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INNOVATIVENESS AS A DETERMINANT OF SHAPING DYNAMIC CAPABILITIES IN THE REGIONAL EDUCATION AUTHORITY IN KRAKOW

INNOWACYJNOŚĆ DETERMINANTĄ KSZTAŁTOWANIA ZDOLNOŚCI DYNAMICZNYCH
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Abstract

The article analyses innovation at the Regional Education Authority in Krakow and its delegations, focussing on improving internal processes, organisational, and communication. A survey (CAWI) was conducted among 101 employees from the central office and regional delegations. The results indicate that digital solutions are crucial to innovation. Statistically significant differences were found in the implementation of employee incentives and digital support for work organisation between the central office and the regional branches. The need for technological and cultural integration to build dynamic capabilities was highlighted.

Streszczenie

Cel artykułu stanowi ocena poziomu innowacyjności w Kuratorium Oświaty w Krakowie i jego delegaturach w: Nowym Sączu, Nowym Targu, Tarnowie i Wadowicach w perspektywie budowania odporności organizacji przez pryzmat oceny doskonalenia procesów wewnętrznych, organizacji pracy oraz komunikacji. Badanie ankietowe (CAWI) przeprowadzono wśród 101 pracowników centrali Kuratorium Oświaty w Krakowie oraz czterech delegatur. Wyniki wskazują, że rozwiązania cyfrowe są kluczowe dla innowacyjności. Stwierdzono statystycznie istotne różnice w implementacji zachęt dla pracowników i cyfrowego wspomagania organizacji pracy między centralą a delegaturami. Podkreślono potrzebę integracji technologicznej i kulturowej dla budowania zdolności dynamicznych.

INTRODUCTION

Although the literature on the dynamic capabilities of the company is extensive [Eisenhardt, Martin, 2000; Teece, 2007], little attention has been paid to the role of organisational capacity and resources in the public sector [Panagiotopoulos et al., 2023]. Over the years, the dominant approach has been that the public sector was obliged to strive for efficiency comparable to that of the private sector [Dunleavy, 2005]. This thinking was popularized in the 1980s with the development of New Public Management (NPM), which introduced economic approaches (e.g., quasi-markets, transaction cost economics, agency theory) and general management theory to public organizations [Hood, 1991]. However, this approach, which focuses on static effectiveness and fixing inefficiencies in public policies, does not justify investing in organisational capabilities focused on creating public value [Mazzucato, 2018].

Referring to the concept of dynamic capabilities can be a response to the need for adaptation of the public sector to the changing expectations of the environment, as it assumes that organisations must regulate learning processes and changes in order to effectively adapt their capabilities to new situations and keep up with the pace of development of the environment. Dynamic capabilities can provide organisational capacity for systemic troubleshooting, resulting from the conscious reading of signals from the environment to ensure the right direction of operation and development of public organisations. These are organisational and strategic routines that allow you to develop new resource configurations [Eisenhardt & Martin, 2000]. Public organizations are not able to carry out their tasks, create public value and respond effectively to changes in the environment without due care for resources, understood as a set of assets, skills, competences, processes, characteristics, information, knowledge and many other elements that enable the implementation of strategies aimed at efficiency [Barney, 2001].

Public sector organisations were established to meet specific social needs, that is, to create public value. However, these needs must be met with limited access to external resources, which results from the permanent increase in public spending pressure to use public funds efficiently instead of increasing them [Ferlie et al., 2015]. Additionally, growing pressure from citizens more effective solving of social problems and increased criticism of public authorities [Kożuch, 2004] make it necessary for public organisations to focus on their own internal resources and potential sources of knowledge [Hawrysz, 2018].

One of the ways to solve the articulated problems is the pursuit of innovation by public sector organisations, which is a response to dynamically changing problems and the needs of an increasingly diverse group of stakeholders.

This article aims to evaluate innovative solutions introduced in the Regional Education Authority in Krakow and its delegations on the levels of solutions in the field of improving internal processes, work organisation, information and communication with both stakeholders and employees. In addition, organisational solutions that encourage employees to submit innovative ideas, financing dedicated to the development and implementation of innovations, and the functioning of project teams were evaluated. The basis for the verification of the formulated research hypotheses and the purpose of the study is the use of a literature review of the subject and survey research carried out in the Regional Education Authority in Krakow and delegations.

