job autonomy and encouragement of initiatives as condition to create feelings of safety and spur the particular motivational state (Kuratko et al., 2014; Buekens, 2014; Fernandez and Pitts, 2011; Zampetakis and Moustakis, 2007); ○ clarity of expectancy within risk culture (consequence of action) (Bysted and Hansen, 2015) <p>– Knowledge-enabling:</p> <ul style="list-style-type: none"> ○ availability of the managerial information (Zampetakis and Moustakis, 2007); ○ awareness of the concept of innovation (Arundel and Huber, 2013). 	<p>– Entrepreneurial orientation:</p> <ul style="list-style-type: none"> ○ to enhance the efficiency, affectivity and service delivery of public sector organisations (Bolton and Lane, 2012; Rogowska et al., 2017); ○ to spur bottom-up innovation in public sector organisations (Fernandez and Pitts, 2011). <p>– Entrapreneurial self-efficacy:</p> <ul style="list-style-type: none"> ○ to stimulate the employees' innovative behaviour and necessary condition for generating creative solutions at work (Zampetakis and Moustakis, 2007), which have positive correlation with the likelihood of the innovative behaviour of public employee (Bysted and Hansen, 2015); <p>– Knowledge-enabling:</p> <ul style="list-style-type: none"> ○ to provide an enabling environment for the formation of conducive managerial conditions (such as experimentation, ability to sunset outdated infrastructure, the existence of feedback loops, motivation to make improvements), which has positive correlation to the likelihood of innovative activity in the public sector context (Demircioglu and Audretsch, 2017). 	Entrapreneurship within public organisation – bottom-up innovation strategy
Public manager as entrepreneur	<p>– Entrepreneurial leadership:</p> <ul style="list-style-type: none"> ○ ability to encourage employees to exhibit entrepreneurial behaviour by searching for new opportunities and exploiting them. ○ allocation of employees' efforts: setting of the direction for the entrepreneurial orientation of the employees via generating stimulants and constraints (Bolton and Lane, 2012); <p>– Self-awareness</p>	<p>– Entrepreneurial leadership</p> <ul style="list-style-type: none"> ○ to provide switch from a passive approach to administrative responsibility to the active ones that include generating new sources of revenues, providing enhanced services and involvement of citizens (Borins, 2002; Morris and Kuratko, 2002); ○ to ensure the supportive context for public employees entrepreneurial orientation 	Entrepreneurial mindset foundation – top-down strategy

	<ul style="list-style-type: none"> ○ Corporate entrepreneurs: the combination of three agencies: ‘stakeholder’, ‘entrepreneurial’ and ‘political’(Currie <i>et al.</i>, 2008); ○ Calculated risk taker: takes relatively big organizational risks without taking big personal risks (Stewart, 2014); ○ Environmentally-oriented behaviour: pressure mitigation (for instance, between financial and non-financial stakeholders interests) (Currie <i>et al.</i>, 2008); ○ Opportunity-based approach: management of opportunities sustainability. <p>– Knowledge intermediation</p> <ul style="list-style-type: none"> ○ Control of the employees’ entrepreneurial judgment. ○ correlation of the information from private business units 	<p>(Riviezzo,2014; Zerbinati and Souitaris, 2005; Mair, 2002)</p> <ul style="list-style-type: none"> ○ to direct employees’ efforts align with the mission of the organisation (Hartley and Allison, 2000; Wart, 2003). <p>– Self-awareness</p> <ul style="list-style-type: none"> ○ to increase the efficiency of innovation activity within a narrow field defined by the organisation beforehand (Currie <i>et al.</i>, 2008); ○ to mitigate the tension of opportunities exploration and exploitation at individual level. <p>– Knowledge intermediation</p> <ul style="list-style-type: none"> ○ to facilitate increasing awareness of the employees, i.e. to provide knowledge enabling (Morris and Kuratko, 2002) ○ to provide awareness that opportunities could be identified by individuals operating at all levels of the organizational hierarchy (Currie <i>et al.</i>, 2008). 	
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According to the current achievements, it was revealed that public sector employees are to be more innovative in their perceived behaviour that private ones (Bysted and Hansen, 2015). In the research context, they were considered as intrapreneurs in order to point out the determinants in the conceptual framework and its corresponding meaning (cognitive implications). Based on the concept developed by Pinchot (1985) (who first suggested the term "intrapreneur" to those employees of large organisations, who think and act as entrepreneurs), we employ this term in order to describe the public sector employees, who perform their duties, demonstrating entrepreneurial propensities in conformity with the organization’s mission execution, being aware of its internal limitations.

