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A MODEL FOR AN ORGANIZATIONAL CAREER DEVELOPMENT SYSTEM APPLYING THE THEORETICAL PRINCIPLES OF COMPLEX ADAPTIVE SYSTEMS

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Abstract. *Complex social environments change traditional human resource management policies and practices, affecting customary interactions between organizations and employees. The aim of this article is to propose a model for an organizational career development system based on the principles of complex adaptive systems (CAS) grounded in an analysis of the issues and challenges arising for individuals and organizations in complex environments. This model can then be applied in businesses and public sector organizations. The methods of scientific literature analysis, synthesis and theoretical modeling are used in this article. Currently, it is more reasonable to understand careers and their management not purely from the organizational and structural perspectives, but as dynamic processes where employees expand their career potential in the form of knowledge, skills and behaviors through various learning experiences provided by the organization, and organizations use these intangible assets as adaptive and creative potential in a complex environment. Individuals can no longer rely on traditional principles of career development based on rationality and planning that used to work in stable environments. For individuals, it is necessary to engage in a continuous meaning-making process by enhancing working experiences and strengthening career potential, which primarily involves investing in personal career capital through learning activities. Intellectual, creative, and adaptive resources accumulated in the careers of individuals compose an important part of the human capital of organizations. This then becomes the essential source of competitive advantage, especially in knowledge-based spheres. As a result, the career development models of organizations change from traditional, stable, universal and hierarchical to* *dynamic, flexible, individualized processes that increase the career potential of employees and provide organic structures which satisfy the diversity of individual and organizational career needs.*

Keywords: *career; complexity; complex adaptive systems; model.*

Reikšminiai žodžiai: *karjera; kompleksišumas; kompleksiškos adaptyviosios sistemos; modelis.*

1. Introduction

The systemic nature of the postmodern world and the unpredictable and accelerating transformations brought about by it have not bypassed the career development environment, nor its participants. The contemporary careers of individuals, as well as organizational career systems, are part of a wide network of global and local political, economic, and social interactions, and possess mutual influences. Therefore, the career development environment becomes dynamic and more unpredictable (Pryor and Bright 2014; Baruch and Rousseau 2019).

This complex environment changes the traditional concepts of careers, the boundaries of career management responsibilities, development trends, and goals at the individual and organizational levels of career management. Traditional vertical career management models of organizations – based on principles of the functioning and management of social systems formed during the industrial era, such as the control, predictability, and stability of systems – are becoming irrelevant against the background of a dynamically changing labor market, the growing aspirations of individuals for self-realization, the prevailing global career space, and flat and fluid organizations. However, while the scientific discourse on individual career development considers contemporary career models quite intensively (Pryor and Bright 2014), at the organizational level of career management there is lack of a universal methodological basis which could provide a deeper understanding of the structure and nature of modern career phenomena. Thus, the appropriate tools to create an employee career development model that meets the requirements of a complex environment have not yet been provided.

Management theorists and practitioners have recently pointed out that organizations are increasingly facing complex phenomena that are difficult to explain by linear thinking models, and traditional methods for managing them are limited (Uhl-Bien and Arena 2017; Jucevičius et al. 2017; Uhl-Bien 2021). In this context, the theory of complex adaptive systems (hereinafter CAS) receives wide attention from scientists and is often regarded as the new paradigm of organizational management in the scientific discourse (Boisot and McKelvey 2010; Capra and Luisi 2014; Sapir 2019). CAS are dynamic systems characterized by non-linear relationships, capable of self-reorganizing without external control and adapting to the requirements of the environment. Because the operation of most modern phenomena and systems can be compared to CAS and these systems are particularly adaptive and resilient, it is believed that by applying CAS principles the problems of modern organizations can be solved more successfully (Schneider and Somers 2006; Uhl-Bien and Arena 2018).

CAS principles could be successfully applied for improving public sector human resource management policies and practices. It must be emphasized that the outcomes of human resource management decisions and the implementation of policies by public governance institutions are difficult to predict and control, and rational intentions in the sphere of public sector human resource management do not always produce the desired results. In the context of their approach to complexity, civil servants are free agents making independent decisions, allowing them to adapt to the complexities of the public sector and external realities. Moreover, their careers can be influenced by constant interaction but not totally controlled – e.g., via fixed or lifetime employment opportunities. Career opportunities in the interorganizational networks comprising public and private organizations should be considered.

This article suggests that CAS theory is a suitable conceptual and methodological basis for analyzing career issues, and the application of the principles of this theory could lay the foundations for improving the processes of the career systems of organizations in a dynamically changing environment. The aim of this article is to propose a model for an organizational career development system based on the principles of complex adaptive systems (CAS). This is grounded in an analysis of the issues and challenges arising for individuals and organizations in complex environments. The article applies the methods of scientific literature analysis, synthesis, and theoretical modeling.

2. Career management in a complex environment: individual and organizational levels

The contemporary careers of individuals are affected by many processes emerging in the global market. Technological breakthroughs, digitization, and the automation of work are changing the nature of work itself (Arntz et al. 2016) and promoting structural changes in the labor market (Hirschi 2018), leading to the disappearance of long-existing professions and the emergence of new ones. This affects future career choices and creates the need for individuals to quickly learn new skills and retrain competitively. In addition, the prevailing global competition has encouraged organizations to abandon hierarchical structures and look for more efficient forms of organization, such as short-term projects, fixed-term employment contracts, or outsourced services (Baruch and Rousseau 2019). Such a situation promotes the disappearance of boundaries for individuals' careers, their expansion into different contexts, and career mobility; in other words, a boundaryless career (Arthur and Rousseau 1996), where individuals become less dependent on one employer and develop their careers within a network of different organizations (Sullivan and Arthur 2006; Arthur 2014). These changes result in a lower mutual commitment between the employee and the employer, increased the insecurity of individuals' work and careers in general, and increase the importance of lifelong learning.

Positive aspects of the impact of globalization and technology on individuals' careers should also be mentioned. The development of technology provides an opportunity for individuals to create their own jobs, search for business partners, promote themselves and their services (Carraher 2005), or develop a personal brand. Individuals' careers are strongly influenced by social connections, which, when transferred online, provide a faster and wider opportunity to be noticed. As the virtual labor market became more and more widespread, even more opportunities for global career development opened up for individuals (Stephany et al. 2021; Roy and Shrivastava 2020). Thus, on one hand, these processes unbalance individual careers. On the other, the modern, more tightly connected world affected by digitization generates more social interactions, choices, and career opportunities. Therefore, careers become more individualized, revealing personal meanings and unique stories. The subjective criteria of career success, which measure personal career satisfaction, and less objective external standards of a successful career formed by society, such as the prestige of the profession, the speed of career progression or the salary, are becoming more important (Dai and Song 2016). As Hall (2004) noted, modern careers are determined by the individual themselves and their values, where freedom of growth and commitment to the profession, but not to the organization, are the most important, and career success is characterized by psychological aspects.

In the scientific literature on career development, it is common to draw a line between a traditional organizational career – linear, stable, developed in a large hierarchical structure and managed by a central authority – and the new one – dynamic, multidirectional and individualized (Clarke 2013). From the perspective of systems' theory, traditional organizational careers conformed to the prototype of a simple mechanical system and were therefore easily managed in traditional centralized ways. Individuals' careers were left to the initiative and needs of organizations, and employees in return received stable employment, often lasting until retirement (Baruch 2004). Typically, vertical careers were awarded to talented employees – an exceptional group of employees who, with the help of career practices implemented in the organization, climb to the highest levels of organizational management and reach career heights.

With the rising waves of globalization, competition, and the technological revolution, conventional employment relationships and the nature of career development were balanced out. Flattening, fluid organizations could no longer offer vertical career opportunities to everyone, and the emerging trend of career individualism encouraged the career mobility of individuals. Thus, the scientific literature (Clarke 2013) began to discuss the end of the organizational career era. Although traditional vertical career opportunities are currently severely limited in Western societies, this does not deny the added value created by career management processes for organizations. The importance of career development has increased in the conditions of the knowledge economy, only the aims and development trends have changed.

3. A model for an organizational career development system

According to the CAS approach, when the system encounters external complexity, the internal complexity of the system must match in – in other words, "the internal complexity must overcome the external complexity" (Boisot and McKelvey 2010). This means that modeling the operation of the system according to CAS principles creates conditions for the system to more easily adapt to changes and survive in a complex environment. In our model (Figure 1), the individual and organizational levels of career development are distinguished. These levels of career management and their interaction are modeled according to the principles of CAS theory by distinguishing self-organization as the main process of the system, during which, under minimal external control, agents seeking conformity to changed conditions interact in various ways. The general process of self-organization consists of three dimensions: the assumptions of self-organization at the individual and organizational level; the process of self-organization; and the outcome of this process – the result of collective interaction between agents. Thus, the self-organization of agents is the cause, and the outcome of the collective interaction of agents is the result of self-organization, i.e., emergence. In the model, the result of collective interaction for the organization is adaptive, flexible, competitive human capital, and the development of career potential is considered to be the result achieved by individuals. The model also integrates other CAS elements: agents and the adaptation space that catalyzes the self-organization of agents.

From the point of view of complexity, it is impossible to predict the behavior of a system in advance because the results of the system's scale depend on many interacting elements. Due to the large number of elements, their interrelations and interactions, and sensitivity to initial conditions, CAS are characterized by non-linear dynamics, when there is no obvious cause-and-effect relationship. Therefore, in complex systems we cannot directly manage, plan, and control the process and the desired result, but it is possible to create suitable conditions that enable self-organization oriented towards the desired direction (Uhl-Bien and Arena 2017; Werder and Maedche 2018). Certain agent characteristics and context conditions promote the self-organization of agents. According to MacLean and Macintosh (2011), CAS achieve optimal conditions for self-organization when they operate outside the balance zone, i.e., between chaos and order. This feature of CAS is often called operating on the edge of chaos and effective complexity, and in organizational management it is called adaptive system response or adaptive space (Uhl-Bien and Arena 2017). In this article, the state of CAS which causes self-organization is named in the model as "adaptation space," where the optimal level of complexity of the career management system is maintained. In the adaptive space, organizations are affected by two forces: formal, bureaucratic, focused on order, results and efficiency; and entrepreneurial, promoting change (Uhl-Bien and Arena 2017). Similarly, two forces can be identified in the adaptive space of the career management systems of organizations: a rationally managed structure of employee career management, with established formal and standard procedures and rules, aiming to maintain the *status quo*; and a force promoting the renewal of the system – the external complex environment of organizations and the new needs and expectations of individuals emerging in it, which lead to the need for the transformation of the career management system. Therefore, in the adaptive space, there is a certain pressure, resistance and combination between the established order in organizations and the new career development goals created by the complex environment and the emerging career needs of employees, which require changing the outdated system. This is a necessary process of energizing the career systems of organizations for career management systems to change and remain viable and attractive.

The following factors enabling the adaptive space of organizational career management systems are distinguished: autonomy of agents; enabling context; and the axis of the development model of the organization's career management system based on CAS principles, which is a dynamic process of learning for a career.

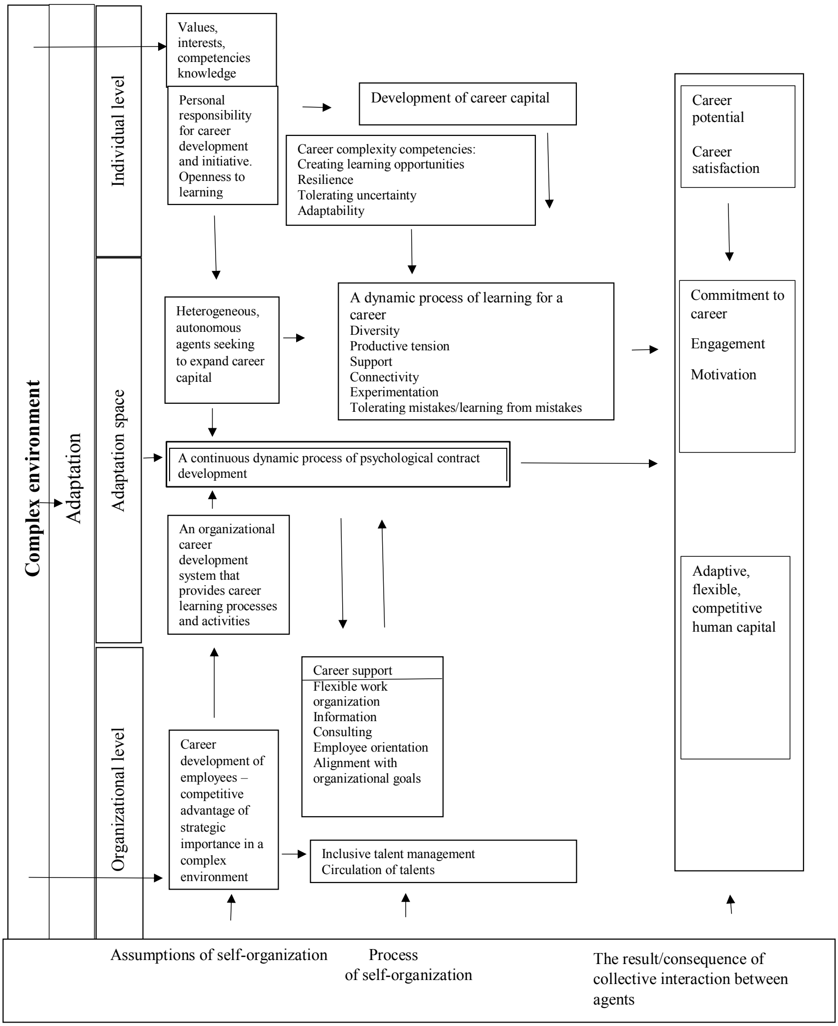

Figure 1. *The model of the organizational career development system in a complex environment*

According to CAS, learning in an organization is not the sum of learning of separate individuals, but the result of interactions between learners. Therefore, the fact that the organization has competent employees that are ready to learn does not automatically mean that the organization as a whole will have adaptive, flexible, and competitive human capital – context plays a crucial role. Taking into account the principles that enable CAS to reach the adaptive space where the most effective self-organization among agents (in this case, learning-oriented) is achieved, the following factors facilitating and enabling dynamic career learning are distinguished.