THE CONCEPT OF DYNAMIC ORGANISATIONAL CAPABILITIES

The concept of dynamic capabilities made the changes taking place in the organisation and its environment the main subject of its interest. The concept of dynamic capabilities focuses on the processes of change that occur both inside the organisation and in its environment. Its genesis should be sought in

various currents of management theory, in particular in behavioural management school [Cyert, March, 1963], which drew attention to the complexity of organisational change processes, their conditioning by previous experience, and limited decision-making rationality. The concept of dynamic capabilities shifts the focus from the mere possession and use of strategic resources to the ability to modify, integrate, and reconfigure them in response to changing environmental conditions [Mitrega, 2017].

D. Teece [2007] dynamic capabilities are understood as high-level competencies that determine the company's ability to integrate, build, and reconfigure internal and external resources and competencies in response to a rapidly changing business environment. Teece et al. [1997] emphasise that the term "dynamic" reflects the ability of an organisation to renew its competencies in order to achieve compliance with the changing business environment. However, the term "capabilities" emphasises the key role of strategic management in properly adapting, integrating, and reconfiguring internal and external skills, resources, and functional competencies to achieve compliance with the requirements of this environment. Eisenhardt and Martin [2000] identify dynamic abilities with the company's processes that use resources, especially the processes of integrating, reconfiguring, acquiring and releasing resources in order to adapt the company to market changes and even trigger them. Thus, dynamic capabilities are the organisational and strategic routines through which companies create new configurations of resources as markets emerge, merge, split, grow, and disappear. An important element of the dynamic capabilities of the company are organisational routines defined as repetitive patterns of conduct, characteristic of groups of employees performing organisational tasks. These are the practical abilities of repeating the same combination of activities in certain circumstances, developed by the organisation under the influence of specific factors. This means that organizational routines are not one, but a whole set of possible patterns of conduct, conditioned by organizational, social, physical and cognitive structures, thanks to which employees know what specific activities to perform [Jashapara, 2004].

It should be emphasised that dynamic organisational capabilities evolve in response to changing environmental conditions. Organisations not only acquire new competencies, but also refine and enhance existing ones. The value of dynamic capabilities is not fixed; rather, it varies over time and is contingent upon contextual factors. Changes in the external environment can both strengthen and diminish the relevance of specific capabilities, influencing them collectively or altering selected components. Scholars identify among the core elements of dynamic capabilities organisational processes oriented toward learning and innovation, together with fundamental approaches to structuring operations and decision-making frameworks that guide and coordinate organisational choices [Teece et al., 1997].

Although the concept of dynamic abilities was originally developed and used in the private sector, in recent years it has been increasingly used in public sector organisations [Ferlie et al., 2003]. With the evolution of public management theories over the past two decades, public sector organisations have adopted business-like patterns, making the use of dynamic capabilities more relevant [Rosenberg et al., 2016]. Proponents of the adaptation of this concept in public institutions see the causes of this phenomenon in the radical changes that take place in their operating environment. Researchers point to environmental turbulence as the main reason for the increasing interest in dynamics [Agarwal, Helfat, 2009]. P.G. Klein and others [2013] stress that public organisations are deprived of a feedback mechanism in the form of market signals (e.g. profits and losses) and are therefore particularly dependent on developed dynamic abilities. As a result, the capacity for renewal, appropriate ways of thinking and acting are becoming as necessary for the public sector as for the private sector. These researchers indicate that public sector managers manage public resources and should do so in a way that allows them to effectively adapt their organisational capabilities to new situations and changes in the environment. However, opponents of the use of the concept of dynamic capabilities in the public sector point to the limited influence of sector managers on the formulation of the strategy and on the fundamental assumptions of the concept of, which embeds the concept of dynamic capabilities, i.e. the

focus on competition and the role of the customer, although with the development of the new public governance the concept of competitiveness has been introduced into the public sector, but as Maj [2017] it is different from that of the private sector.