The structure introduced in table 1, accounts for three generalized groups of conditions which stimulate displays of the entrepreneurial behaviour among public sector employees and public managers. Also, we assert that all determinants are not explicitly separated, contrariwise, they are quite interdependent, i.e. all of them should be employed within ones’ organization internal environment. The first group covers processes of empowerment and employees’ involvement in decision-making which, in turn, are one of the pivotal factors that may spur bottom-up innovation in public sector organisations (Rogowska *et al.*, 2017; Riviezzo, 2014; Fernandez and Pitts, 2011; Kim, 2010).

While the link between entrepreneurial orientation and innovative behaviour seemed to be the most disclosed phenomenon, simultaneously, the same interrelation for other determinants (intrapreneurial self-efficacy and knowledge-enabling) is much less analysed. According to Kuratko *et al.*, (2014) and Fernandez and Pitts (2011), along with the empowerment, the perceived job autonomy and encouragement of initiatives seem to be central drivers of employees’ innovative behaviour. It induces cognitive processes for elaborating of the particular employees’ motivational state, which increases the perceptivity for seeking opportunities to provide improvements at work. In particular, Demircioglu and Audretsch estimated its effects

on the likelihood of organizational innovation based on Sahni's *et al.*, (2013) framework of such managerial conditions as: "(1) experimentation; (2) ability to sunset outdated infrastructure; (3) the existence of feedback loops; (4) motivation to make improvements; and (5) budget constraints". The results, gained on the base of the Australian Public Service Commission dataset, shows that first four conditions are positively correlated to the likelihood of innovative activity in the public sector context, while the budget constraints do not have any statistical effect on public sector employees' innovation (Demircioglu and Audretsch, 2017).

One of the most essential conditions to form and support employees' self-efficacy is "clarity of expectancy" within risk culture, i.e. to have a clear awareness of the expected consequence of action within the mission performed by the organisation. According to Bysted and Hansen (2015), public sector employees have less expectancy clarity than their counterparts from the private sector. The relevance of these findings for public sector enterprises innovation activity is highly connected with the awareness of the concept of innovation under the "knowledge-enabling" conditions. If there is a lack of such kind of awareness among public sector employees and consistency with managers' understanding of the concept of innovation within a particular organization, it leads to the essential bias in the analysis of innovation activity of public organization as any minor changes that are neither novel nor substantive can be reported as innovation (Arundel and Huber, 2013).

As far public sector employees are most familiar with the peculiarities of internal barriers to innovate, they are able to use prior knowledge and experience in order to diminish those barriers in the most efficient way (D'Este *et al.*, 2012; Torugsa and Arundel, 2016). The source of this prior knowledge is experience gained from learning processes within previous innovation activities. Hence, the innovation concept comprehension, along with the high level of the expectancy clarity, has crucial meaning in pursuing the opportunity to innovate with respect to the organisation performance improvement. Consequently, high level of awareness of the necessity to be innovative (i.e. to seek opportunities to be engaged in innovation activity) and creative to the same extent as to be mission-oriented in public context will provide a direct impact on the likelihood to innovate.

In such a way, innovative self-efficacy and knowledge enabling are the conditioning elements for enactment of the opportunity-seeking processes to foster the innovation activity, which reflects entrepreneurial behaviour of public sector employees' as intrapreneurs. The adjustment of the internal entrepreneurial strategy within public context is a complex process, which is to provide supportive implications to the bottom-up innovations at public organisations. For instance, Westrup (2013) introduces public sector intrapreneurship as effective toolkit of transferring innovative projects into a permanent operation. Thereby, exploring of the entrepreneurial behaviour displays at an individual level (among public employees), it was revealed that internal entrepreneurship evidently remains not only an underestimated capability of the public organisations with respect to the innovativeness issues, but also uncovered from the standpoint of the opportunity-based approach.

Based on the prior reasoning, we seek to state the following PROPOSITION that marks the first step in our development of a theory of the entrepreneurial determinants of public sector employees' innovative behaviour.

PROPOSITION 1. Entrepreneurial orientation, intrapreneurial self-efficacy and knowledge-enabling of public sector employees are positively correlated with the likelihood of the recognition and pursuing the opportunity to innovate driven by non-profit rewards in the public sector context.