- *Diversity*. CAS agents are heterogeneous, and this characteristic is necessary for the overall adaptation and evolution of the system (Levin 2003). Agent diversity is a critical characteristic and strength of CAS that should not be suppressed in the name of efficiency in the context of organizations (McDaniel 2007). In the organization, maintaining the diversity of opinions, attitudes, and interpretations opens up the opportunity for employees to expand the boundaries of perception and to learn from each other. In this interaction of cognitive diversity, a more appropriate response to change is generated. Therefore, it is necessary to ensure a suitable environment in which employees can express their opinions and personal views, experiences, and interpretations when solving difficult situations or facing new challenging tasks.
- *Productive tension*. Support for different viewpoints and interpretations in the organization is inseparable from a certain level of tension, contradictions, and conflicts. According to CAS, learning and adaptation occur when agents, driven by common motives, begin to interact, and in this interaction, due to the heterogeneity of the agents themselves, a certain friction arises. To find innovative solutions, this friction is necessary. To create and maintain an adaptive space, it is necessary to maintain optimal tension (Uhl-Bien and Arena 2017). Too high a level of conflict causes resistance among agents and a loss of motivation to cooperate in the name of a common goal. On the other hand, the absence of conflicts means uniformity of views or suppression of contradictions, limiting the adaptive response generated by collective interactions. Thus, in the framework of CAS, learning takes place in tandem with other agents, and for it to be effective, a certain level of tension between its members is required.
- *Support*. Employees should be encouraged to express their opinions, interpretations of the situation, or conflicting points of view on the issue being resolved without fear that it will cause resentment from other co-workers. Therefore, learning – when one's views on the situation are expanded, changed, or supplemented by the perspectives of other members – requires a safe environment, which first of all starts with the support and encouragement of leaders for such a learning process to take place.
- *Connectivity*. Connectivity involves communication links between agents which develop as information is exchanged and interactive learning takes place at the individual and organizational levels. According to CAS, learning takes place in the interrelationships between agents, and the overall learning of the whole organiza-

tion depends on the collective interactions and influences of the agents, making learning a dynamic and often non-linear process. Learning in complex systems takes place during social interactions between individual agents (employees) and between an agent and a group (Yuan and McKelvey 2004). Each employee's contribution to learning depends on interactions with other members.
- *Experimentation*. Operating in a complex environment is inseparable from rapid change, uncertainty, and surprises, so organizations must learn quickly if they want to survive. Complexity changes the nature of learning, moving from learning and applying proven information to learning and acting in real-time, creatively improvising and experimenting with available resources. The most important source and method of learning becomes trial and error, which takes place in real time by reflecting on one's actions. Managers should combine formal structures with flexibility (McDaniel 2007) because innovative solutions and adaptive responses are created under minimal control when there is favorable space for employee experimentation. Managers should encourage employees to engage in a creative process of interpreting, acting, and observing situations.
- *Tolerating mistakes and learning from mistakes*. Experimentation means accepting uncertainty and associated risks (Uhl-Bien and Arena 2017). Experimentation involves acting based on available information and observing how the chosen intervention affects the situation. However, in complex systems, information can either change very quickly or there can be so much of it that the human mind is unable to process it in a short time, so the momentary decisions of individuals can often be wrong and affect the situation unexpectedly. Mistakes are a manifestation of complexity (Pryor and Bright 2012), and in most cases should be treated more as a norm than as representative of a lack of competence. Therefore, mistakes in organizations should not be seen as things to be avoided at all costs, but as things that are inevitable when it comes to discovering the most optimal adaptive response to an uncertain situation.

Conclusions

1. It is recognized that career development, for both individuals and organizations, is characterized by complexity – i.e., the large number of elements involved in the system and their unpredictable interactions make it less defined and predictable, and more dynamic. As a result, career trajectories and development directions, focal points, and management strategies are changing.
2. Individuals can no longer rely on the traditional principles of career development based on rationality and planning that used to work in a stable environment. It is recognized that today, for individuals to create a career embodying individual meanings, it is necessary to engage in a continuous process of strengthening career potential, which primarily means investing in personal career capital through learning activities. Considering the prevailing uncertainty in careers, it becomes especially important to develop those career potential resources that enable easier navigation

and prevent individuals from getting lost in a rapidly changing environment. These resources are called career complexity competencies, and include planned happenstance, adaptability, resilience, and uncertainty tolerance abilities.

3. Intellectual, creative, and adaptive resources accumulated in the careers of individuals form the human capital of organizations, which becomes the most important source of competitive advantage, especially in knowledge-based businesses. This changes the career development models of organizations from traditional, stable, universal and hierarchical to dynamic, flexible, individualized processes that increase the career potential of employees and provide organic structures which satisfy the diversity of individual and organizational career needs.
4. In the career development system model based on the principles of CAS, the dynamic process of career learning is considered to be an essential process, combining the needs of individuals for career growth and enabling organizations to develop adaptable and resilient human capital.
5. The model also emphasizes the process of continuous dynamic development of the psychological contract, which can be implemented by creating flexible mechanisms that enable the changing mutual expectations of organizations and individuals to be captured.

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ORGANIZACINĖS KARJEROS SISTEMOS VYSTYMO MODELIS TAIKANT KOMPLEKSIŠKŲ ADAPTYVIŲJŲ SISTEMŲ TEORINIUS PRINCIPUS

Anotacija. *Kompleksiška aplinka keičia tradicinę karjeros sampratą, atsakomybių ribas už karjeros valdymą, vystymo kryptis ir tikslus tiek individų, tiek organizacijų karjeros valdymo lygmenyse. Tradiciniai vertikalūs organizacijų karjeros valdymo modeliai, paremti dar industrinėje eroje susiformavusiais socialinių sistemų funkcionavimo ir valdymo principais – kontrole, sistemų nuspėjamumu ir stabilumu – tampa neaktualūs dinamiškai kintančios darbo rinkos poreikių, augančių individų savirealizacijos siekių, įsigalinčios globalios karjeros erdvės ir plokštėjančių organizacijų kontekste. Moksliniame organizaciniame karjeros valdymo diskurse stokojama visapusiško metodologinio pagrindo, leidžiančio nuodugniau suprasti šiuolaikinių karjeros reiškinių prigimtį, struktūrą ir suteikiančio tinkamus įrankius kurti darbuotojų karjeros vystymo modelį, atitinkantį kompleksiškos aplinkos reikalavimus. Šio straipsnio tikslas – išanalizavus individualios ir organizacinės karjeros vystymo lygmenų kompleksiškoje aplinkoje problemas, išgryninus aktualias jų valdymo kryptis, pasiūlyti organizacinės karjeros vystymo sistemos modelį, pagrįstą kompleksiškų adaptyviųjų sistemų teorijos principais. Straipsnyje taikomi mokslinės literatūros analizės, sintezės ir teorinio modeliavimo metodai. Tiek individų, tiek organizacijų karjeros vystymo kontekstai pasižymi kompleksiškumu. Dėl didelio sistemoje dalyvaujančių elementų skaičiaus ir nenuspėjamų jų sąveikų jis tampa mažiau apibrėžtas ir labiau dinamiškas. Dėl to kinta karjeros trajektorijos ir vystymo kryptys, taip pat valdymo strategijos. Individai nebegali pasitikėti tradiciniais, racionalumu ir planavimu pagrįstais karjerų vystymo principais, kurie veikė stabilioje aplinkoje. Pripažįstama, kad pastaruoju metu asmenims, norintiems susikurti individualias prasmes įkūnijančią karjerą, reikia įsitraukti į nuolatinį karjeros potencialo stiprinimo procesą, kuris pirmiausia reiškia investavimą į asmeninį karjeros kapitalą per mokymąsi. Atsižvelgiant į karjerose vyraujantį neapibrėžtumą itin svarbu ugdytis ir tuos karjeros potencialo resursus, kurie*

suteikia galimybių lengviau naviguoti ir nepasimesti greitai kintančioje aplinkoje. Šie individų karjerose akumuliuojami intelektiniai, kūrybiniai ir adaptaciniai resursai papildo organizacijų žmogiškąjį kapitalą, kuris tampa svarbiausiu konkurencinio pranašumo šaltiniu, ypač žiniomis grįstose srityse. Tai keičia organizacijų karjeros vystymo modelius – nuo tradicinių, stabilių, universalių ir hierarchinių link dinamiškų, lanksčių, darbuotojų karjeros potencialą auginančių procesų ir karjeros poreikių įvairovę patenkinančių individualizuotų ir organiškų struktūrų.

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THE EFFECT OF DYNAMIC GOVERNANCE ON PUBLIC SERVICE INNOVATION THROUGH THE RECRUITMENT OF MANAGERS OF PUBLIC ORGANIZATIONS

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Abstract. Dynamic governance has been seen as a pertinent strategy to foster public service innovation and the recruitment of public sector managers. This study proposes to explore the effect of dynamic governance on public service innovation through the recruitment of public sector managers as a moderating variable. The study employs a quantitative approach to analyze the research data, for the collection and analysis of which a survey strategy was used. The research includes 357 respondents selected via a disproportionate random sample technique based on Krejcie and Morgan's table, with a 0.05 margin of error. The research findings show that dynamic governance consists of two dimensions which positively and significantly affect public service innovation: dynamic capabilities and institutional cultures. Additionally, the recruitment of public organization managers has a positive and significant effect on public service innovation. Accordingly, the dynamic governance perspective is seen as a relevant way to support dynamic performance, continuity, and change in local governance. Further, it may also improve the effectiveness of the recruitment of public organization managers in human resources management, and deliver better innovation in the future.

Keywords: *dynamic governance; dynamic capabilities; institutional cultures; recruitment; public organization managers; public service innovations.*

Reikšminiai žodžiai: *dinamiškas valdymas; dinamiški pajėgumai; institucinė kultūra; įdarbinimas; viešųjų organizacijų vadovai; viešųjų paslaugų naujovės.*

Introduction

The recruitment of public organization managers is necessary in order to create high-quality public service, and it should be conducted based on capability and a strong institutional culture in order to achieve optimal public sector service performance (Horton 2008). Recruitment becomes a social need in the sense of selecting the most suitable public officials (Leisink and Steijn 2008), and should use a merit-based system to determine the best criteria rather than one that involves patronage (Edenborough 2005). Additionally, recruitment in the dynamic public administration environment can promote good governance (Egeberg et al. 2017).

Recruiting public organization managers is seen a key driver towards better performance in public organizations (Cohen and Mehta 2017; Mizrahi et al. 2009). The success of bureaucratic organizations in achieving the highest performance is predominantly determined by the merit-based recruitment of public leaders who have individual capabilities, legitimate authority, and leadership power, and who align with the organizational culture (Lundvall and Nielsen 2007; Nielsen et al. 2017).

The dynamic governance perspective has four major areas of creating public service innovation: political leadership, public policy harmonization, the merit system, and the anti-corruption movement (Kasim 2013). However, as evidence has shown, the recruitment of public organization managers is not preceded by job analysis (Ashraf 2017); recruitment remains problematic in public organizations, and politicization continues to occur (Bach and Veit 2018; Neo and Chen 2007). The involvement in recruitment of people who are systematically educated is lacking (Crothall et al. 1997), and this is currently supplanted by patronage (Jreisat 2018), rent-seeking, and individual-serving behavior (Veronesi, Kirkpatrick, and Altanlar 2019).

1.1. The theory of the research: *dynamic governance, the recruitment of public managers, and public service innovation*

In the literature, dynamic governance is considered a critical factor for success in a rapidly globalizing and technologically advanced world (Neo and Chen 2007). This is an approach that considers the roles of actors involved in governance, the legal mechanisms available to promote regulatory goals, and the tools suitable for policymakers and other stakeholders to achieve the desired outcomes (Markell and Glicksman 2016).

On the other hand, recruitment in the public sector is viewed as problematic, the workforce in public organizations poses challenges, and the nature of the problem is not yet well defined (Collins 2008). Therefore, recruitment should prioritize merit and neutrality, as these factors can impact the recruitment of public organization managers who are responsible for ensuring the development of public service quality (Boeckelman 2016). Previous research has found that public organizations that adopt a merit-based recruitment approach tend to have significantly lower levels of corruption in their operations (Egeberg et al. 2017). Selection and evaluation are also crucial aspects of human resource practices (Pfeffer 1998). Furthermore, recruiting skilled public organization managers can help to achieve efficiency and competitive advantage in public organizations (Ordanini and Silvestri 2008).

Further, dynamic capabilities can generate competitive advantages, result in the highest performance levels, and offer a greater likelihood of achieving the goals of the public organization (Ahmad et al. 2005; Yan and Gao 2016). These capabilities are developed through deliberative decisions, choices, planning, organized activities, and the deployment of expertise (Neo and Chen 2007). Moreover, a strong organizational culture is crucial for public organizations as it can enhance an organization's ability to be more efficient and effective at fulfilling their mission (Bergwerk 1988; Olejarski et al. 2019).

Empirically, in the public sector, the modern organization must put people-centered cultures into practice to achieve better performance (Black and Venture 2018; Breaugh 2017; dos Santos et al. 2017). Organizational culture can be perceived as the key to effective leadership and organizational development (Brown 2014). Meanwhile, institutional culture is closely related to recruitment in achieving high organizational effectiveness (Bergwerk 1988). It might also be meaningful for organizations to establish a people-centered culture (Black and Venture 2018; Vogel and Güttel 2012). Organizational culture becomes the core driver for effective leadership and organizational development (Brown 2014). Dynamic capabilities can influence an organization's ability to renew its competence in the face of a rapidly changing internal and external environment (Eisenhardt and Martin 2000).

Group work, socialization, informal standards, shared assumptions and beliefs, dispersed authority, and codependence are also significant factors in this regard (Olejniczak 2018). The relationship between institutional culture and recruitment has encountered substantive issues in fostering the performance of public organizations (Darnold and Rynes 2013; Rynes and Cable 2003). Furthermore, empirical evidence has demonstrated that the recruitment of public organization managers at the local government level should be based on open recruitment and merit-based selection. This includes recruitment, selection, and the presentation of information on organizational missions and job tasks in the recruitment process (Asseburg et al. 2018; Edenborough 2005), as well as the nature of the recruitment process itself (Cortázar et al. 2016).