According to the premise formulated by Eisenhardt and Martin [2000] dynamic capabilities allow organisations to focus on the efficient use of resources, which can be an opportunity for the public sector to get things done efficiently by shifting the importance from owning and controlling resources to knowledge acquisition, which requires an active role of stakeholders, and cooperation with the environment strengthens the flexibility of the public organisation [Hawrysz, 2018]. The key to the success of public organisations in the opinion of Frączkiewicz-Wronki and Szymaniec [2012] identification and strengthening of strategic capabilities that create and sustainable maximum value for stakeholders at a reasonable cost, which translates into a competitive advantage in the public sector. As the researchers note, this is a significant challenge in the conditions of limited resources, growing social expectations, scepticism toward public institutions, and pressure to provide services at a level satisfactory to stakeholders.

In response to growing pressures, public institutions are increasingly seeking innovative solutions aimed at enhancing their effectiveness [Bekkers, Tummers, 2018; Vivona, 2024]. Research shows that innovation is essential in the public sector to address complex and multidimensional challenges for which traditional approaches are insufficient [Corydon et al., 2017]. In this context, the development of dynamic capabilities, namely the ability to interpret a changing environment, to seek innovative solutions, and to implement sustainable transformations—emerges as a key factor for public institutions striving to maintain both effectiveness and flexibility in their operations [Schoemaker et al., 2018].

SPECIFICS AND DETERMINANTS OF PUBLIC SECTOR INNOVATION

In a dynamically changing environment, the importance of the level of innovation of an organisation increases in the face of increasing social requirements. Innovation is a key element of growth and adaptation for any organisation, but the reasons for investing in innovation can vary from sector to sector and industry to industry. In the public sector, the development of innovation is mainly driven by the desire to create public value and improve the quality of services provided to citizens, which puts them in visible contrast to the private sector, where innovation is driven mainly by the desire to maximize profit and by the pressure of competition [Sinurat et al., 2023].

Innovation in the public sector can be defined as the implementation of a new (or significantly improved) product (including a good or service), process, implementation of a new management method or concept, or improvement of relations with stakeholders [Criado et al., 2025]. The public context often forces innovative processes that adopt an evolutionary approach to the services provided, e.g. by streamlining internal processes, modifying organizational structures or the development of new policies and programmes to respond to growing and complex societal challenges [Criado et al., 2025; Sinurat et al., 2023]. In the literature on the subject, the literature identifies four main types of innovation, which include: product, process, organisational, and marketing innovations [Criado et al., 2025; Duygan et al., 2023; OECD & Eurostat, 2018; Sinurat et al., 2023]. The uniqueness of innovation in the public area is the result of several important factors. Firstly, organisations of this type are usually characterised by a high level of bureaucratisation, complex decision-making processes resulting from legal regulations, and greater resistance to change than in the private sector [Cinar et al., 2019]. Second, it can be noted that the objectives of implementing innovative processes are more orientated toward the public good but do not have a profit-generating component. This perspective is essential in the context of assessing the success of implementing innovation. Third, innovations in this sector are characterised by a high level of cooperation with stakeholders, including employees of offices, citizens, NGOs, other

public entities, or the private sector. It should also be noted that the mere desire to innovate, even if it is widely accepted among stakeholders, is not enough if it is not in line with state policy. All of these aspects lead to the development of open and collaborative innovations in the public area [Kharazmi, Dartoomi, 2023; Palumbo et al., 2023]. It can be pointed out that theoretical models that illustrate the conditions and specificity of innovative activities in the public sector draw from many sources, such as the theory of information diffusion, the theory of transaction costs, or institutional theory. This comprehensive view of the analysed issue allowed for the creation of an analytical framework covering the types, strategies, conditions and outcomes of innovation [Criado et al., 2025; De Coninck et al., 2023; de Vries et al., 2018; Duygan et al., 2023].