In other words, the intrapreneurial mindset within public context can be specified as the ability to act as private agent (i.e. to seek opportunities to instigate different improvements at work), staying public (acting in line with the internal barriers and admissible level of risk-aversion, taking into account not primarily the social meaning of the organisations' mission and non-profit motivation). Thus, it is internal source to enhance innovation potential of public

organisations. Bysted and Hansen (2015) highlighted that if the public sector employees' job organisation can be designed so that it can support the autonomy, leave room for innovation, and develop the risk culture, this would stimulate innovative behaviour. At the same time, Zampetakis and Moustakis (2007) highlight the crucial meaning of the supportive context (access to managerial information and encouragement of initiatives) for employee's entrepreneurial behaviour displays. It means that provision of the conducive condition for the intrapreneurial mindset incorporation within public organisations is in the public managers' competence. Hereby, the formation of the public managers' entrepreneurial mindset as a reflection of their ability to encourage their employees to behave entrepreneurially with respect to the required strategic direction (for instance. to seek opportunities to exploit available organisational resources in order to trigger innovative processes) is to provide supportive conditions for the top-down strategy for innovation activities for public organisations. This state of affairs results in the following extension of PROPOSITION 1.

PROPOSITION 1a. *Incorporation and fostering intrapreneurship in public sector organisation is a necessary condition to increase the efficiency of the bottom-up strategy to innovate, but not sufficient for the support of top-down ones, i.e. consequently not sufficient for the entrepreneurial mindset adjustment within public sector organisations.*

2.3 – Entrepreneurial mindset adjustment

As it was suggested earlier, it is not enough to consider the entrepreneurial behaviour exhibited only by public sector employees without taking into consideration corresponding patterns within middle and top managerial staff. Focussing on the patterns of the public managers' "entrepreneurial actions" within the second group of reviewed approaches, we distinguish the determinants which are needed to enact the entrepreneurial mindset formation (see Table 1). The entrepreneurial dimension of public managers' behaviour is highly connected with the extension to which they are able to take risks with an opportunistic bias toward action in order to overcome the bureaucratic and political obstacles their innovations usually face (Kearney *et al.*, 2007). In order to reveal determinative characteristics of the entrepreneurial mindset adjustment at public organisations, we seek to consider public managers as entrepreneurs in the public context.

The Cohen and Musson's (2000) interpretation of "entrepreneurs" as those individuals who are able to generate innovative ideas and suggest unpredictable solutions "*often in the spaces between formal organisational structures and protocols*" is reconcilable with the concept of public entrepreneurs presented in the scientific literature and quite precisely depicts the environmental peculiarities of public managers operations. According to the approach introduced by Currie *et al.*, (2008), the public sector entrepreneur is considered in three-dimensional space: "political agent", "stakeholder agent", "entrepreneurial agent" and is defined by its combinations. It also finds reflection within the framework suggested in this research. The ability to direct employees entrepreneurial orientation align with the mission of the organisation; to mitigate pressure with respect to the ambiguity of the stakeholders' interests, arising in the process of the relationship between the internal and external environment; to provide awareness that opportunities could be identified by individuals operating at all levels of the organizational hierarchy are vital cognitive implications of the pointed determinants of the formation of entrepreneurial mindset among public managers.

Moreover, we state that these determinants (the entrepreneurial leadership, self-awareness and knowledge mediation) are congruent to the corresponding determinants among public employees and considered as proxies for enabling environment of the employees' intrapreneurial mindset formation. For instance, the main cognitive implication of the entrepreneurial leadership in the public sector domain is not only to provide the supportive

context for public employees' entrepreneurial orientation, but also to set up an appropriate direction for employees' "entrepreneurial" efforts (efforts allocation) with respect to the current tasks of the public organisation. By determining the set of innovation projects or activities of primary interest for public organisation within a particular period, public managers are able to encourage the process of pursuing new opportunities within a distinct area of innovation.

In a similar vein, knowledge intermediation is able to keep under control the employees' entrepreneurial judgment, adjusting the level of acceptable risk and providing a high level of clarity on the following issues: what should be considered as entrepreneurial opportunities within innovation process; what can be considered as innovation and what kind of results are expected (e.g. what kind of effects from the innovations implementation are expected). Consequently, it provides an impact on such an element of the public employees' innovation self-efficacy as clarity of expectancy within risk culture development (awareness of the consequences of action) (Wakkee *et al.*, 2010; Bysted and Hansen, 2015).