2. Materials and method

In order to test the proposed hypotheses, a quantitative methodology was applied by conducting a survey of public personnel in the Government of Palu City, Indonesia. The total number of individuals surveyed was 4,868, consisting of 2,132 males and 2,736 females. The study used an exploratory survey, and the research sample was determined using proportionate random sampling based on the demography of respondents and the educational attainment of public servants. The sample was determined using the Krejcie table, with a margin of error of 0.05 (Krejcie and Morgan 1970). The total research sample consisted of 357 respondents. To avoid sample bias, the researchers applied more than one sample to reduce the bias of conclusions drawn using structural equation modelling (SEM) analysis (Loehlin and Beaujean 2017).

The variable of the recruitment of public organization managers in human resource management consisted of 10 indicators: integrity, capability, skill, innovation, open recruitment, fair selection process, no political interest, prudence, meritocracy, and perceived competitiveness (Ban et al. 2003; Collins 2008; Egeberg et al. 2017; Neo and Chen 2007; Sparrow 2007). The dimension of public service innovation involved three dimensions: changing the organizational environment, changing the organization structure, and changing the products. These dimensions were evaluated according to ten indicators (Boyne and Gould-Williams 2003; Hodgkinson and Sadler-Smith 2018; Smith 1990).

2.1. The measurement of hypotheses

After conducting the pilot study, all data was analyzed using SPSS version 24. Furthermore, the research questionnaires were tested through SPSS to find the value of their reliability and validity, and were then distributed them to 357 respondents. A total of 350 questionnaires were returned, equating to a response rate of roughly 98 percent of the total sample. There were 7 questionnaires that were discarded because some respondents did not fully answer all of the questions, or left some blank. The respondents were asked to rate their level of perception based on a 6-point Likert scale that ranged from strongly agreeing to strongly disagreeing. Inferential statistical methods were used to test the hypotheses using structural equation modeling (Hair et al. 2016).

The reliability scale of the 39 items was assessed using the SPSS Windows version 24 and SEM Analysis. The reliability statistic value was assessed individually using Cronbach's Alpha, and the result was 0.910 (with $F_{test} = 9.596 > \alpha = 0.05$). After confirmatory factor analysis, we removed 14 cases based on the Mahalanobis distance. For this study, we used four variables: dynamic capabilities (measured using five items), institutional culture (measured using seven items), recruitment of public organizational managers (measured using eight items), and public service innovation (measured using five items). The results of the data analysis using AMOS software are presented in the following Table 1.

Table 1. *The statistical results of convergent, discriminant, and nomological validity*

Criteria	DC	IC	RPM	PSI
AVE	0.408	0.514	0.621	0.464
CR	0.860	0.941	0.675	0.558

*Note: AVE – average variance extracted; CR – composite reliability; DC – dynamic capabilities; IC – institutional cultures; RPM – recruitment of public managers, PSI – public service innovation (significant at **p < 0.001, * p < 0.05).*

Table 1 confirms that all data had no any individual constructs and that there were no other violations of nomological validity. The analysis of the average variance extracted indicates that the dynamic capability variable was 0.408, institutional culture was 0.514, recruitment of public organization managers was 0.621, and public service innovation was significant at an alpha level of 0.05. Moreover, the composite reliability of dynamic capability was 0.860, institutional culture 0.941, recruitment of public organization managers 0.675, and public service innovation at 0.558. The goodness of fit indices of each variable showed the initial condition of using SEM analysis (Hair et al. 2016). The goodness of fit of the results is presented in Table 2.

Table 2. *Goodness of fit*

Measurements	Absolute fit measure				Incremental fit measure		Parsimonious fit measure
	χ^2	CMIN/DF	GFI	RMSEA	NFI	CFI	AGFI
Criteria	>0.05	<5	≥0.90	<0.05	≥0.90	≥0.95	≥0.90
Obtained	725.787	2.824	0.969	0.072	0.903	0.962	0.935

*Note: ** $p < 0.001$, * $p < 0.05$*

According to the results of the analysis presented in Table 2, structural equation modelling provided a goodness of fit measurement for the data in this research. This is supported by the statistical analysis of the chi-square test, which found $\chi^2 = 725.787$, $DF = 257$, $p = 0.000$ and $CMIN/DF = 2.824$. The results were significant and the GFI and RMSEA values were 0.060 and 0.072, respectively, indicating appropriate goodness of fit. Additionally, the results showed that NFI and CFI were 0.903 and 0.962, respectively, meeting the minimum requirements. The parsimonious fit measure showed that the AGFI achieved 0.935, meaning that the data were relevant to the cutoff point of >0.90. Further, the RMSEA was within margin, and the CMIN/DF was 2.824; according to theory, the smallest degree of freedom in the sample discrepancy function must be ≤2 (Hair et al. 2016). We argue that the model used in this study achieved goodness of fit, so that the SEM model can be used to test the research hypotheses. Based on the goodness of fit, there are five hypotheses proposed in this article, and the final data analysis confirmed that all of the variables of dynamic governance theory based on Neo and Chen (2007) indicate that all paths are statistically positive and significant, and thus accepted. The SEM analysis results are presented in the Table 3.

Table 3. *Hypotheses measurement results*

Hypotheses	β	*p*	Labelling
H1: RPM <--- Dynamic Capabilities (DC)	0.449	***	Accepted
H2: RPM <--- Institutional Cultures (IC)	0.303	***	Accepted
H3: PSI <--- RPM	0.152	0.017	Accepted
H4: PSI <--- Dynamic Capabilities (DC)	0.287	***	Accepted
H5: PSI <--- Institutional Cultures (IC)	0.366	***	Accepted

*Note: β – standardized regression weight, *p – significance level (one-tailed)*

3. Results and discussion

Empirically, there is a close relationship between dynamic capabilities and institutional culture regarding the competitive advantage of public organizations (Violinda and Jian 2016). The recruitment of public organization managers has become a matter of debate among public officials because public managers in public organizations have often been criticized for being bureaucratic, impersonal, reactive, or cautious conformists (Redman and Mathews 1997). Dynamic capabilities have received significant attention as a means of maintaining organizational performance and effectiveness, whether in public or private organizations (Teece 2007, 2018). It is believed that dynamic capabilities and knowledge management may help organizations achieve sustained competitive advantage (Prieto and Easterby-Smith 2006), enhance dynamic organizational performance (Rengkung 2018; Wu 2006), and develop human capital (Chatterji and Patro 2014; Schreyögg and Kliesch-Eberl 2007; Vogel and Güttel 2012). Institutional culture is viewed as another critical dimension that needs to be cultivated in order to achieve higher performance in the public sector. This research demonstrated that institutional culture may improve and enhance an organization's effectiveness in achieving its mission (Olejarski et al. 2019; Acar and Acar 2012; Adeinat and Abdulfatah 2019; Bergwerk 1988; Violinda and Jian 2016).

Meanwhile, recruiting the best candidates in public organizations is viewed as crucial, and job management effectiveness is determined by better recruitment (Hays and Sowa 2005). Dynamic capabilities also refer to the management process and organizational routines, including the three elements: coordination or integration (a static concept), learning as a dynamic concept that must be applied over time, and the recombination or transformation concepts (Yan and Gao 2016). Increasing structural clarity, transparency, and effectiveness has been introduced through dynamic governance (Heijne and Buck 2013). Scholars have found that dynamic capabilities have a strong correlation with the development of knowledge management, which can increase the competitive advantage of organizations (Prieto and Easterby-Smith 2006) and build innovation (Fallon-Byrne and Harney 2017; Hess 2008).

Moreover, recruitment is one of the strategies with which a merit-based system has been most closely linked when it comes to achieving a high level of political performance (Seligman 1964). The recruitment of public managers has become the norm in public organization and development (Neo and Chen, 2007), and may improve good governance (Bonsafia et al. 2016; Bowman and West 2006; Cortázar et al. 2016; Egeberg et al. 2017).

Conclusions

1. Dynamic governance has the benefit of increasing the effectiveness of a government, enabling it to achieve a high level of performance. Public organizations within local government have always faced a dynamic and unpredictable environment. The research hypotheses were confirmed by the results of structural equation modelling (SEM) analysis: dynamic capabilities have the most positive and significant effect on

the recruitment of public managers, with a path coefficient of β = 0.449 at $p = 0.01$. This is followed by institutional cultures, which have a path coefficient of β = 0.303 at $p = 0.01$. Furthermore, the recruitment of public organization managers has a positive and significant effect on the public service innovation, as indicated by the path coefficient of β = 0.152 at $p = 0.01$. Institutional cultures also have a positive and significant effect on public service innovation, with a path coefficient of β = 0.366 at $p = 0.01$. Finally, dynamic capabilities have a positive and significant effect on public service innovation, with a path coefficient of β = 0.287 at $p = 0.01$.

2. The research revealed that there is a strong correlation between dynamic capabilities and institutional cultures, as indicated by the path coefficient of β = 0.329 at $p = 0.01$. Interestingly, this study found that dynamic capabilities are the strongest predictors of the recruitment of public organization managers, accounting for 44.9%. Meanwhile, institutional cultures predict 36.6% of variance in public service innovation. Then, institutional culture will predict at least 30.3% of the recruitment of public managers, and dynamic capabilities will predict 28.7% of public service innovation. Finally, at least 15.2% of the recruitment of public organization managers is predicted by public service innovation.
3. According to the research findings, it can be concluded that dynamic capabilities and institutional cultures have strong correlations for the recruitment of public organization managers and for service performance. Moreover, dynamic capabilities have a positive and significant effect on the recruitment of public organization managers. Likewise, recruitment based on merit is perceived as being highly effective toward public service innovation (PSI). Meanwhile, both dynamic capabilities and institutional culture have the strongest correlation toward the performance of public organizations.

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DINAMIŠKO VALDYMO POVEIKIS VIEŠŲJŲ PASLAUGŲ NAUJOVĖMS ĮDARBINANT VIEŠŲJŲ ORGANIZACIJŲ VADOVUS

Anotacija. *Dinamiškas valdymas buvo laikomas tinkama strategija viešųjų paslaugų naujovėms reklamuoti ir viešojo sektoriaus vadovams įdarbinti. Šio tyrimo tikslas – ištirti dinamiško valdymo poveikį viešųjų paslaugų naujovėms moderuojamu kintamuoju pasirinkus įstaigų vadovus. Tyrimo duomenys rinkti ir analizuoti taikant apklausos strategiją, taip pat analizei pasitelktas ir kiekybinis metodas. Tyrime 357 respondentams taikyta neproporcingos atsitiktinės imties metodika, pagrįsta Krejcie ir Morgan lentele su 0,05 paklaida. Tyrimo rezultatai parodė, kad dinamiškas valdymas susideda iš dviejų dimensijų – dinamiškų pajėgumų ir institucinės kultūros. Abi jos teigiamai ir reikšmingai veikia viešųjų paslaugų inovacijas. Be to, viešųjų organizacijų vadovų įdarbinimas teigiamai ir reikšmingai veikia viešųjų paslaugų naujoves. Atitinkamai, dinamiška valdymo perspektyva buvo vertinama kaip tinkamas būdas palaikyti dinamišką vietos valdymo veiklą, tęstinumą ir pokyčius. Tai gali pagerinti viešųjų organizacijų vadovų įdarbinimo veiksmingumą žmogiškųjų išteklių valdymo srityje ir pasiūlyti daugiau naujovių ateityje.*

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AN ANALYSIS OF THE DECISION-MAKING BEHAVIOR OF THREE INTERESTED PARTIES IN THE PROCESS OF PRIVATE UNIVERSITY EDUCATION REFORM

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Abstract. *In response to the current situation in which an imbalance in educational redistribution has led to an inefficient and slow educational environment in the long-term, difficulty in satisfying the interests of subjects, and a lack of effective targeting of school policy measures, an SD evolutionary game model targeting educational reform, with schools, administrative institutions, and professors as the three parties, was established. Based on expected utility theory and Lyapunov's first law, a feedback regulation simulation study was conducted on subjects' decision-making behavior. The research results show that: the evolutionary trajectory of the subjects in the game is affected by the redistribution of education funding benefits, but the evolution of the final system is in a state of stable equilibrium (push, reform, reform); the decision-making behavior of the pushing party plays a decisive role in the stability of the system, and if the education subsidies of university professors and the income from the value of research results are greater than the education subsidies before the education reform, evolution over time is conducive to prompting the professor group to prefer the education reform strategy, while the effect of school push on the stability of the educational reform system is significant in schools with lower returns on the value of research funding.*

Keywords: *education reform; simulation study; decision-making behavior; reform strategy.*

Reikšminiai žodžiai: *švietimo reforma; simuliacinis tyrimas; elgesys priimant sprendimus; reformų strategija.*

Introduction

As the social environment and times change, the conceptual framework and connotations of education have undergone a process of constant evolution and change. The concept of innovation in education has risen to the national policy level (Law and Pan 2009). Deepening innovation in colleges and universities is an important initiative to advance the comprehensive reform of higher education and promote higher-quality entrepreneurship and employment for college graduates (Zhang and Yao 2020).

Deepening reform on innovation in education requires good institutional design as well as a complete policy system as a guarantee; otherwise, defects in the system and policies will become the main factors that restrict the subjects of reform and keep them trapped in their work (Azam et al. 2017). From the perspective of deepening education reform, although the corresponding policy system at the national level is complete and rich in content, concrete implementation in different colleges and universities – subject to the latter's regional differences in geographical location, resource endowment, economic foundation, cultural tradition, etc. – creates a differing sense of urgent regarding the policy barriers to be broken in supporting or promoting deepening education reform (Laengle et al. 2017). For example, from 2001 to 2016, Guangdong Province issued 24 policy documents related to innovation reform, involving various aspects such as entrepreneurship training, incubator construction, innovation talent introduction program, fund management, etc. In contrast, Yunnan Province issued only 11 related policies from 2008 to 2016. In terms of geographical factors, policy responses in developed provinces and poor regions are not timely. Some regions still have difficulties in implementing national policies despite their inclinations in the direction of education reform (Mantovi and Schianchi 2019).