The analysis of the literature on the subject allows one to determine a number of factors directly related to the level of innovation in the public sector. First of all, attention should be paid to the determinants in the organizational and management area, where the key role will be played by an organizational culture focused on innovation, openness to the implementation of innovative solutions and readiness to take risks [Duygan et al., 2023]. Another element in this area will be leadership, which by supporting commitment and setting appropriate strategic goals can support the development of innovation in a public organisation [Liarte et al., 2025; Lopes & Farias, 2022]. Researchers indicate that in the same area, human resources, organizational structure, access to financing, internal mechanisms of learning and coordination, and pro-innovative beliefs of managers play a huge role [Criado et al., 2025; Duygan et al., 2023; Kusumasari et al., 2019]. Another area determining the level of innovation of public organisations is environmental and institutional factors. In this context, the importance of innovations driven by the demand of citizens for new or improved services (demand-pull innovations) is indicated, which are a very strong stimulus for innovation in the public sector [Hong et al., 2022]. The political environment is of particular importance to public organisations, and the electoral motivations of local politicians can directly or indirectly favour the implementation of innovative solutions in offices. Hong and his colleagues [2022] also points to the importance of isomorphic pressure, which it describes as the willingness of neighbouring public organisations to emulate innovative practices. The impact of the effectiveness of public governance, the quality of regulation, national innovation capacity and the cultural dimension (e.g. avoiding uncertainty), which are linked to innovation patterns in European countries, are also mentioned in this area [Natário, Couto, 2021]. The third area, which is a separate and equally important category of determinants today, is digital innovation. The adoption, implementation and promotion of modern digital technologies, such as big data, artificial intelligence (AI), or the Internet of Things (IoT) are crucial to the transformation and development of public services. Duygan's research [2023], which in its work was based on Rogers' theory of diffusion of innovation, indicate that the perceived attributes of innovation (such as its relative convenience and compatibility) are the main determinants of positive attitudes and expectations of managers of public institutions towards the implementation of new digital solutions. Another area indicated by the authors is cooperation and open innovation (OI). Public support is an indispensable factor, without which it is difficult to imagine the development of innovation in the public sector. Position of public institutions at the interface of public administration, science, and business (triple helix model) is a factor positively influencing the possibilities of implementing open innovations [Jugend et al., 2020]. From this perspective, resource-based rationale, institutional pressures, and transaction costs are also factors determining the adoption of open innovation models in public organisations [De Coninck et al., 2023].

RESEARCH METHODOLOGY

An important premise of the present study, particularly relevant in the context of seeking innovative solutions in response to the changing needs and expectations of stakeholders, is the digital transformation of the public sector. Digital transformation in public sector organisations is understood as the process of implementing government innovations supported by information and communication technologies (ICT), which redefines internal processes, organisational structures, management systems, service delivery models, regulatory frameworks, and relationships both across levels of government and between public and private actors [Liva et al., 2020]. The objectives of digital transformation in the public sector include improving service delivery, improving efficiency and accessibility for citizens, and increasing public value generated through collaboration and stakeholder engagement [Gasco-Hernandez et al., 2022]. Wodecka-Hyjek et al. [2024] indicate that public sector institutions, such as the Regional Education Authority in Krakow, function as digitally innovative entities that, in response to ongoing digitalisation, adapt their offerings to stakeholder needs by implementing innovative digital solutions in areas including task execution, process optimisation, information and communication, and work organisation. Widianto et al. [2021] demonstrate that the capacity for organisational change serves as a critical link, transforming managerial skills into measurable performance improvements. Panagiotopoulos et. al [2023] show that ICT positively supports the development of sensing, seizing, and transforming capabilities within governmental units. Castelo and Gomes [2023] investigate how dynamic capabilities mediate the relationship between management systems and performance measurement in public administration.

Based on the results of literature research, a set of the most commonly used solutions to support innovation in institutions dealing with education management has been determined in Poland. The conducted analysis constitutes an extension and continuation of the research carried out by the authors [Wodecka-Hyjek et al., 2024]. This collection includes:

- digital solutions for improving tasks carried out for stakeholders,
- digital solutions for the improvement of internal processes,
- digital solutions to improve work organisation,
- digital solutions in the field of information and communication methods with both stakeholders and employees,
- organisational solutions encouraging employees to submit innovative ideas
- financial resources dedicated to the development and implementation of innovations.
- functioning of project teams dedicated to the implementation of innovations.

The survey was conducted from 18 to 25 September 2024 using the survey technique (CAWI). 101 of 165 employees employed at the Regional Education Authority in Krakow participated in it. The group of respondents included 55 people employed at the Regional Education Authority in Krakow and 46 people representing its delegations in the following: Nowy Sącz, Nowy Targ, Tarnów and Wadowice.

The analysis of the literature on the subject allowed the formulation of the following research hypotheses.

H1. There are statistically significant differences in the level of implementation of solutions supporting innovation in the Regional Education Authority in Krakow and its delegations.

H2. Digital solutions are the most important among the solutions that support innovation in the Regional Education Authority in Krakow and its delegations.