In its turn, knowledge intermediation, which is aimed to show that opportunities could be identified by individuals operating at all levels of the organizational hierarchy (Currie *et al.*, 2008), at the same time influences on the self-efficacy (providing a higher level of perceived job autonomy and encouragement of initiatives) of the public employees and self-awareness of the public managers as entrepreneurs. Conducting the survey on public sector entrepreneurship in Sri Lanka from the standpoint of officials' entrepreneurial behaviour, Fernando (2016) highlighted that the "motivation to achieve" is one of the key elements for the development of the efficient public management system. In addition, Zampetakis and Moustakis (2007), introducing the definition of a public entrepreneur as a person employed in the public sector with an ability to create an energetic working environment, underlined ability to provide changes, performing a set of activities and practices, which is aimed at increasing quality services for the citizen. In such a way, we assert that fundamental orientation onto the creation of the public value in a new creative pro-active and innovative way (Moore, 1995) driven by non-economic motives is an integral part of the public managers' entrepreneurial mindset.

Thereby, we claim that all determinants are not only interdependent within one particular organisational level, in addition, they provide a high degree of the intergroup interactions. Proceeding from this premise, the theoretical exploration of the public organisations' entrepreneurial mindset construct is comprised of the interaction effects between the public employees' intrapreneurial mindset adjustment and public managers' entrepreneurial mindset directly. These two key components include mechanisms of the interaction with the external environment of public organisations: the intrapreneurial mindset precepts the feedback from the consumers, reflecting the public relations (e.g. with citizens); on the other hand, public managers' entrepreneurial mindset covers the relationship with the stakeholders, governmental structures and other policy agents, performing the role of the interests mediators. Based on the reasoning mentioned above, we intend to specify PROPOSITION 2 and introduce the generalized framework of the entrepreneurial mindset formation in public context as an effective toolkit to enhance innovation activity (see Fig. 1).

PROPOSITION 2. The higher level of the public managers' entrepreneurial mindset (composed by entrepreneurial leadership, self-awareness and knowledge intermediation) adjustment to the public organisations' managerial system the more likely opportunities to be engaged in innovation activity will be enacted in the public sector domain.

It worth to highlight the fact that up to now the consideration of the entrepreneurial behaviour displays by the public sector managers was tied up with the discussion of the plausibility of the incorporation of the corporate entrepreneurship models developed in the private sector into the public one. The key definitions of the corporate entrepreneurship concept in public sector context are presented in Table 2.