This experiment mainly demonstrates the feasibility of education reform, using the tripartite game system theory (professor-administration-school) to discuss the internal factors related to education reform (Ormerod and Ulrich 2013). It also analyzes the demand for education reform, clarifies the responsibility list and task list of each relevant functional department and faculty, and builds a collaborative joint implementation mechanism and a mutually beneficial incentive mechanism for multiple subjects (Abdel-Moneim 2020).

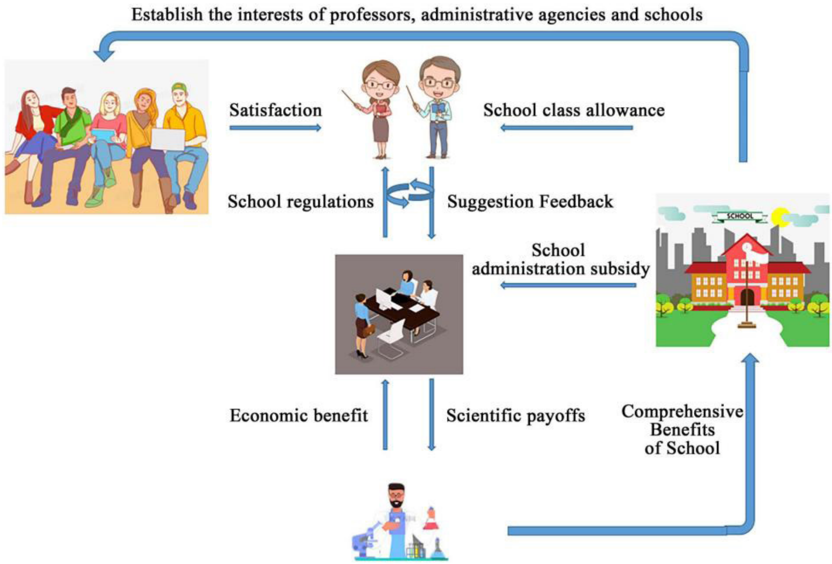


Figure 1. *The logical relationships within the game model between professors, administrative bodies and schools*

Game model assumptions

In the context of the General Office of the State Council of China issuing the Notice of Carrying Out National Education System Reform, it is clearly proposed to comprehensively improve the service capacity of education and provide strong support for building the talents needed for China's modernization (Bellani et al. 2022). Scientific and technological achievements are encouraged to create economic benefits for society. This study focuses on the logical strategy of the game among teachers, administrative agencies and schools adopted by local universities to participate in the education system reform, and makes the following assumptions with reference to a large amount of literature (Casini and Garulli 2022).

Hypothesis 1 (game subject assumption): In this paper, the school, the administration and the professor are the three game subjects, and it is assumed that all three parties are finite and rational. The administration and professors seek to maximize the benefits they receive, and the school seeks to maximize the comprehensive benefits of the school (Huang et al. 2022).

Hypothesis 2 (game strategy hypothesis): The state protects the right of university student groups to pursue quality education and promotes student groups in giving feedback on the improvement of professors' lectures while following the university's rules and regulations. At the same time, the university must also respect the professor's wishes in the process of referring to the feedback from the university student body. Schools have two behavioral choices: to promote educational quality reform or not to promote teaching quality reform in order to improve the school's research, with a strategy set of {push, not push}. The administration has two decision-making behaviors in promoting educational quality reform based on the game conditions, in which the educational quality reform outcomes are related to the school's administrative subsidies: to promote education quality reform or not to promote teaching quality reform, where the set of strategies is {push, not push}. Similarly, professors can choose to promote education quality reform or not to promote teaching quality reform in the game process, where the set of strategies is {push, not push}.

Hypothesis 3 (strategic probability assumption): Supposing that the probability of the university promoting teaching quality reform is g, then the probability of not promoting is 1–g. If the probability of the university administration choosing to promote teaching reform is m, then the probability of not promoting teaching reform is 1–m. Finally, if the probability of the professor choosing to promote teaching quality reform is f, then the probability of not promoting teaching quality for reform is 1–f.

Hypothesis 4 (assumptions on the parameters of the university-related game): The subsidy given to professors' hours according to the university policy is θ, and the subsidy given to the education administration is $\boldsymbol{\mu_m}$. The cost invested by the university to promote the reform of teaching quality in order to encourage professors and the administration to accept the educational reform is C_g^s, including: the cost of the negotiation process of the leadership organization, C_g^{s1}; the subsidy required by the administration to develop improved regulations, C_g^{s2}; and the additional subsidy received by the university professors for accepting the improved regulations, μ_f. The comprehensive benefits of the university generated by the university to promote the educational reform are represented as P_g^s (economic benefits generated by the university's research results and the university's reputation, and the security for student recruitment and employment provided by the improvement of the ranking)

Hypothesis 5 (assumptions about the parameters of the game related to the administration): The cost of the negotiation process between the administration and the university professors themselves is represented as C_m. The period of the educational reform process is n years, and the range of disciplines involved in the educational reform is Q. The cost of educating university students is P_l. The number of research results per year is Y_m, the cost of the required labware materials is C^i, the value of the research results is α_i, and the discount on the consumable labware purchased in bulk is η. The university's professors and administration are engaged in spontaneous negotiation and educational quality improvement, and the overall benefits of the university through improved research and higher student employment rates are P_m^s.

Hypothesis 6 (assumptions about the parameters of the game related to professors): The cost of spontaneous negotiations between professors and the administration for the improvement of school regulations (educational reform) is C_f, the annual income of professors after the educational reform is P_f^i, the cost of readjusting professors to the new regulations after the completion of the educational reform is λ. If no educational reform is carried out, the number of research results per year is 1 and the overall benefit to the school is generated as P_g^f.

Table 1. *The two-sided game payment matrix for universities to promote education reform*

		Pro $\sum_{i=1}^{n} P_g^s - C_g^s$ form（f）	No reform $\sum_{i=1}^{n} P_f^s - C_g^{s1} - \sum_{i=1}^{n} Q\theta$
Administrative department	Reform（m）	$\sum_{i=1}^{n} Q[\mu_m + C_g^{s2} + \alpha_i Y_m - P_1 - C^i + \eta]$	
			$\sum_{i=1}^{n} Q(\alpha_i \hat{Y}_f - C^i + \theta)$
		$\sum_{i=1}^{n} P_f^s - C_g^{s1} - \sum_{i=1}^{n} Q\theta$	$\sum_{i=1}^{n} P_f^s - C_g^{s1} - \sum_{i=1}^{n} Q\theta$
	No reform（1-m）		
		0	$\sum_{i=1}^{n} Q(\alpha_i Y_f - C^i + \theta)$
		$\sum_{i=1}^{n} Q(\alpha_i Y_f - C^i + \theta)$	

		Professor Reform（f）	No reform（1-f）
Administrative department	Reform（m）	$\sum_{i=1}^{n} P_m^s - Q\mu_m$	$\sum_{i=1}^{n} P_f^s - \sum_{i=1}^{n} Q\theta$
		$\sum_{i=1}^{n} Q[\mu_m + \alpha_i Y_m - C^i - P_1 + \eta] - C_m$	$-C_m$
		$\sum_{i=1}^{n} [Q(P_1 - \alpha_i Y_f + C^i - \theta) + P_f^i] - \lambda Q - C_f$	$\sum_{i=1}^{n} Q(\alpha_i Y_f - C^i + \theta)$
	No reform（1-m）	$\sum_{i=1}^{n} P_f^s - \sum_{i=1}^{n} Q\theta$	$\sum_{i=1}^{n} P_f^s - \sum_{i=1}^{n} Q\theta$
		0	0
		$\sum_{i=1}^{n} Q(\alpha_i Y_f - C^i + \theta) - C_f$	$\sum_{i=1}^{n} Q(\alpha_i Y_f - C^i + \theta)$

Constructing the payoff expectation function

As shown in Table 1, the two-sided game payment matrix for universities to promote education reform is $P_f^p = \sum_{i=1}^{n} Q\left(\alpha_i Y_f - C^i + \theta\right)$, $P_m^p = \sum_{i=1}^{n} Q\left(\alpha_i Y_m - C^i + \eta - p_l + \mu_m\right)$. As shown in Table 1, the benefits of education reform are shown for each side in n years. The expected benefits for schools choosing the "push" and "no push" education reform strategies are E_g^1 and E_g^2, respectively, and the average expected benefits are $\bar{E}_g$ $E_g^1 = n\left[(1-fm)\left(P_f^s - \theta Q\right) + fmn\left[P_g^s - Q\left(C_g^s + \mu_f\right)\right]\right] - C_g^{s1}$ (1), $E_g^2 = n\left[(1-fm)\, P_f^s + fmP_m^s - Q\left(\theta - fm\theta + fm\mu_m\right)\right]$ (2), and $\bar{E}_g = g\,E_g^1 + (1-g)\,E_g^2$ (3).

The expected benefits of the administration's "reform" and "no reform" education reform strategies are E_m^1 and E_g^2, respectively, and the average expected benefit is E_g.

$$E_m^1 = gfnC_g^{S2} + (g-1)\,C_m + fP_m^p \quad (4),\quad E_m^2 = 0 \quad (5),\quad \bar{E}_m = m\,E_m^1 + (1-m)\,E_m^2 \quad (6).$$

The expected benefits of the "reform" and "no reform" education strategies are E_f^1 and E_f^2, and the average expected benefit is $\overline{Ef}$, respectively.

$$E_f^1 = (g-1)\,C_f + (1-2m)\,P_f^p + m\left[\sum_{i=1}^{n} P_f^i + Q\left(nP_l - \lambda + gn\mu_f\right)\right] \quad (7),\quad E_f^2 = P_f^p \quad (8),\quad \overline{Ef} = fE_f^1 + (1-f)\,E_f^2 \quad (9).$$

Stability analysis of the strategy of the three game subjects, stability analysis of school gaming strategies, and dynamic equation analysis based on school stability

$$F(g) = dg/dt = g(1-g)\left\{fmn\left[P_g^s - P_m^s + Q\left(\mu_m - C_g^{s2} - \mu_f\right)\right] - C_g^{s1}\right\} \quad (10),$$

$$F'(g) = dF(g)/dg = (1-2g)\left\{fmn\left[P_g^s - P_m^s + Q\left(\mu_m - C_g^{s2} - \mu_f\right)\right] - C_g^{s1}\right\} \quad (11).$$

The following equation enables the analysis of the evolutionary stability of school game decision behavior, where F(g)=0:

$$fmn\left[P_g^s - P_m^s + Q\left(\mu_m - C_g^{s2} - \mu_f\right)\right] - C_g^{s1} = 0,\quad f_0 = c_g^{s1} \Big/ \left\{mn\left[p_g^s - p_m^s + Q\left(\mu_m - c_g^{s2} - \mu_f\right)\right]\right\}$$

That is, at that time $f = f_0$, $F(g) = 0$, when the school game strategy is stable in the system regardless of the value of g.

(a) $f > f_0$, $H(f) > 0$, $F'(g)_{g=1} < 0$, $F'(g)_{g=0} > 0$ At this point, $g = 1$ represents a steady state of the school's game evolution, and therefore the school's game strategy tends to choose to promote educational reform.

(b) $f<f_0$, $H(f)<0$, $F'(g)_{g=1}>0$, $F'(g)_{g=0}<0$ At this point, $g = 0$ represents a stable state of the school's game evolution, so the school's game strategy tends to choose not to push for educational reform.

(c) $f>f_0$, $H(f)<0$, $F'(g)_{g=1}>0$, $F'(g)_{g=0}<0$ At this point, $g = 0$ represents a steady state of the school's game evolution, so the school's game strategy tends to choose not to push for educational reform.

(d) $f<f_0$, $H(f)>0$, $F'(g)_{g=1}<0$, $F'(g)_{g=0}>0$ At this point, $g = 1$ represents a stable state of the school's game evolution, so the school's game strategy tends to choose to push for educational reform.

Stability analysis of administrative agencies' gaming strategies and game replication dynamic equation analysis based on administrative agencies

According to equations (4) to (6), the replication dynamic equation of the administration in the educational reform game system is obtained as:

$$F(m)=dm/dt=m(1-m)\left[fgnC_g^{s\,2}+(g-1)C_m+fP_m^p\right] \quad (12),$$

$$F(m)=dF(m)/dm=(1-2m)\left[fgnC_g^{s\,2}+(g-1)C_m+fP_m^p\right] \quad (13),$$

$$fgnC_g^{s\,2}+(g-1)C_m+fP_m^p,\ \partial K(f)/\partial f=gnC_g^{s\,2}+P_m^p$$

Therefore, $K(f)$ is an increasing function with respect to *f*.

(a) When $f>f_1$, $K(f)>0$, then $F'(m)_{m=1}<0$, and $F'(m)_{m=0}>0$, so $m=1$ is the stable state point of the game for the administration, and the administration's game strategy prefers to "push" the education reform

(b) When $f<f_1$, $K(f)<0$, $F'(m)_{m=1}>0$, and $F'(m)_{m=0}<0$, then $m=0$ is the stable state point of the game for the administration; therefore, the administration's game strategy tends to "not push" the education reform (Han and Fu 2022).

Stability analysis of professor selection strategy and analysis based on the replication dynamic equations of professors

According to equations (7) to (9), the replication dynamic equation of professors in the educational reform game system is obtained as:

$$F(f)=df/dt=f(1-f)\left[(g-1)C_f+2mP_f^p+mQ\left(\sum_{i=1}^{n}P_f^i-\lambda+nP_l+gn\mu_f\right)\right]$$

$$F'(f)=dF(f)/dt=(1-2f)\left[(g-1)C_f-2mP_f^p+mQ\left(\sum_{i=1}^{n}P_f^i-\lambda+nP_l+gn\mu_f\right)\right]$$

If the evolutionary stability of the professor's decision-making behavior in the game of educational reform is analyzed such that $F(f) = 0$, then:

$$mQ\left(\sum_{i=1}^{n} P_f^i - \lambda + nP_l + gn\mu_f\right) + (g-1)\, C_f - 2mP_f^p = 0$$

(a) When $g > g_0$, then $L(g) > 0$, $F'(f)_{f=1} < 0$, $F'(f)_{f=0} > 0$. At this time, the professor in the game of educational reform tends to choose "reform."