To verify the H1 and H2 hypotheses, the following questions from the research survey were used:

- INN-1 – Have innovative solutions in the field of digital support for process improvement (e.g., new forms of service delivery, computerisation of service implementation processes, new

management support systems, etc.) been implemented in the Regional Education Authority in Krakow and its delegations)?

- INN-2 – Has the Regional Education Authority in Krakow and its delegations implemented innovative solutions in the field of digital support for the process of improving the services provided (e.g., new services for the population, business, non-profit organisations, other public administration units; offering services to a new type of customers, offering services to a larger number of customers)?
- INN-3 – Has the Regional Education Authority in Krakow and its delegations implemented innovative solutions in the field of digital support for the process of improving information and communication methods (e.g., forms of consulting stakeholders, methods of influencing customer behaviour such as awareness campaigns, methods of promoting new services, etc.)?
- INN-4 – Have the Regional Education Authority in Krakow and its delegations implemented innovative solutions in the field of digital support for the process of improving the organisation of work (e.g., new methods of work, management; organisational changes aimed at increasing the level of quality of services and service)?
- INN-5 – Are there organisational solutions in the Regional Education Authority in Krakow and its delegations that encourage employees to submit innovations?
- INN-6 – Does the Regional Education Authority in Krakow and its delegations have financial resources dedicated to the development and implementation of innovations?
- INN-7 – Are project teams dedicated to the development and implementation of innovations established in the Regional Education Authority in Krakow and its delegations?

Respondents had the option of answering using a five-point Likert scale, where a score of 1 meant “definitely not” and a score of 5 meant “definitely yes”. The answers provided allowed us to examine the opinions of employees of both the Regional Education Authority in Krakow and its delegations on the main solutions that support the process of developing and implementing innovations. To perform a statistical analysis of the significance of the differences between the responses of the headquarters and the delegation employees (H1 hypothesis), the Mann-U test was used.

ANALYSIS OF THE SURVEY RESULTS

The purpose of the study was to evaluate the solutions used by the Regional Education Authority in Krakow and its delegations in the field of innovation stimulation. A separate block in the survey was devoted to the evaluation of solutions supporting innovation, including 7 questions (questions from INN-1 to INN-7). Each of the questions referred to a specific solution to support the process of developing and implementing innovative ideas. Assuming the possibility of a difference in the conditions in which the employees of the central unit of the Regional Education Authority in Krakow and its local delegations perform their duties, it was proposed to carry out the research in two separate groups of respondents defined as “employees of the headquarters” (55 people) and “employees of regional branches” (46 people). The results of the answers to the questions about the use of solutions supporting the process of creating innovations in the Regional Education Authority in Krakow are presented in Table 1.

Table 1. The level of implementation of solutions supporting innovation in the Regional Education Authority in Krakow according to the employees

Question symbol	Mean	Median	Minimum	Maximum	Standard deviation
INN-1	3.62	4.00	2.00	5.00	0.93
INN-2	3.16	3.00	1.00	5.00	1.18
INN-3	3.35	3.00	1.00	5.00	1.14
INN-4	3.36	3.00	2.00	5.00	1.01
INN-5	2.85	3.00	1.00	5.00	1.31
INN-6	2.89	3.00	1.00	5.00	1.10
INN-7	2.82	3.00	1.00	5.00	1.29

Source: own study

The data indicate that respondents who belong to the first of the surveyed groups rated the highest level of implementation of digital solutions. The level of implementation of solutions in the field of digital support for process improvement at the Kraków headquarters was rated the highest (mean score: 3.62). The level of implementation of solutions in the field of digital support for the process of improving the organisation of work (3.36) and solutions in the field of digital support for the process of improving information and communication methods (3.35) was evaluated at almost the same level. The last place among digital solutions was taken by those whose role is to support the process of improving the services provided by the Regional Education Authority in Krakow (3.16). The organisational solutions were relatively poorly assessed by the employees of the central unit of the Regional Education Authority in Krakow, and the mean score of each of them did not exceed the level of 2.9. In this respect, the institution's use of financial resources to support innovative activities was rated the highest (2.89), while the system of incentives for employees to propose innovations was slightly lower (2.85). The lowest score among the respondents was given to the solution consisting of creating teams dedicated to creating and implementing innovations (2.82).