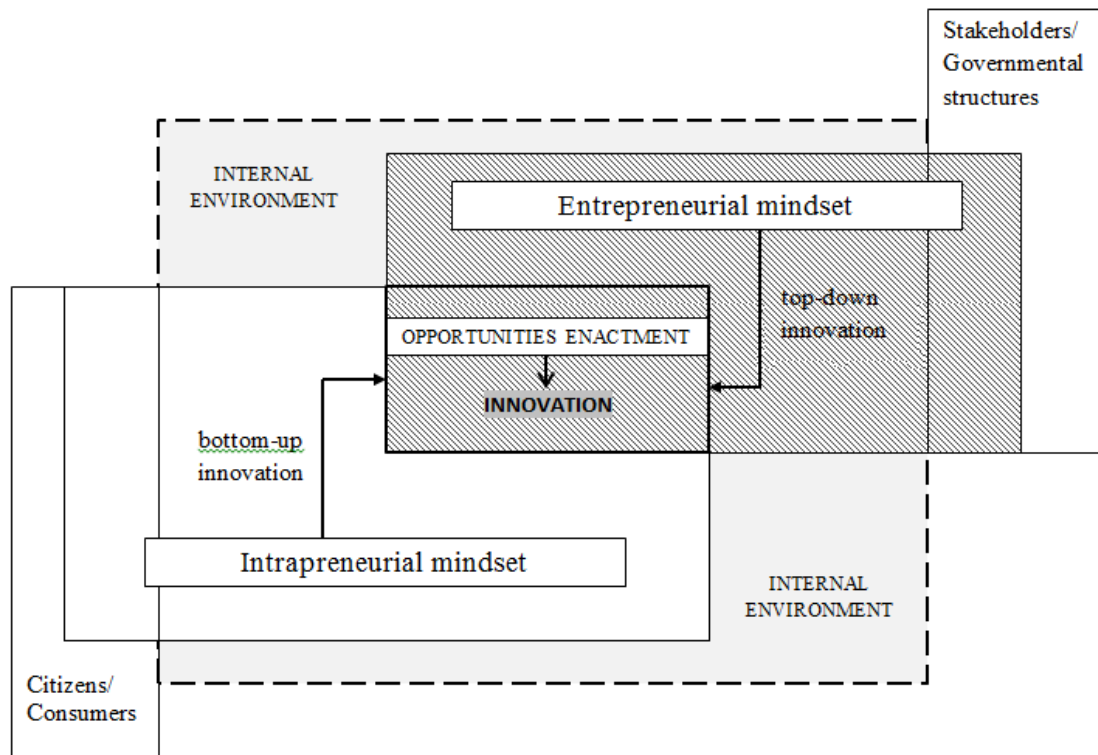


Fig. 1 – Framework of the entrepreneurial mindset formation

The basic findings on this issue could be generalized by the following statement:

...engendering corporate entrepreneurship and innovation in the public sector is realistic and feasible provided it has organizational and top management support and commitment, with an appropriate more organic structure, low formalization, more flexible decentralized decision making, less formal control systems, more positive rewards and greater degree of motivation and a flexible supporting culture that facilitates moderate risk taking and encourages proactivity... (Kearney *et al.*, 2007).

The results, derived from the concepts review, revealed that each of them emphasized the presence of the correlation between the fostering of the innovative activities of public sector organisations and opportunity-seeking process. Another important issue is that these processes are mission-oriented, i.e. aimed to achieve increased efficiency and effectiveness: providing development of new and existing services, technology, administrative techniques (Kearney *et al.*, 2007), helping to facilitate increased education and involvement of citizens (Morris and Kuratko, 2002).

However, the logic within the considered surveys regards the presence of innovation as one of the necessary factors to define the public organization as being entrepreneurial (Kearney, *et al.*, 2007). On the contrary, we state that causal relationships should be considered in the opposite direction as an entrepreneurial activity within the public domain is mission-oriented behaviour at both organizational and individual-level (i.e. aimed at innovation which will increase the efficiency of the organizational performance) (Covin and Slevin, 1991). Hereby, in order to conceptualize the determinants of the entrepreneurial behaviour within the public sector domain, it is reasonable to apply the “entrepreneurial mindset” category which is much more precise to reflect the cognitive processes within the public organisations, while entrepreneurial effectiveness can be measured in terms of organizational performance, e.g. innovativeness level.

PROPOSITION 2A. *The introduction of public managers’ entrepreneurial mindset is conducive condition for the public employees’ intrapreneurial mindset development and necessary and sufficient*

condition for the entrepreneurial mindset adjustment within public sector organisations, which directly support a top-down strategy to innovate and indirectly provides supportive context for the bottom-up once.

Table 2. The concepts of corporate entrepreneurship in the public context

Concept	Definition	Author
Public sector corporate entrepreneurship <i>as an organizational ability</i>	The ability of the public sector organisations to encourage their employees to behave entrepreneurially by searching for new opportunities and exploiting them through the available organisational resources.	Nzilano (2016)
Public sector corporate entrepreneurship <i>as an particular kind of entrepreneurship</i>	Entrepreneurship within existing public organisations which result in innovative activities, such as the development of new and improving of the existing services, technology, administrative techniques, and new improved services.	Kearney <i>et al.</i> , (2007)
Public sector corporate entrepreneurship <i>as a process</i>	A deliberate search for innovative change, generation of new revenue sources, and provision of enhanced services through the involvement of citizens, and on-going innovations to achieve increased efficiency and effectiveness.	Luke <i>et al.</i> , (2010)
Public sector corporate entrepreneurship <i>as an specific approach to administrative responsibility</i>	An active approach to administrative responsibility that include generating new sources of revenues, providing enhanced services and helping to facilitate increased education and involvement of citizens.	Morris & Kuratko (2002)

3 – Public managers as opportunities enactors

In essence, consideration of the entrepreneurship mindset adjustment within public organisations should be performed from the standpoint of the Baumol's (1990) 'productive' entrepreneurship' (entrepreneurship, which is aimed at the pursuing of the opportunities that advance production and social well-being). Hence, the discovering of the mentioned phenomenon in terms of its impact on the innovation activity in public context cannot be completed without disclosure of the cognitive interrelation between entrepreneurial mindset development and the opportunities-seeking and enactment processes. Prior findings state that organizational structures and strategies within the public domain need to be organised in order to stimulate entrepreneurial activities and culture through opportunity-driven management (Kim, 2010; Osborne and Brown, 2013).