(b) When $g < g_0$, $L(g) < 0$, $F'(f)_{f=1} > 0$, and $F'(f)_{f=0} < 0$. At this time $f = 0$, hence the professor in the game of the evolution of the state educational reform tends to choose "do not promote educational reform".

Stability analysis of the combined strategy of the gaming system

By associating equations (10), (12) and (14), a replicated dynamic system of equations for the game of the three subjects in educational reform is obtained, as shown in equation (16):

$$\begin{aligned}
F(g) &= g(1-g)\left\{fmn\left[P_g^s - P_m^s + Q\left(\mu_m - C_g^{s2} - \mu_f\right)\right] - C_g^{s1}\right\} \\
F(m) &= m(1-m)\left[fgnC_g^{s2} + (g-1)\, C_m + fP_m^p\right] \\
F(f) &= f(1-f)\left[\left[(g-1)\, C_f - 2mP_f^p + mQ\left(nP_l + gn\mu_f - \lambda\right) + m\sum_{i=1}^{n} P_f^i\right]\right]
\end{aligned}$$

According to equation (16), the Jacobian matrix of the decision-making behavior system of the three stakeholders in the process of education reform in private colleges and universities is obtained:

$$J = \begin{bmatrix} \frac{\partial F(g)}{\partial g} & \frac{\partial F(g)}{\partial m} & \frac{\partial F(g)}{\partial f} \\ \frac{\partial F(m)}{\partial g} & \frac{\partial F(m)}{\partial m} & \frac{\partial F(m)}{\partial f} \\ \frac{\partial F(f)}{\partial g} & \frac{\partial F(f)}{\partial m} & \frac{\partial F(f)}{\partial f} \end{bmatrix} = \left\{\begin{array}{l}
\frac{\partial F(g)}{\partial g} = (1-2g)\left\{fmn\left[p_g^{s2} - p_m^s + Q(\mu_m - C_g^{s2} - \mu_f)\right] - C_g^{s1}\right\},\ \frac{\partial F(g)}{\partial m} = fgn(1-g)\left[P_g^s - P_m^s + Q(\mu_m - C_g^{s2} - \mu f)\right],\ \frac{\partial F(g)}{\partial f} = 0, \\
\frac{\partial F(m)}{\partial g} = m(1-m)fnC_g^{s2} + m(1-m)C_m,\ \frac{\partial F(m)}{\partial m} = (1-2m)\left[fgnC_g^{s2} + (g-1)C_m + fP_m^P\right],\ \frac{\partial F(m)}{\partial f} = m(1-m)gnC_g^{s2} + m(1-m)P_m^P, \\
\frac{\partial F(f)}{\partial g} = f(1-f)C_f + f(1-f)mn\mu_f Q,\ \frac{\partial F(f)}{\partial m} = f(1-f)(nP_l + gn\mu_f - \lambda)Q - 2P_f^P f(1-f) + f(1-f)\sum_{i=1}^{n} P_f^i \\
\frac{\partial F(f)}{\partial f} = (1-2f)\left[(g-1)C_f + mQ(nP_l + gn\mu_f - \lambda) + m(\sum_{i=1}^{n} P_f^i - 2P_f^P\right].
\end{array}\right\}$$

Reinhard pointed out that the stable solution in a multi-group evolutionary game is a strict Nash equilibrium, which must be a pure strategy. Therefore, there are eight combinations of pure strategies in the three-subject evolutionary game system. The stability of the strategy combinations of the game system can be judged according to Lyapuno's first law, which stipulates that: if the Jacobian matrix eigenvalues are all negative real parts, then the equilibrium point is asymptotically stable; if the Jacobian matrix eigenvalues have at least one positive real part, then the equilibrium point is unstable; and if the Jacobian matrix eigenvalues have eigenvalues with real parts of 0 except for the remainder of the eigenvalues, then the equilibrium point is in a critical state where the Jacobian matrix eigenvalues have at least one positive real part. In the replicated dynamic system (16), let F(g)= F(m)= F(f)=0. The 8 combinations of pure strategy equilibrium points are found to be $E_1(0,0,0)$, $E_2(1,0,0)$, $E_3(0,1,0)$, $E_4(0,0,1)$, $E_5(1,1,0)$, $E_6(1,0,1)$, $E_7(0,1,1)$, $E_8(1,1,1)$. Jacobian matrix (see Appendix A1) eigenvalues of the replicated dynamic equations are further obtained, and the stability of the equilibrium point of the gaming system is analyzed by the Jacobian matrix eigenvalues, as shown in Table 2, which shows that there are three possible stable equilibrium points of the system: (0,0,0), (0,1,1) and (1,1,1).

Table 2. *System equilibrium points, corresponding Jacobian matrix eigenvalues and asymptotic stability analysis*

Equantequation	Eigenvalue			Sign symbol	Meet the conditions	Stability
	λ_1	λ_2	λ_3			
$E_1(0,0,0)$	$-C_g^{s1}$	$-C_m$	$-C_f$	$(-,-,-)$	\	ESS
$E_2(1,0,0)$	C_g^{s1}	0	0	$(+,0,0)$	\	Point of instability
$E_3(0,1,0)$	$-C_g^{s1}$	C_m	$-C_f-2P_f^p+Q(nP_l-\lambda)+\sum_{i=1}^{n}P_f^i$	$(-,+,N)$	\	Point of instability
$E_4(0,0,1)$	$-C_g^{s1}$	$P_m^p-C_m$	C_f	$(-,+,+)$	\	Point of instability
$E_5(1,1,0)$	C_g^{s1}	0	$-2P_f^p+Q(nP_l+n\mu_f-\lambda)+\sum_{i=1}^{n}P_f^i$	$(+,0,N)$	\	Point of instability
$E_6(1,0,1)$	C_g^{s1}	$nC_g^{s2}+P_m^p$	0	$(+,+,0)$	\	Point of instability
$E_7(0,1,1)$	$n[P_g^s-P_m^s+Q(\mu_m-C_g^{s2}-\mu_f)]-C_g^{s1}$	$C_m-P_m^p$	$C_f+2P_f^p-Q(nP_l-\lambda)-\sum_{i=1}^{n}P_f^i$	$(-,-,-)$	①	ESS
$E_8(1,1,1)$	$C_g^{s1}-n[P_g^s-P_m^s+Q(\mu_m-C_g^{s2}-\mu_f)]$	$-nC_g^{s2}-P_m^p$	$2P_f^p-Q(nP_l+n\mu_f-\lambda)-\sum_{i=1}^{n}P_f^i$	$(-,-,-)$	②	ESS

Simulation

In the game stability analyses concerning Heilongjiang Province, Jiangxi Province and Henan Province colleges and universities as the objects of study, cases were mainly selected from Qiqihar Engineering College, Henan Engineering College and Jiangxi Vocational College. The data were mainly obtained from online consultation, the Ministry of Education information network and academic literature. In addition, it was assumed that: all three schools had five identical majors and 50 professors adapted to the education reform; the cycle of education reform was 3 years; the growth rate of scientific research achievements was 3%; and the initial value of the willingness of professors and administration to push forward the education reform was 0.5, i.e., $g = m = f = 0.5$. The initial values of the simulation parameters are shown in Table 3.

Table 3. *Initial values of case simulation parameters*

parameter		i	Q	α_1	C_w^1	C_r^1	θ	μ_m	C_g^{s1}	C_g^{s2}	μ_f	P_g^s	P_m^s	C_m	P_l	η	Y_m	C_f	P_f^i	Y_f	λ	a
value	Qiqihar College of Engineering	3	500	1.25	570	800	210	100	5000	0	100	150000	150000	4000	500	225	1950	2000	2000000	1700	50	50
	Henan College of Engineering	3	500	1.25	570	710	215	100	1200	200	0	150000	150000	1000	700	225	2100	500	3810000	1800	50	50
	Jiangxi Vocational College	3	500	1.25	570	710	215	100	5000	0	160	150000	150000	4000	900	225	2400	2000	3740000	2100	50	50

Simulation analysis of three private university initialization programs

The three-party evolutionary game simulation model is established through Vensim software, and the data in Table 3 are input into the simulation model to produce the initial results of the simulation of colleges and universities. This paper uses Matlab software to carry out the simulation, and the simulation results of the initialization scenario of the three schools are shown in Figure 2. From the overall view of Figure 2, different regions have different schooling systems, infrastructures, and policy environments, which affect the evolution path of the game between the three stakeholders, but the evolution of the system is finally stabilized at the equilibrium point (1,1,1).

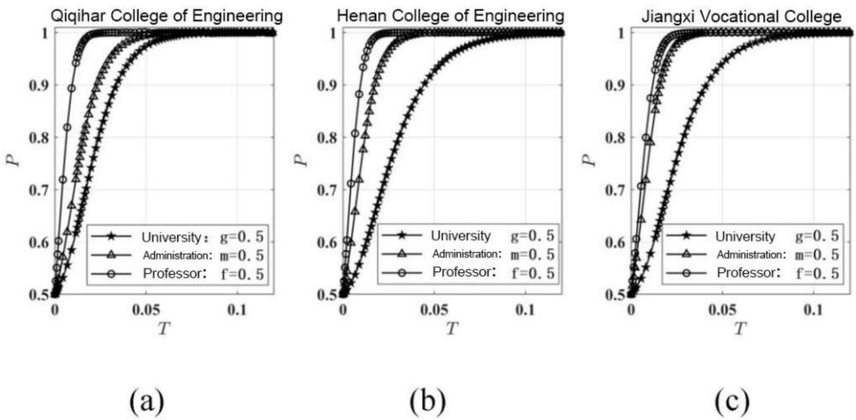


Figure 2. *Evolutionary path results for different case scenarios*

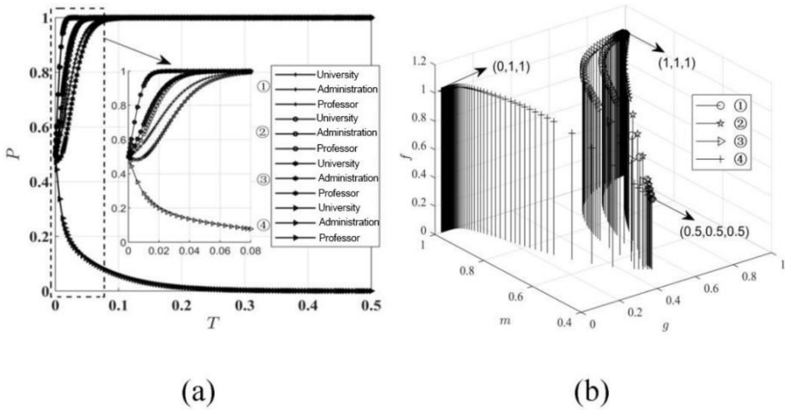
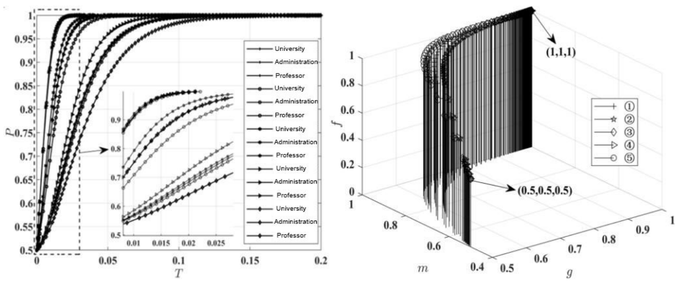


Figure 3. *Results of the impact of changes in* C_g^{s1} *and* P_g^s *on school decision-making behavior and the game system*

However, as can be seen from Figure 2(a), schools and administrations reach the steady evolutionary state the fastest in the gaming system compared to the other two schools with poorer experimental facilities and regulations. For schools, vocational education for university students is beneficial to local employment, professionalism, and the building of a modernized country, thus generating higher overall school benefits. Therefore, schools are more willing to push forward with pedagogical reforms (Doumpos et al. 2023).

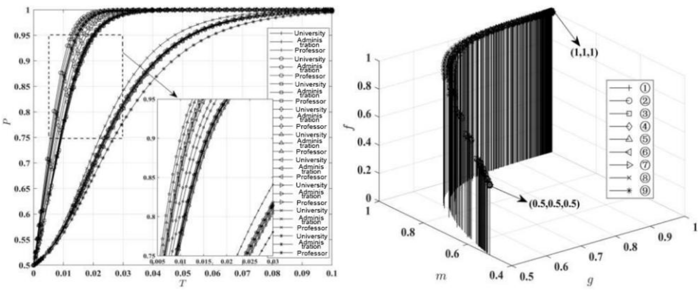
Analysis of the influence of key exogenous variables on the evolutionary process and the outcome of the subject's game decisions

Taking Qiqihar Engineering School as the background, $\{C_g^{s1}, P_g^s\}$ = ①{5000 ,400000}, ②{50000 600000}, ③{600000 600000}, ④{1500000 600000}, the simulation results are shown in Figure 3. The higher the cost of promoting education reform in schools, the lower the willingness of schools to promote. When the cost of promoting education is much greater than the comprehensive benefits of education, schools are not willing to invest in promoting education reform, and their strategy converges towards "no-push." The more that the P_g^s cost is greater than the C_g^{s1} cost, the faster the evolution of the educational game converges towards the "no-push" strategy (Elango and Talluri 2023).



(a) (b)

Figure 4. *The results of the impact of changes in* P_m^p *and* C_g^{s2} *on the decision-making behavior of administration X and the game system*



(a) (b)

Figure 5. p_f^p p_f^i p_l *and* μ_f *changes in the professor's decision-making behavior and the outcome of the game system*

Taking Jiangxi Vocational College, it is assumed that ① {1513500 200} ② {1200000 200} ③ {1800000 300} ④ {1513500 100}, ⑤ {1513500 300}, and the simulation results are shown in Figure 4. The game evolution trajectory of the administrative agency in the education reform process is less influenced by the administrative agency subsidy C_g^{s2} and more significantly influenced by the combined research and school revenue P_m^p. In contrast, after the reform of eastern teachers' education, the comprehensive school revenue is high, and the administrative agency C_g^{s2} revenue is higher compared to the meager school subsidy, so the school administrative agency subsidy has less influence on the administrative agency's game decision (Schuelka 2023).