The results of the same surveys carried out in the group of employees of the Regional Education Authority branch offices were slightly different (Table 2).

Table 2. The level of implementation of solutions supporting innovation in the Delegations of Regional Education Authority in Krakow according to the employees

Question symbol	Mean	Median	Minimum	Maximum	Standard deviation
INN-1	3.61	4.00	1.00	5.00	0.88
INN-2	3.24	3.00	1.00	5.00	0.87
INN-3	3.48	4.00	2.00	5.00	0.89
INN-4	3.87	4.00	3.00	5.00	0.69
INN-5	3.46	3.00	1.00	5.00	1.15
INN-6	2.83	3.00	1.00	4.00	0.90
INN-7	3.17	3.00	1.00	5.00	0.90

Source: own study

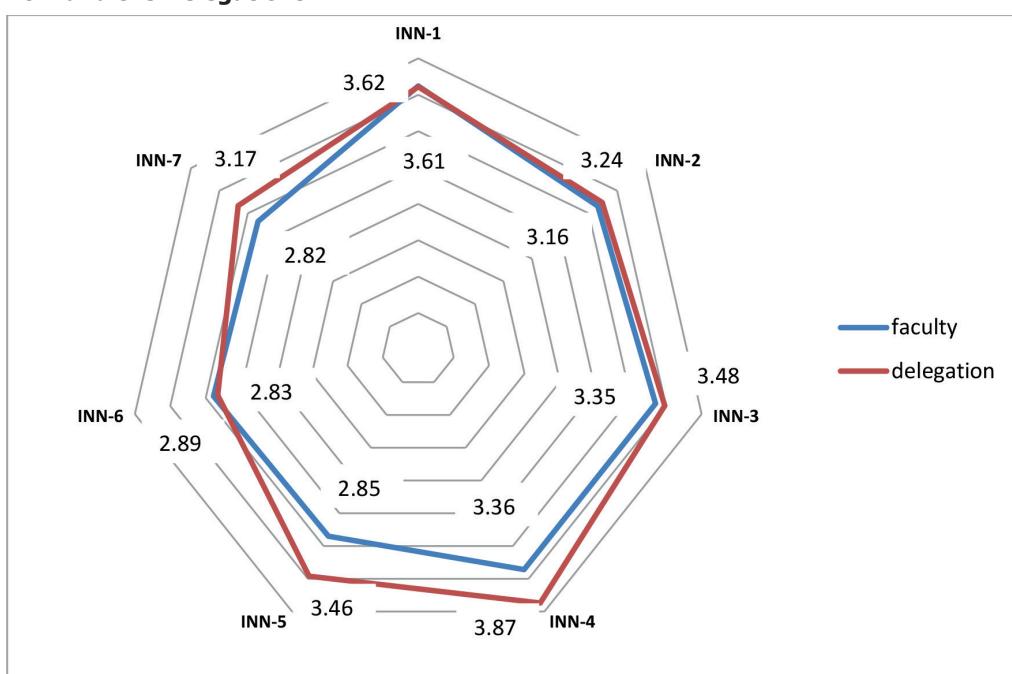
In this group of respondents, the priority of digital solutions over organisational solutions was no longer so visible. The level of implementation of solutions in the field of digital support for the process of improving organisational efficiency (3.87) and digital support for process improvement (3.61) was rated the highest in the delegations of Regional Education Authority in Krakow. The implementation of solutions in the field of digital support for the process of improving information and communication methods (3.48) and the incentive system for employees to submit innovations (3.46) were assessed at a very similar level. Respondents from delegations of the Regional Education Authority in Krakow rated the lowest level of financial resources allocated to innovation development (2.83). When analysing the results of the study contained in Tables 1 and 2, it is easy to notice the differences, but are they statistically significant? To answer this question, the Mann-U test was performed, the results of which are presented in Table 3 and Figure 1.