If opportunities are not addressed internally, someone else will address them externally, and the organization will eventually become obsolete Peter Drucker (2009).

In this context, the nature of these opportunities acquires great importance. Ramoglou and Tsang, (2016) define opportunities "... as *unactualized propensities...*" which implies that subjectivities of opportunity actualization do not contradict the objective existence of opportunities and, also, explains whereby individuals might have cognitive contact with opportunities prior to their actualization (Ramoglou and Zyglidopoulos, 2015). In this respect, an adaptation of the intrapreneurial mindset of public sector employees as part of the entrepreneurial mindset a is an endeavour aimed at the actualization of a pre-existing opportunity, providing enabling environment for the opportunities perception by public

employees. Public managers' entrepreneurial mindset acts as an instrument to set up the contextual positions for the boundaries of the opportunity pre-existence space.

According to Curries' approach (Currie *et al.*, 2008), the cognitive displays of the entrepreneurial behaviour within public organisations covers:

- (i) identification of the opportunities within the political landscape;
- (ii) optimization of the performance-enhancing potential of innovation for the public sector organization;
- (iii) ability to carry the stakeholders interests in a way that at the same time to permit risk and recognize the stewardship of public sector resources.

As mitigation of the tension between opportunities exploration and exploitation at the individual level is a cognitive implication of the public managers' self-awareness in the frame of entrepreneurial mindset adjustment processes, consequently "*the ability to carry the stakeholders' interests*" is a derived function, which is to be performed by public managers in order to control the process of opportunities objectification.

Follows the Wood and McKinley's (2017) concept, which states that process of the opportunity de-objectification is triggered by the erosion of consensus among a venture's stakeholders about the viability of the opportunity, we deem that public managers act as mediators between stakeholders (arguing that governmental structures are considered to be stakeholders) and public sector employees. It is states that

... if stakeholder consensus about opportunity viability is disrupted, it begins to 'destroy' the objectivity of the opportunity, as the entrepreneur starts to attribute the opportunity to his/her internal psychological states rather than an objective phenomenon" (Wood and McKinley's (2017, p.19)

which reflects opportunity de-objectification process. The category "opportunity de-objectification" was considered in accordance with definition developed by Wood and McKinley's (2017), i.e. as a shift in the entrepreneur's modality of consciousness such that he/she begins to attribute sense data about the opportunity to internal psychological states rather than to an external phenomenon. The opportunity previously externalized as reality becomes increasingly subjective.

Public managers, being environmentally-oriented within the framework of the entrepreneurial mindset development, are specific agents who are able to maintain consensus about opportunity viability among stakeholders. Moreover, they are able to react proactively to the de-objectification, providing in such a way the continual reproducing of the opportunities (e.g. mitigating the tension between financial and non-financial stakeholders' interests within innovation activity). Therefore, the absence of the mechanisms of the entrepreneurial mindset incorporation leads to the fostering of the opportunity de-objectification as it disregards an effective instrument of the de-objectification resistance and maintenance of the enacted opportunities' viability. Based on this reasoning, we suggest a third PROPOSITION:

PROPOSITION 3. The greater level of the self-awareness is demonstrated by public managers, the higher capacity to propagate opportunity and to maintain consensus about opportunity viability in the face of the de-objectification processes is displayed by public sector organisations.

Despite the significance of the opportunity concept within the theory of entrepreneurship, this phenomenon remains undisclosed in the public context. The entrepreneurial mindset adjustment in a public context, supporting the viability of opportunities, allows taking advantage of opportunity-seeking processes, at the same time, overcoming the intrinsic barriers to be engaged in innovation activity. Based on the causality mentioned above, we seek to articulate the closing PROPOSITION:

PROPOSITION 4. *The cognitive processes of entrepreneurial mindset adjustment to the public sector environment constitute a conducive condition for increasing the likelihood of innovative activity of public sector organisations.*