The educational infrastructure of Jiangxi Vocational College is closer to perfect, so the educational reform recommendation is faster and the comprehensive output gain of the school is higher. While the cost of student education is also relatively high, administrative agencies are not highly motivated to promote educational reform. Taking Jiangxi Vocational College as the background, assuming that $\{p_f^p, p_f^i, p_l, \mu_f\}$= ① {2550000 6425000 900 160} ② {2200000 6425000 900 160} ③ {2800000 6425000 900 160} ④ {2550000 6025000 900 160} ⑤ {2550000 6825000 900 160} ⑥ {2550000 6425000 800 160} ⑦ {2550000 6425000 1000 160} ⑧ {2550000 6425000 900 100} ⑨ {2550000 6425000 900 220}, the simulation results are shown in Figure 5. The motivation for educational reform increases when university professors receive an increased additional subsidy μ_f from improved regulations.

Conclusion

This paper takes the premise of the finite rationality of game parties, combines game theory and system dynamics methods, and applies them to the study of the decision-making behavior of multiple stakeholders in education reform. It also establishes an SD evolution game model of education reform with professors, administrative agencies and schools as the three game subjects. Then, through the stability analysis of game strategies and feedback regulation simulation, it draws the following main conclusions.

From the overall results of the feedback regulation simulation, the heterogeneity of educational infrastructure conditions and educational implementation measures affects the game evolution trajectories of professors, administrative agencies and schools, and the state of educational infrastructure and educational reform policies are the root causes that influence professors' and administrative agencies' willingness, and thus lead to different educational reform processes. The redistribution of the benefits of reform among three schools in three different geographical scenarios has an impact on the evolutionary trajectory of the subject's game, but ultimately the system evolves in an ideal equilibrium (push, push, reform), i.e., schools choose to reform and administrative agencies and professors choose to reform, realizing a win-win situation and highlighting the trend of educational reform.

Changes in the willingness of professors or administrative agencies to reform education have an impact on the other players. The evolutionary trajectory of the decision-making behavior of the other two parties also has a significant impact. Since the satisfaction of the interests of the three game subjects depends on the value of the research results, professors and research institutions are the direct educational reform decision makers; therefore, the reform willingness of both of them significantly affects the evolutionary trajectory of the decision-making behaviors of the other two parties.

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TRIJŲ SUINTERESUOTŲJŲ ŠALIŲ SPRENDIMŲ PRIĖMIMO ELGESIO ANALIZĖ PRIVATAUS UNIVERSITETO UGDYMO REFORMOS PROCESE

Anotacija. *Šis tyrimas buvo atliktas reaguojant į susiklosčiusią situaciją, kai švietimo perskirstymo neatitiktis lemia ilgalaikę neveiksmingą ir lėtą ugdymo aplinką, mokomųjų dalykų lūkesčių tenkinimo sunkumus, veiksmingo švietimo politikos priemonių tikslinimo trūkumą. Remiantis numatoma naudingumo teorija ir pirmuoju Lyapunovo dėsniu, buvo atlikta tiriamųjų elgsenos priimant sprendimus grįžtamojo ryšio reguliavimo modeliavimo analizė. Tyrimo rezultatai atskleidė, kad mokomojo dalyko raidą veikia švietimo finansavimo išmokų perskirstymas, tačiau galutinė sistemos raida yra stabili. Tačiau trijų sprendimų įgyvendintojų, kurie visokeriopai siekia realizuoti reformą, elgesys yra lemiamas norint užtikrinti sistemos stabilumą. Todėl didesnės subsidijos švietimui, nei buvusios iki reformos, ilgainiui sudaro palankias sąlygas paskatinti ypač mokslininkų grupes pirmenybę teikti švietimo reformos strategijai, taip pat leidžia kontroliuoti reformos finansavimo garantijas.*

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THE CREATION OF PUBLIC VALUE IN THE PROCESS OF THE DIGITAL TRANSFORMATION OF PUBLIC ADMINISTRATION IN KAZAKHSTAN

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Abstract. *This paper explores the concept of public value in the context of digital transformation in Kazakhstan's public administration. It investigates the creation of public value and assesses the outcomes of government digitalization efforts. The study employs a qualitative research methodology, including citizen questionnaires and the analysis of relevant documents. The aim is to not only understand public value creation but also identify the specific dimensions of value in Kazakhstan's case, filling a gap in the empirical research on public value in Central Asian countries' digital transformation initiatives.*

Keywords: *digital transformation, public value creation, Kazakhstan, public services.*

Reikšminiai žodžiai: *skaitmeninė transformacija, viešosios vertės kūrimas, Kazachstanas, viešosios paslaugos.*

Introduction

The concept of public value in government objectives encompasses various dimensions, including efficiency, public service delivery, equity, inclusivity, transparency, citizen engagement, and citizen well-being (Karunasena et al. 2011). E-government is recognized as a means to achieve these objectives by enhancing services, reducing costs, and increasing participation, which is essential for government accountability (Karunasena et al. 2011).

Public value theory, rooted in Mark Moore's work, defines public value as citizens' collective expectations of government services (Moore 1995). It highlights the responsibility of public managers to enhance services and societal conditions to create public value (Moore 1995). Although Moore's theory does not directly address digitalization processes, it provides a foundation for assessing the impact of digital transformation on public values (Strathoff 2016; Naidoo and Holtzhausen 2020). Creating a robust framework for evaluating e-government and digital transformation is challenging due to the complexity of categorizing values and defining suitable measurement indicators (Karunasena et al. 2011; Kearns 2004; Kelly et al. 2002). There are ongoing debates about the elements and dimensions of public value, and a common classification or taxonomy has not been established (Bannister and Connolly 2014; Cordella and Paletti 2019). However, values can be broadly categorized as socially oriented, service-oriented, managerial, and democratic (Bonina and Cordella 2009; Cordella and Paletti 2019).

This paper aims to apply the conceptual framework of public value theory to preliminarily evaluate the impact of digitalization in Kazakhstan. Kazakhstan has made remarkable progress in digitalization and e-government, ranking 15th in global citizen e-participation and 28th in e-government development in 2022 (Sputnik 2022). The country also holds a strong position in the Network Readiness Index, and it now ranks 56th out of 134 countries, surpassing Turkey, Ukraine, and Belarus (Finprom 2023). Digital literacy among Kazakhstani residents aged 6 to 74 has increased by 4.5% over the past 3 years, reaching 84.1% by the end of 2020 (Finprom 2023). In April 2023, Kazakhstan improved its global internet speed ranking to 72nd place, outperforming neighboring countries in the Eurasian Economic Union and Central Asia (Finprom 2023).

Thus, this paper enhances the understanding of digital transformation in Kazakhstan's public administration by applying public value theory. It seeks to answer the following question: ***"What public values are created through digital transformation in Kazakhstan?"***

The paper qualitatively analyzes responses from 274 survey participants, focusing on the contribution of digital platforms to public value across four dimensions: *trust, service delivery, desired outcomes,* and *service effectiveness*. It also includes the analysis of audit reports, strategies, and government announcements regarding Kazakhstan's digital programs. While the survey gathered the general opinions of citizens, it did not specifically investigate the concerns highlighted in state reports. Future research could involve more comprehensive methods, including structured interviews with high-level managers involved in digitalization and focus group investigation. This would lead to a more comprehensive evaluation of digitalization efforts.

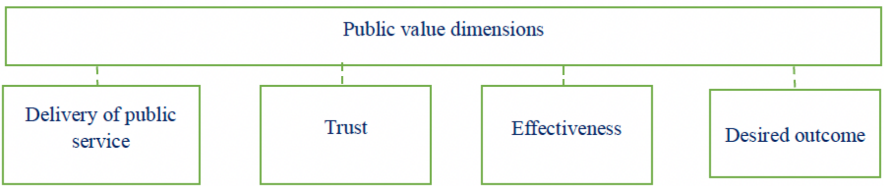
In recent years, Kazakhstan has prioritized digitalization efforts in public administration to improve efficiency, transparency, and service quality. Key initiatives include e-government, e-participation, e-procurement, and open platforms. Kazakhstan's approach blends international experiences with adjustments to suit its unique needs (Kassen 2018). The country has adopted a non-linear model of e-government implementation, marked by distinct stages: *creation of infrastructure*, *informatization and training*, *development of a cohesive ecosystem*, *interdepartmental integration*, *e-participation*, and *open government* (Lee 2010, as cited in Kassen 2019).

Several studies have examined citizens' satisfaction with digitalized public services in Kazakhstan, identifying areas for improvement (Bokayev et al. 2021). Authors have highlighted the importance of sectoral changes and the transformation of public services and e-government implementation (Kassen 2016; Knox and Janenova 2019). Knox and Janenova (2019) discussed a paradox where e-government, despite addressing bureaucracy and corruption, can lead to unintended consequences, particularly in post-Soviet states. Notably, open government initiatives in Kazakhstan have struggled to engage citizens actively, with unofficial platforms such as social media becoming more popular for one-way communication (Knox and Janenova 2019). These studies emphasize principles such as openness, transparency, inclusiveness, public satisfaction, and engagement as essential outcomes of state development programs. However, a limited amount of research has focused on open communication between the government and citizens and the creation of public value in the digitalization of the public sector in Kazakhstan.

Research methodology

This paper adopts the conceptual framework of public value theory, which includes four main dimensions: delivery of public service, outcomes, trust, and effectiveness (Karunasena et al. 2011), in alignment with the frameworks of Kelly (2002) and Kearns (2004). The choice of this framework was driven by two primary reasons. First, Kazakhstan, as a developing country, has successfully digitized its public services. Second, the concept of public value provides an analytical structure to assess policy implementation results, the quality of public services, and the value created for citizens by the government. Examining a country's digital transformation from a value-based perspective allows for a comprehensive understanding of the context of transformation and the relationship between technology and society (Kearns 2004).

Table 1. *The conceptual framework – public value dimensions*



Source: Developed by the authors based on the frameworks of Karunasena (2011), Kelly (2002) and Kearns (2004).

Public service delivery signifies the quality of services offered to the public (Kearns 2004; Heeks 2008). This dimension encompasses various aspects, including information availability, relevance to citizens' needs, multiple service delivery channels, cost savings, fairness, citizens' satisfaction, and the number of users accessing at least one service (Kearns 2004; Karunasena et al. 2011). Desired outcomes focus on socially desirable impacts, deliverables, and consequences of public service delivery, spanning initial, intermediate, and long-term effects (Codagnone and Undheim 2008). The trust dimension is assessed from various perspectives, such as security, privacy transparency, trust in e-services, and citizens' participation in government (Kearns 2004; Heeks 2008). Effectiveness gauges the public value created through e-government, and is measured by factors such as efficiency, public body accountability, and citizens' perceptions of public organizations (Moore 1995). E-government efficiency is determined by criteria such as cost savings, financial returns, employee empowerment, and ICT infrastructure development (eGEP 2006).

Faulkner and Kaufman's systematic review (2017, 3) emphasized the need for empirical measures to test hypotheses regarding the causes and consequences of public value creation. This study aims to assess the practical application of these frameworks in the digital transformation of Kazakhstan's public administration and the country's efforts to generate public value. The research utilizes the conceptual framework of public value theory and employs qualitative research methods, including the distribution of questionnaires to citizens. It also involves the analysis of secondary data sources such as policy papers and government releases. Surveys have previously been used to evaluate the design-reality gap and assess the utility of online government services (Heeks 2003; Bwalya and Mutula 2014; Makoza, 2016). This approach not only aids in comprehending public value creation, but also uncovers specific dimensions of values within the context of Kazakhstan, which is an expected research outcome. The study combines citizens' questionnaires and the analysis of strategic documents related to digital transformation. The questionnaire was administered through Google Surveys, and consisted of 13 closed questions. It was distributed to participants from various sectors through randomly shared links on social networks, resulting in the collection of 274 responses between April and May 2023.

National Programs and Strategies on the Digitalization of Kazakhstan

Kazakhstan's political and socio-economic reforms, initiated with the "Declaration on State Sovereignty" in 1990 and the Law "On State Independence," aimed to transition to a democratic, secular, and market-based economy. Over two decades, the country pursued a policy of establishing a Unified Information Space, reducing budget costs and fostering a unified communication environment. In 1997, a Presidential Decree addressed issues of inadequate interaction between state information systems, emphasizing the importance of efficient information flow management for decision-making and security. Electronic document management played a pivotal role in this initiative (Supreme Audit Institution of Kazakhstan 2022, Table 1). In 2017, Kazakhstan launched the "Digital Kazakhstan" program, inspired by the Fourth Industrial Revolution, focusing on emerging technologies such as *big data, blockchain, AI,* and *3D printing*. The program aimed to boost economic development through five key directions: *digitizing economic sectors, transitioning to a digital government, implementing the digital Silk Road, enhancing human capital,* and *fostering innovation* (Decree of the Government No. 827, 2017).

It ended in 2022, but laid the groundwork for subsequent initiatives. It aimed to digitize public administration and streamline bureaucratic procedures, involving citizens, government officials, and businesses. The program sought to redefine the state-citizen relationship, encourage business-government collaboration, enhance digital literacy, and stimulate innovation (Supreme Audit Institution of Kazakhstan 2022). The eGov Mobile application provided access to 641 public services, benefiting approximately 1.2 million monthly users (e-Gov, n.d.).

The National Development Plan of Kazakhstan until 2025 is the foundational document guiding the country's digital development, with a strong focus on key sectors such as education, healthcare, agriculture, infrastructure, and government digitalization (Presidential Decree No. 521, 2021).

The "Technological Leap through Digitization, Science, and Innovation" document outlines tasks from 2021 to 2025, with a focus on science, economic and social digitization, economic diversification, and balanced development. It aims to achieve outcomes such as GDP growth in the ICT sector, revenue from the crypto industry, private co-financing for R&D, and improved government services. The "Methodological Recommendations for Building Smart Cities" guide the construction of innovative "Smart Cities" in Kazakhstan, with oversight by authorized bodies and digitization offices to regulate development and monitor progress through key indicators (Decree of the Government No. 727, 2021).

The "Concept of Digital Transformation, Information-Communication Technologies Industry Development, and Cybersecurity for 2023–2029" initiative involves stages to ensure the country's security, protect personal data, and enhance cyber hygiene. It represents the phased implementation of Kazakhstan's digital segment (Decree of the Government No. 269, 2023).