Table 3. Analysis of the statistical significance of the differences between the means from the Regional Education Authority in Krakow and the Delegations

Question symbol	Mean in the Regional Education Authority	Mean in the Delegations	p
INN-1	3.62	3.61	0.915823
INN-2	3.16	3.24	0.761545
INN-3	3.35	3.48	0.548450
INN-4	3.36	3.87	0.006716
INN-5	2.85	3.46	0.025985
INN-6	2.89	2.83	0.867316
INN-7	2.82	3.17	0.068134

Source: own study

Figure 1. Statistical significance of the differences between the means of the Regional Education Authority in Krakow and the Delegations



Source: own study

The data indicate that the level of the p-index for the average answers obtained in both groups of respondents falls below the value of 0.05 only in two out of seven cases. Statistically significant are the differences in the assessments of the functioning of the incentive system for employees to present innovative ideas ($p=0.025985$) and the degree of implementation of solutions in the field of digital support for the improvement of the organisation of work ($p=0.006716$). Therefore, the H1 hypothesis was only partially confirmed. The results also allow us to refer to the H2 hypothesis. Based on data from Tables 1 and 2, it can be concluded that digital solutions are indeed the most important group of factors supporting the process of designing and implementing innovations, both in the Regional Education Authority in Krakow and its delegations. The H2 hypothesis has been confirmed.

DISCUSSION OF THE STUDY RESULTS

The results of an empirical study conducted at the Regional Education Authority in Krakow and its delegations provide interesting material for reflection on the practical functioning of innovation in public institutions.

Observations on digital organisational solutions and systems that support innovative employee behaviour, included in the answers to the INN-4 and INN-5 questions, turn out to be particularly important. These areas have not only proven to be the most diverse between headquarters and delegations, but also indicate the different levels of capacity of dynamic educational institutions. Analysis of these results in light of the existing literature allows us to see that the observed phenomena are not isolated but correspond to broader trends identified in international research.

According to the meta-analysis of De Vries, Tummers and Bekkers [2018], one of the key challenges of innovation implementation in the public sector is the integration of institutional levels – from macro (central institutions) to micro (operating units). In the Regional Education Authority in Krakow survey, we observe this phenomenon in the difference in assessments between the central unit and delegations in the use of digital solutions supporting organisation of work (INN-4). Although the headquarters rated them higher, the delegations pointed to their limited availability or lack of adequate implementation. Such a discrepancy indicates an uneven rate of diffusion of innovation, which is also confirmed by previous research indicating the importance of local conditions, such as organizational culture, leadership style and availability of resources [Jugend et al., 2020].

However, observations related to the INN-5 question, concerning the incentive system for employees to carry out innovative activities, correspond to the findings of Sinurat et al. [2023], who showed that intrinsic motivation and a sense of agency are crucial to the success of innovation in administration. The Regional Education Authority in Krakow and its delegations noted that the lack of mechanisms to support creativity and innovation among staff demotivates and discourages experimentation with new solutions. It should be emphasised that effective innovations in the public sector require not only technology but, above all, appropriate organisational and cultural facilities, which is reflected in the empirical data.

In the context of digital solutions and their impact on improving the adaptability of public institutions, it is worth referring to the results of the conclusions cited by Jugend et al. [2020], which point out that investments in digitalisation must be linked to reforms in human resource management. Technology alone without the appropriate competences and support structures does not automatically translate into increased efficiency. In this sense, the high rating of INN-2 and INN-3 (with respect to digital communication and employee development) in the Regional Education Authority in Krakow and its delegations demonstrates the potential, which, however, is not evenly distributed between units.

In the study by De Vries et al. [2018], the superiority of digital solutions over organisational solutions was emphasised, which is consistent with the results obtained in the Regional Education Authority and its branches. Miller and Ghaffarzadegan [2025] indicate that dynamic capabilities in the public sector facilitate the creation of public value through their impact on operational capabilities, innovation, and organisational change, but they require synchronisation of technology, learning, and resource-related decisions. In the study conducted, relatively high scores were recorded for digital areas (INN-1, INN-3, INN-4) and lower scores for motivational-financial mechanisms (INN-5, INN-6) and project-based mechanisms (INN-7). According to Miller and Ghaffarzadegan [2025], such a situation indicates a limitation of dynamic capabilities and represents a critical area requiring improvement. The dominance of digital solutions in the conducted research confirms H2.