4 – Discussion and future research suggestions

In their recommendations Currie *et al.*, (2008) called for future studies to subject the multi-agency view of the public sector entrepreneur to further empirical scrutiny in the public domain, using a variety of methodological approaches. Subsequent findings presented by Clark (2016) and Kearney and Meynhardt (2016) have provided further insights into the “entrepreneurial” public sector consideration by introducing concepts of the corporate entrepreneurship strategy in a public context. The issues connected with the entrepreneurial mindset adjustment in public organisations emerge within our review as a leverage mechanism on the innovativeness of public organisations. Despite the unrealistic perspective of full integration of the corporate entrepreneurship in the public sector, it is apparent that there are huge advantages that the public organisations could derive from having an entrepreneurial and innovative culture (Kearney and Meynhardt, 2016). Taking into consideration the heterogeneous nature of the public domain, organisational systems are meant to be used as a common system across government institutions to provide common standards, rules, and procedures, with a view to reducing the risks of mismanagement of public resources (Chêne, 2009). Based on this logic entrepreneurial mindset adjustment within the public organization is considered to be the incorporated toolkit for the organizational performance efficiency improvement in terms of innovation activity.

In this article, we intend to reconsider the causality which links the entrepreneurial mindset adjustment and likelihood to be engaged in innovation activity in a public context. The importance of the fostering the internal cognitive processes to improve organisation performance of the public sector, in particular, increase its innovativeness is predicated by the experiencing the external pressure of the continuous service improvement. Based on the statement that being entrepreneurial does not necessarily mean being innovative and entrepreneurial orientation of some organisations or individuals may not necessarily mean being innovative (Drucker, 1985), we employ the confines conceptualising the entrepreneurial mindset in public context with the emphasis on the mission-oriented nature of the opportunity-seeking process (i.e. aimed at innovation) as the main attribute of the entrepreneurial behaviour. Introducing the framework of the public organisations' entrepreneurial mindset as a framework of the favourable environment formation, which provides conducive conditions to innovate, we distinguish its determinants with corresponding implication at two different managerial levels: intrapreneurial mindset formation among public employees and public managers' entrepreneurial mindset development.

This paper contributes to the current discussion on the objective status of the entrepreneurship within the public sector. Exploring this phenomenon, we articulated PROPOSITIONS which reflect cognitive processes that accompany entrepreneurial behaviour within a public context with respect to a reversed causal relationship in terms of its impact on the likelihood to innovate. Further testing of the PROPOSITION introduced could shed the light on both: (i) conceptual framework that should be employed to guide the measurement of public sector innovation and (ii) working out the reliable indicators appropriate for the deep empirical research. Succeeding experimental designs should include variables that reflect actual entrepreneurial or innovative behaviour (Zampetakis *et al.*, 2009).

Now, we seek to provide some key clues for testing of the introduced PROPOSITIONS, considering the limitations and highlighting the agenda for future research. The main limitation inherent for the research is the necessity to rely on self-reported and cross-sectional data.

Despite the fact that, in terms of the cognitive process discovering, these kinds of data are sufficiently reflective, more research is needed to improve the generalizability of the qualitative research to provide possibilities of transferring of the results gained into other settings (e.g. generalization of the entrepreneurial behaviour indicators with respect to its impact on the likelihood to innovate in the public domain).

PROPOSITION 1 and 2 with its extensions rely on the interrelated and interdependent antecedents within the managerial system of the public organisations. Taking into consideration the causality such as that described in the preceding section, one could develop semi-structured interviews in order to identify the independent variables that represent a correlation of the cognitive processes experienced by individuals employed in the public sector within intrapreneurial and entrepreneurial mindset foundation.

However, one of the main obstacles that were not considered in this research is the impact of those employees who value stability rather than change. It covers such kind of situations when employees have considerable professional power; they may block changes (Currie *et al.*, 2008). Hence, along with the concept of the intrapreneurial mindset formation, it is reasonable to consider mechanisms of the employees' resistance, working out the indicators of the employees' attitudes toward changes and how it may affect the public managers' behaviour. As professional experience might be deterministic factor with this respect, the impact of the managers' turnover on the entrepreneurial mindset formation should be also evaluated. The issue of clear comprehension of the innovation concept and justifiable level of risk-taking in the public sector remains quite arguable and challenging within academic literature. According to Arundel and Huber (2013), the branch managers did not dismiss the role of higher levels in the public sector hierarchy in innovation and often actively welcomed it, solving the problem of taking responsibility.