Results and Discussion

Of the 13 questions in the survey, eight were directly related to the four dimensions of public value: trust, service delivery, desired outcomes, and service effectiveness, as illustrated in Figures 1–4. The remaining questions assess the potential of state digital initiatives in generating public goods and public values. Preliminary feedback from citizens indicates their satisfaction with public services delivered by state bodies. Kazakhstan's e-government system is viewed as a successful model for creating public value in the digitalization of public administration. It offers citizens a convenient one-stop online service, reducing the need for physical government office visits, cutting corruption and bureaucracy, and enhancing transparency and efficiency in government interactions.

Table 2. *Phases of the digital transformation of public administration in Kazakhstan*

Year	Purpose	Reforms	Results
1997–2001	The initial phase of the establishment of a robust infrastructure.	Reforms aimed at the development of the public sector.	*Active computerization; building a technological infrastructure basis; initial creation of telecommunications network; establishing first internet and intranet connections in public institutions; introducing internal corporate e-mail systems; procuring servers, software, terminals, websites, etc.*
2001–2004	Focus on the informatization of public institutions.	Building a powerful national infrastructure.	*Formulation of important conceptual and legislative foundations, initiation of civil service professionalization.*
2004–2006	Focus on a centralized ecosystem for e-government.	Formation of an "electronic government."	*The establishment of the E-Gov web portal (www.egov.kz).*
2007–2010	A new phase of technology-driven public-sector reforms.	Transitioning to a cloud platform, the first stage of the state cloud initiative.	*Adoption of the second e-government strategy and the e-procurement Law.*
2010–2012	Focus shifted towards establishing a service-oriented state.	Implementation and development of the architecture of the "electronic government."	*Kazakhstan's e-government matured with tools, international practices, and public-private partnerships.*
2013–2016	Focus on advancement of open government and open data platforms.	Implementation of an architectural approach to improve the efficiency of the government system.	*The "Information Kazakhstan – 2020" strategy aimed to reduce bureaucracy and improve services and e-participation.*
2017–ongoing	Proactive phase.	Digitization of internal activities of government agencies, transition to a "Digital State."	*"Government for Citizens" was launched, which introduced cloud services, mobile technologies, and other government technologies.*
2017–2022	"Digital Kazakhstan."	The "Digital Kazakhstan" State Program was designed to guide the country's digital transformation efforts, with a focus on promoting innovation, economic growth, and social development through the use of digital technologies.	*The launch of the eGov Mobile application and other e-platforms.*

Year	Purpose	Reforms	Results
2022–2029	Concept of Digital Transformation, Information-Communication Technologies Industry Development, and Cybersecurity for 2023–2029.	This is based on the "National Development Plan of the Republic of Kazakhstan until 2025." Similar to the "Digital Kazakhstan" program, the target groups and associated tasks can be divided into several categories: - population; - business and economy; - governmental structures.	*This concept was approved by the Government of the Republic of Kazakhstan on March 28, 2023, and is still ongoing.*

Sources: *Developed by the authors on the basis of following documents and authors: Kassen 2018: Bokayev et al. 2021; Presidential Decree No. 3787, 1997; The Government Resolution No. 715, 1998; The "Informatization Law" (Law No. 412, 2003); Presidential Decree No. 1471, 2004; Government Resolution No. 1155-1, 2007; Presidential Decree No. 958, 2010; Government Resolution No. 983, 2010; Presidential Decree No. 464, 2013; Government Directive No. 39, 2016; Decree of the Government No. 269, 2023.*

Answers to the questions regarding the creation of public value: 50% of respondents believe digital transformation can enhance effective state management and increase public well-being; 45.3% believe digital transformation can promote inclusiveness and democratic values through accessible public services and transparent governance processes; 55.5% view e-government services as enhancing transparency and accountability; and 54.4% provide a "mostly positive" evaluation of the impact of digital transformation on information openness, accessibility, and accountability.

However, 40.5% stress the importance of proper implementation and careful management. Moreover, 42.7% emphasize the need for projects tailored to various population groups and personal data security, while around 40% see the need for regulations and the protection of citizens' and businesses' rights. Approximately 30% call for adequate control over government process accountability. Respondents believe that the service-oriented model of transformation is ongoing, but note that not all personnel meet high standards, potentially hindering goal achievement.

Answers to the questions on the aspects, impacts, and quality of digitalization and state programs: 63.5% consider Kazakhstan's e-government platform significant for reducing bureaucracy and increasing transparency. However, fewer respondents believe in the impact of the state's economic development. Around 29.9% see digitalization as positively impacting Kazakhstan's development, while 28.5% emphasize the importance of digital infrastructure, and a similar proportion highlight digital economy development. The quality of public services is the primary benefit of digital transformation, with 31.4% noting increased transparency and openness. The "Listening State"[1] program is seen as a means to enhance feedback from citizens and stakeholders, with 24.8% urging the consideration of citizens' opinions and needs in decision-making processes.

1 See the "Listening State" concept in https://www.akorda.kz/en/addresses/addresses_of_president/president-of-kazakhstan-kassym-jomart-tokayevs-state-of-the-nation-address-september-2-2019

Answers to the questions on the necessary conditions and challenges in digital transformation: 40.1% believe reliable infrastructure with high-speed data transfer is a crucial condition for maximizing digital transformation opportunities. Data security and privacy concerns, specifically information leakage, are the primary worries for 48.9% of respondents. Respondents show less concern about inclusiveness, social group and regional disparities, and the need for digital technology training. The long-term goals of Kazakhstan in e-government and digitalization are perceived very positively by 56.2% of respondents. Another challenge involves establishing effective communication channels between citizens and government agencies, reflecting Knox and Janenova's (2019, 12) findings of one-sided communication and limited interaction between the government and citizens.

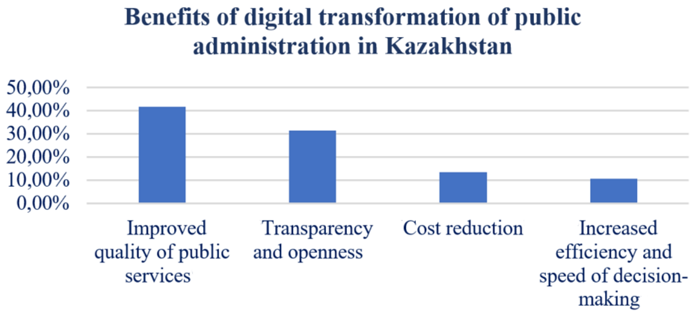


Figure 1. *Service delivery*

Source: Developed by authors on the basis of the respondents' answers.

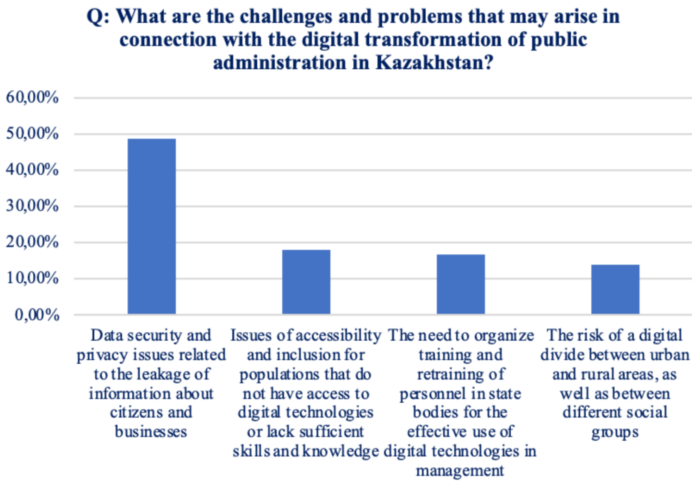


Figure 2. *Trust*

Source: Developed by authors on the basis of the respondents' answers.

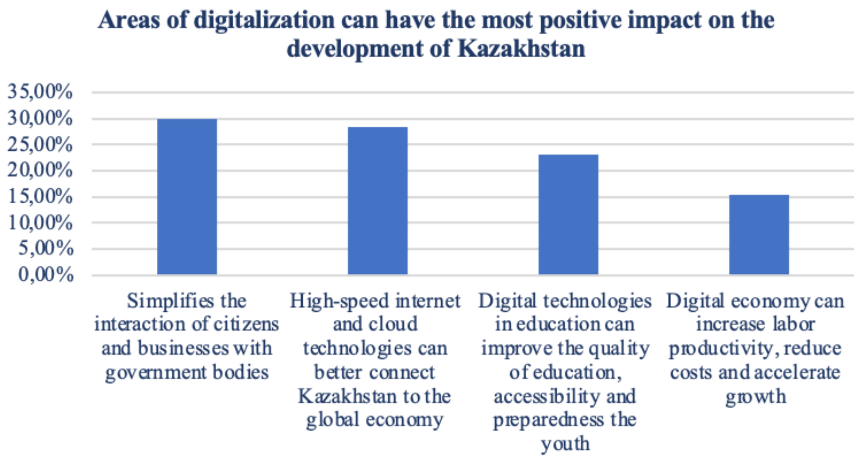


Figure 3. *Effectiveness*

Source: Developed by authors on the basis of the respondents' answers.

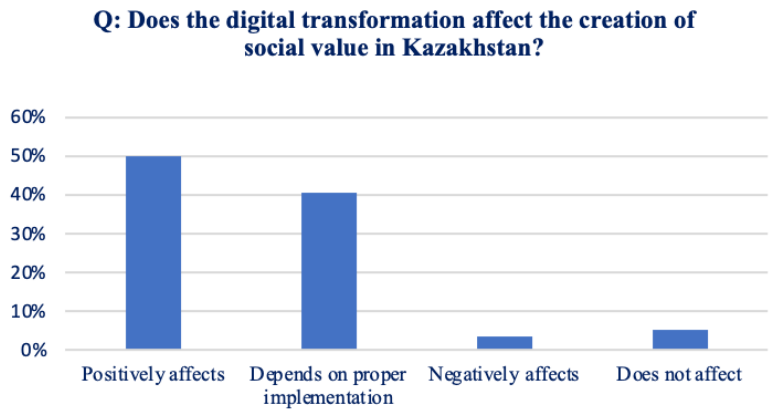


Figure 4. *Desired outcomes*

Source: Developed by authors on the basis of the respondents' answers.

At the same time, approximately 24% of respondents emphasized the inclusion of citizens' opinions and needs in the decision-making process.

The obstacles identified in the State Interim Evaluation Report primarily result from the lack of systematic planning, organizational continuity, and clear indicators in the development and implementation of informatization and digitization programs. This poor implementation quality poses risks to fundamental processes, including budgeting and public service provision. Key recommendations include establishing systematic planning, ensuring organizational continuity during state body reorganization, improving the quality of indicators and benchmarks within state programs, and reducing bureaucratic processes for these initiatives to have a significant impact across all sectors and the entire population (Supreme Audit Institution of Kazakhstan 2022).

While these activities closely relate to the work of state bodies, from an academic perspective they can be complemented by systematic analysis and monitoring activities. For sectoral development, as the report concludes, the impact of digital technologies on increasing labor productivity remains insufficient. For example, according to the "Digital Kazakhstan" State Program, the growth of labor productivity in the mining and quarrying sector from 2018–2020 was 13.7%; in agriculture, forestry, and fishing it was 36.6%; and in the manufacturing industry it was 19.2%. However, the utilization of digital technologies by large and medium-sized enterprises in Kazakhstan has remained low, not exceeding 10% in the past two years (5.9% in 2019 and 7.8% in 2020). In addition to this, only around 23% of respondents believe that digitalization has had a positive impact on the development of Kazakhstan's digital economy.

Apart from these challenges, the e-government system is seen as a successful case, streamlining access to services, reducing corruption and bureaucracy, increasing transparency, and improving communication with government services.

Conclusion

1. The digitalization of public administration in Kazakhstan is a significant endeavor to modernize government services and enhance efficiency. To effectively assess the progress and outcomes of state programs, it is essential to use specific and measurable criteria, avoiding vague formulations such as "reporting information."
2. This study has highlighted the potential for creating public value through digitalization, including enhancing: the accountability of state bodies; the effectiveness and availability of public services; transparency; information openness; and reducing bureaucratization. However, challenges such as data security and the protection of citizens' and businesses' rights must be addressed.
3. The achievement of the goals of digitalization depends on robust infrastructure, a skilled workforce, and efficient governance structures, which, in turn, impact the creation of public goods and value.
4. Future recommendations include:
   a. developing a methodology for measuring key indicators in the effectiveness of national projects and their impact on socio-economic development;
   b. conducting systematic analysis of feedback from digital e-platforms and sociological and sectoral assessments to evaluate specific public value creation;
   c. expanding research methods and comparing digitalization achievements in developing countries using the framework of public value theory.

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VIEŠOSIOS VERTĖS KŪRIMAS VIEŠOJO ADMINISTRAVIMO SKAITMENINĖS TRANSFORMACIJOS PROCESE KAZACHSTANE

Anotacija. *Šiame straipsnyje nagrinėjama viešosios vertės samprata Kazachstano viešojo administravimo skaitmeninės transformacijos kontekste. Tiriamas viešųjų vertybių kūrimas ir vertinami Vyriausybės institucijų skaitmeninimo pastangų rezultatai. Atliekant tyrimą taikoma kokybinė tyrimo metodika, apimanti piliečių anketas ir atitinkamų dokumentų analizę. Siekiama ne tik suprasti viešosios vertės kūrimą, bet ir nustatyti kon-*

krečias vertės dimensijas Kazachstano atveju. Taip pat Centrinės Azijos šalių skaitmeninės transformacijos iniciatyvų kontekste siekiama užpildyti empirinių viešosios vertės tyrimų spragą.