According to Jemmy et al. [2025], strategic innovations in educational institutions are derived from three interrelated dimensions: technological, organisational, and pedagogical innovation, whereby the critical processes responsible for dynamic capabilities sensing (identifying opportunities and threats), capture (mobilising resources for action), and reconfiguration (adjusting organisational structures and resources to adapt to a changing environment) mediate between the strategic innovation of educational institutions and their capacities to anticipate, cope, and adapt. High scores for INN-1 (digital support for process improvement) and INN-4 (digital support for work organization) indicate that the technological layer is perceived by the Regional Education Authority staff as the main driver of innovation. However, without parallel reinforcement of organisational practices, its positive impact on resilience and innovation remains limited.

The differences between the headquarters of the Regional Education Authority and its branches (partial confirmation of H1) are more pronounced in INN-4 and INN-5 (in both cases, the differences are statistically significant). A comparative study by Bahagijo et al. [2025] indicates that the development pathways of dynamic capabilities depend on contextual conditions; institutions can build them through long-term design and digital transformation or implement abrupt changes forced, for example, by crises [Bahagijo, Mustofa, Priyanto, 2025]. The study carried out allows us to conclude that in branches it is easier to align digital tools with organisational reorganisation and behavioural incentives (INN-4, INN-5), while in the headquarters, without dedicated resources and cultural mechanisms, technological innovations translate more slowly into lasting innovation.

Moderate scores for INN-2 (digital support for services) and INN-3 (information/communication) indicate that the “sensing” component, understood as understanding the needs of citizens and integrating external knowledge, has not yet been fully institutionalised. Galdino de Magalhães Santos [2024] demonstrates that digital transformation in the public sector is not only about modernising internal processes but also involves a two-level flow of change: within the organisation and in the environment of user interactions, including co-creation of public value. The observed dominance of “internal” factors (INN-1, INN-4) over “external” factors (INN-2) is consistent with this claim and suggests the need for greater user involvement in service design so that existing technologies become a true driver of public value rather than merely operational efficiency.

As a result of the study conducted, the lowest scores were recorded in organisational areas: INN-6 (innovation financing) and INN-7 (project teams). In light of existing research, it appears that the opinion of Do et al. [2025] can be confirmed: without stable funding streams and cross-departmental executive forms, it is difficult to translate implemented technologies into a sustainable increase in process and service innovation.

Attention should also be paid to the role of leadership and organisational culture as significant factors in the' perceptions of the respondents. Yıldızoglu and Topcu [2025] indicate that collaboration, leadership competencies, crisis preparedness and infrastructure strengthen organisational resilience in schools, while communication problems, resistance to change, and infrastructural deficiencies weaken

it. These findings are consistent with the current study. Even well-rated digital tools do not guarantee uniform, continuous and positive change without a supportive organisational climate and motivational mechanisms (INN-5), which were rated lower at headquarters than in branches.

Undoubtedly, the conducted study has certain limitations, primarily due to its limited scope (the surveys were carried out only among employees of the Regional Education Authority in Krakow and its regional delegations who expressed a willingness to participate). Therefore, the results cannot be generalised and their analysis should be approached critically. It would also be necessary to expand the research by increasing the sample, preferably to include employees of all Regional Education Authorities in Poland. In addition, it would be interesting to compare the results obtained by extending the study to other public sector institutions.

CONCLUSIONS

A comparison of the study results with the literature on the subject shows that the Delegations of Regional Education Authority in Krakow and their delegations are part of broader trends and challenges characteristic of the public sector in Europe and beyond. The high evaluation of digital tools in the headquarters, with the simultaneous difficulties in their adaptation in delegations, confirms the existence of the problem with the diffusion of innovations. However, the indicated barriers, especially the attachment to procedures and schemes, are well known in the literature and confirm the thesis about the need for simultaneous technological and cultural activities. Only such an approach can effectively build dynamic capabilities in the public sector and enable sustainable modernisation of public administration.

Against the background of the presented considerations, it is worth noting that the concept of open innovation in the public sector, which was presented by Jugend et al. [2020], assumes active cooperation with the environment, both within the institution and in relations with other public sector entities. However, the Regional Education Authority in Krakow and its delegations study does not mention interinstitutional cooperation or the use of open innovation tools, which may indicate gaps in the implementation of broader strategic assumptions based on cooperation. This gap should be seen as a potential area for development, given that the literature [Jugend et al., 2020; Wang, 2025] clearly indicates the positive impact of collaborative forms of innovation on the effectiveness of their implementation. The presented issue should be the direction of future research in the field of building dynamic capabilities of the Regional Education Authority in Krakow and its delegations.

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