Another avenue for the future research is the investigation of the processes adopted for securing public support of the values and targets of the changes provided (e.g. entrepreneurial mindset public organisational adjustment as a part of the improvement of the innovation policy in the public context). For instance, due to the last findings on the conducive conditions formation analysis budget cuts do not affect the likelihood of innovative activity (Demircioglu and Audretsch, 2017). However, in particular, settings, where entrepreneurial mindset formation is considered as supportive context for the enactment of the conducive conditions, require more studies in order to determine the effects of budget changes on innovation in the public sector.

As PROPOSITION 3 raises concerns connected to the processes of the opportunity-seeking to innovate, applying entrepreneurial mindset in the public sector, its testing should cover indicators of public managers' pro-activity as an essential attribute of the opportunities enactment. Such processes might require a more entrepreneurial response with respect to the providing viability of the opportunities. One might also include items such as "*What kind of factors inherent for the public organisation is able to undercut consensus deeply enough to cause opportunity erosion?*", "*To what extent do you attribute the innovative resource exploitation to the successful opportunity maintenance by public managers?*", etc. Reflecting cognitive processes that underpin the endogenous nature of the opportunity, the research is still incomplete without taking into consideration exploitation of the opportunities to be enrolled in the external innovation projects as well as its role of the entrepreneurial approach in its pursuing. New findings with this respect is able to shed light on the way how do organisations successfully overcome conflicting obstacles to pursue opportunities which ends up with innovation.

PROPOSITION 4 is aimed to generalize the concept of the entrepreneurial mindset adjustment with respect to the innovation activity in a public context. Therefore, its testing implying support, in case of justifying previous PROPOSITIONS and its extensions, and rejection, in case of causality violation at least of the one of them. From the very beginning, we stated that the framework of the entrepreneurial mindset adjustment in public organisations would be

considered regardless of institutional differences within the sector (e.g. type of service delivered, ownership, etc.). Nevertheless, subsectors in public context are quite different with respect to its innovative potential, therefore, to the tense of correlation of the entrepreneurial mindset adjustment and the likelihood to innovate.

Some areas of the public sector look more like parts of the private sector than other parts of the public sector. We, therefore, need to understand the explanations of sector differences: what are due to sector effects and what are due to subsector/industry effects (Bysted, 2013).

Highlighting that the differences between the subsectors within the public sector are more influential than the differences between sectors, we affirm very important avenue for future investigations. In order to test the sensibility of the impact on the likelihood to innovate of the “entrepreneurial” approach, it is reasonable to focus on the role of subsectors/industries and its specialisation. Future investigators could explore such research avenues, and we anticipate that the results would contribute to both: a better understanding of the entrepreneurship within the public sector and working out efficient innovation policy for public organisations. Consequently, promising area of research could be depicted by the following item: *“To what extent have different institutional frameworks and contexts legitimate the entrepreneurial mindset adjustment in order to improve innovative activity in the public domain?”* In addition, we encourage cross-country analysis within the phenomenon mentioned above.

In spite of the limitations mentioned, the conceptualisation, presented in this article, revealed new insights on the legitimation of the entrepreneurial mindset formation within public organisations. It, consequently, contributes to the theory of entrepreneurship and organizational theory, providing new research angle of consideration, supporting evidence for the construct validity of the entrepreneurial behaviour (Zampetakis *et al.*, 2009). In turn, the overall implication from the empirical lens is considered as an elaboration of new facilitating toolkit for the effective innovation strategy development in the public sector.

5 – Conclusion

Based on the literature review, this paper introduced the framework of the entrepreneurial mindset adjustment in public context associated with the formation of the conducive conditions to innovate. Our research provides an important clue to advance understanding of the entrepreneurial behaviour displays within public organisations, providing some insights on the assessment of the legitimacy and reasoning of the phenomenon mentioned. Applying reverse causality (in comparison with the previous research logic), we argue that cognitive processes of entrepreneurial mindset formation in the public sector provide an enabling environment to foster innovative activity. Further, our framework suggests that these processes embrace public employees’ intrapreneurial mindset development within the adjustment of the public managers’ entrepreneurial one. In addition, we hope to stimulate further research that will shed light on the public organizations’ capacity to propagate opportunities to overcome the inherent barriers to innovation activity. Finally, we state that advancing the concept of opportunities in the public domain could deepen insights for both theory and practice of the public sector entrepreneurship and innovation.

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