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THE PREPAREDNESS OF VILLAGE GOVERNMENTS FOR THE DIGITAL TRANSFORMATION OF PUBLIC SERVICES IN BANYUMAS REGENCY, INDONESIA

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Abstract. *The objective of this study is to assess the level of preparedness exhibited by village governments in relation to the digital transformation of public services. The advancement of Information and Communication Technology (ICT) has brought about significant transformations in both the private and public sectors. Particularly, it has played a pivotal role in driving the modernization of public services at the regional level, with a specific focus on village governance. In Indonesia and other developing nations, the process of transformation faces various challenges. These challenges encompass: a digital divide resulting from an inadequate ICT infrastructure network, limited innovation leadership, and a lack of digital literacy within the local government apparatus. This study employs a descriptive quantitative approach to further investigate the aforementioned issues. The research involved 75 village governments in Banyumas Regency, and the collected data were analyzed using descriptive statistical methods. The findings indicated that the insufficient focus and dedication of regional and village governments towards the advancement of ICT in their respective areas, along with the limited investment in enhancing the digital proficiency of government personnel, are influential factors in determining the level of preparedness of village governments for the process of digital transformation.*

Keywords: *digital transformation; level of preparedness; public services; village government.*

Reikšminiai žodžiai: *skaitmeninė transformacija; pasirengimo lygis; viešosios paslaugos; kaimo vadovybė.*

Introduction

The advent of the digital revolution has resulted in a diverse range of innovations in both the industrial and public sectors, thereby influencing the provision of services and fostering innovation (Okkinakos et al. 2016; Sjödin et al. 2018). Public sectors actively pursue competitive advantage by leveraging innovative digital services (Martín-Peña et al. 2018). To effectively respond to the dynamic environment, the incorporation of e-government concepts has been undertaken. Mergel, Edelmann, and Haug (2019) assert that the adoption of e-government on the Internet as a service model has significantly bolstered the efficacy of public services. The adoption and utilization of this particular technology has been found to have a positive impact on the overall standard of public services, as well as on the efficiency of administrative processes. Additionally, it has been observed that it contributes to the advancement of democratic principles, fostering transparency and inclusivity (Bannister and Connolly 2014).

The implementation of e-government has been found to enhance public trust and satisfaction in local governments, enabling citizens to access services in a flexible manner irrespective of temporal and spatial constraints (Bernhard et al. 2018). The implementation and development of robust ICT infrastructure has been shown to significantly contribute to the promotion of transparency and accountability in various aspects of public services, as well as administrative and political processes (Whitacre and Mills 2010; Townsend et al. 2013). As a result, the utilization of information and communication technology (ICT) in e-government initiatives promotes the facilitation of citizen engagement in a convenient manner.

The universal adoption of rapid and massive changes in the service delivery system may be hindered by factors such as inadequate ICT infrastructure and low digital literacy within communities, thereby limiting the convenience that digital transformation can provide (Joshi and Islam 2018). The geographical conditions present in Indonesia also pose significant obstacles in the pursuit of digital equality. According to the data provided by the Indonesian Central Bureau of Statistics (2022), Internet access was available to a mere 58.3% (158 million) of the overall population in 2021. Furthermore, the aforementioned report indicates that only 55.75% of villages and hamlets (46,485 out of 83,381) had access to the Internet. These figures underscore the evident disparities in the distribution of network infrastructure, with rural areas being disproportionately affected (Kementrian Pendayagunaan Aparatur Negara dan Refromasi Birokrasi 2022). In addition, village governments encounter challenges in fulfilling technological requirements, such as the necessity for proficient personnel and favorable regulatory frameworks (Salemink et al. 2017).

The process of digitizing villages in Banyumas Regency entails various challenges and opportunities that have a substantial impact on the results of digital transformation, with a specific focus on the 71 villages located within the region. Irwansyah and Haninda (2019), as well as Yamin et al. (2018), delineated a number of obstacles that necessitate resolution, encompassing: deficient ICT infrastructure, restricted proficiency in digital literacy, financial constraints, and aversion to change. However, the potential benefits are significant, and include: improved service delivery, economic growth, the empowerment of local communities, education and skills development, and enhanced transparency and accountability in governance (Puspasari 2018; Rokhman 2020). By leveraging these opportunities and taking proactive measures to overcome challenges, local governments have the ability to develop efficient strategies that can bridge the digital divide, foster digital literacy, and empower communities to fully harness the transformative power of digital technology in village governments within Banyumas Regency.

Furthermore, the allocation of village funds in Banyumas Regency assumes a significant role in facilitating the development of local capabilities by leveraging ICT. According to Rokhman (2020), the provision of funds specifically earmarked for the development of villages enables village authorities to allocate resources towards: the establishment of ICT infrastructure, the implementation of training initiatives aimed at enhancing digital literacy, and the execution of projects centered around technology. By utilizing the village fund, communities have the ability to procure essential hardware and software resources, as well as establish community centers equipped with Internet connectivity.

The objective of this study is to provide an overview of the level of preparedness exhibited by the local government in Indonesia with regard to implementing digital transformation initiatives in the realm of public services. The subject matter at hand aligns with the pronouncement made by the President of Indonesia during the 2020 G20 summit in Bali, wherein digital information was identified as one of the foremost concerns in the country's progress. As previously stated, Indonesia and several Asia-Pacific nations face significant challenges in their efforts to promote digitalization within their respective territories. The literature review section of this paper provides an in-depth analysis of the concept of digital transformation, elucidates the core components of digitalization, and examines the challenges encountered during the process of digital transformation. The subsequent section elucidates the various approaches and methodologies employed in the research conducted, followed by the presentation of findings and empirical analysis. The final section encompasses the discussion, conclusion, and contribution of the current study.

Literature Review

Digital Transformation in Public Services

The process of digital transformation is influenced by three external factors. The proliferation of the Internet has played a significant role in driving advancements in various associated technologies. These include: broadband, smartphones, Web 2.0, search engine optimization (SEO) tools, cloud technology, voice recognition, online payment systems, and digital currencies. Consequently, these technological developments have greatly contributed to the expansion of e-commerce (Verhoef et al. 2021). Furthermore, the advent of novel digital technology has caused significant disruptions in the competitive environment, resulting in heightened levels of competition among retail enterprises and facilitating the ascendancy of market-dominating enterprises led by younger generations (Verhoef et al. 2021). Furthermore, the advent of the digital revolution has prompted alterations in consumer behavior, resulting in a notable transition towards the practice of online shopping. The significance of digital touchpoints in the consumer journey has been heightened by this transition, impacting sales in both online and offline channels (Kannan and Li 2017).

According to Mergel, Edelmann, and Haug (2019), digital transformation is composed of three essential components. Firstly, this entails the utilization of technology to modify the approach of delivering services, thereby enabling direct engagement between service providers and customers. In the realm of private enterprise, this phenomenon gives rise to novel advancements, exemplified by the emergence of online ride-hailing services facilitated by platforms such as Go-Car, Go-Jek, and Grab. Within the realm of the public sector, there is a notable shift towards the adoption of e-government principles, which involve the transfer of services from traditional offline channels to online platforms. The main purpose of this transition is to improve the efficacy and efficiency of governance (Meijer and Bekkers 2015; Cordella and Tempini 2015; Linders, Liao, and Wang 2018; Siddiquee 2016).

Moreover, digital transformation encompasses the application of technology to alter the cultural and communicative structures within an institution, thereby initiating a paradigm shift that augments the delivery of services, transparency, accountability, and civic engagement in the governmental sphere (Reyes and Gil-Garcia 2014; Nograsek and Vintar 2014). Sivarajah, Irani, and Weerakkody (2015) argued that the incorporation of digital tools plays a crucial role in enabling transformations in work methodologies, communication practices, and service delivery. These tools facilitate the active engagement of citizens and stakeholders in the cooperative design and implementation of public services. Moreover, the digital transformation process enables the creation of improved linkages between service providers and users, resulting in the emergence of innovative value propositions in both the private and public sectors. Collaboration, co-design, co-creation, and other associated endeavors have emerged as indispensable elements of contemporary culture, particularly within the public sector. The implementation of ICT has resulted in notable transformations in fundamental principles and has facilitated the engaged involvement of individuals and interested parties in the process of generating value (Berman 2012, 6; Bannister and Connolly 2014).

The process of digital transformation is typically influenced by technological advancements, alterations in consumer behavior, and shifts in organizational culture. The combination of these factors leads to significant alterations in service delivery and value creation across various industries.

The digital divide poses a significant barrier to the process of digital transformation

The notion of the digital divide refers to the unequal distribution and usage of ICT among different socio-economic strata, including individuals, households, businesses, and geographical areas. This concerns the availability of ICT in a community, facilitated by an online network (DiMaggio et al. 2001, 310; Sparks 2013, 28). The availability of technology within a community is shaped by a range of socio-economic factors, such as: economic resources, educational attainment, proficiency in ICT, attitudes towards technology, financial well-being, social connections, and age (Blank and Groselj 2015, 276).

The digital divide can be characterized by four dimensions: digital skills and literacy, user autonomy in Internet access, social support for Internet use, and integration into the prevailing techno-culture. Furthermore, the digital divide is perpetuated by the inequitable allocation of technological infrastructure. According to Philip et al. (2017), the provision of Internet services is contingent upon the presence of telecommunication infrastructure, which can be facilitated either by governmental entities or private enterprises. Nevertheless, it is commonly observed that rural communities exhibit a lower level of receptiveness towards the advancement of information technology, thereby impeding endeavors aimed at enhancing digital connectivity (Malecki 2003; Velaga et al. 2012).

The issue of inadequate connectivity in rural areas is a significant concern, which is influenced by various factors including the potential market for digital technology, investment in technology infrastructure within villages, government focus on regional development, and the presence of supportive policies and regulations (Salemink, Strijker, and Bosworth 2017). The development of digital connections in rural areas is significantly influenced by adaptive local leadership (Malecki 2003).

Research Method

The present study employed a descriptive quantitative approach to depict phenomena, events, symptoms, or incidents in a factual, systematic, and accurate manner, relying on the existing quantitative data. The utilization of this methodology facilitated the collection of factual evidence, data, and pertinent information pertaining to the level of preparedness exhibited by village governments. These findings were subsequently presented in a variety of numerical formats within the research sample. In order to acquire the anticipated data, the researchers adhered to the normative framework of reference in order to systematically observe and collect data utilizing appropriate research instruments. The data were collected and examined for the purpose of providing descriptive information, using a significant sample of participants (Babbie 2007, 450; Creswell 2008, 145).

Samples were acquired using a multistage cluster random sampling method, which considered the geographical features and typology of the villages in the Banyumas Regency. The process of selecting research samples, in the form of villages, was determined by employing the Slovin formula. A representative sample of 75 villages was selected from a larger population of 301 villages, with a margin of error of 10% and a confidence level of 95%. To ensure compliance with the principle of representativeness, the sampling procedure employed a multistage random sampling technique. The first step in this study entailed the identification of a cluster by categorizing 27 subdistricts within Banyumas Regency into 7 distinct regions. This classification was based on the proximity of these subdistricts to the central government office located in Purwokerto. The identified regions were named as follows: South Banyumas, Southwest Banyumas, West Banyumas, Central Banyumas, North Banyumas, Suburban, and City. The data that was collected was analyzed using descriptive statistical methods, specifically through the use of frequency distribution.

Result and Discussion

The successful implementation of digitalization in local government public services necessitates adequate preparation and readiness, with a particular focus on proficiency in both ICT management and utilization (Deloitte Research 2000). The quality and availability of ICT infrastructure, as well as the ability of users, business players, and government to effectively utilize ICT for maximum benefit, can be measured by the level of preparedness (Economist Intelligence Unit 2008). This study aims to delineate the four aspects that encompass preparedness for digital transformation: (i) *Supporting Policies for Digital Transformation in Public Services* (ii) the role of leadership in village government, (iii) the competency of village apparatus, and (iv) the accessibility and connectivity of the village government regarding Internet connection.

Supporting Policies for Digital Transformation in Public Services

According to Hudson, Hunter, and Peckham (2019), the implementation of public interest programs necessitates the establishment of accompanying policies to guarantee their compliance with legal frameworks. The supporting policies for the implementation of e-services pertain to regulations that establish the normative framework for the execution of public services at the village level. The policies in question encompass a broad spectrum, from overarching policies established by the Central Government to policies formulated by local village governments. At the macroscopic level, digital policies in rural regions are formulated according to the guidelines provided by the Ministry of Villages and the Development of Disadvantaged Villages. These guidelines encompass four distinct models of digitalization, which prioritize: the establishment of databases, the development of noteworthy villages, the acceleration of village government services, and the enhancement of transparency regarding financial status and development (Village Digital Profile 2021).

In 2021, the implementation of the Village Information System (SID) sought to facilitate the consolidation of administrative services within the villages of Banyumas Regency. At the time of its launch, a mere 3% of villages had successfully transitioned to digital platforms for the provision of public services. By 2022, the number of villages effectively utilizing ICT in most public services in Banyumas Regency had increased to seven, representing less than 3% of the total villages undergoing digital transformation.

The Role Leadership in Village Government

The role of leadership is of paramount importance in the attainment of transformation (Hammer and Champy 1993). The successful implementation of digital transformation in public services is contingent upon the presence of proficient leadership within organizational structures. The study's results indicate that the village heads in Banyumas Regency demonstrated a considerable degree of leadership, as supported by an aggregate leadership index score of 82.5. Nevertheless, it is crucial to acknowledge that specific dimensions and categories might not comprehensively encompass the complete spectrum of village heads who possess the requisite skills and competencies to facilitate digital transformation. Based on the information provided in Table 1, it can be observed that only 61.3% of village heads were able to effectively establish the public service system, attaining a score of 75% on the index. Moreover, a meager 53% of village leaders demonstrated the capability to successfully inspire their personnel to adopt innovative methodologies.

Table 1. *The statements of the heads of villages regarding their leadership in supporting digital transformation*

No	Indicator	Category (%)				Index %
		5	4	3	2	
1	Commitment of the head of the village to address issues related to village public service.	34.7	65.3	0	0	87
2	Dedication of the head of the village to developing village public services.	18.7	80.0	1.3	0	84
3	Motivation of the head of village to develop digital-based public services/e-services.	8.0	61.3	30.7	0	75
4	Encouragement from the head of village to the village apparatus to exercise innovation when performing their work.	30.7	53.3	14.7	1.3%	82
5	Support of the head of village in developing ICT and Internet infrastructure.	36.0	45.3	18.7	0	83
6	Support of the head of village in the form of budgeting for the development of digital-based public services/e-services.	30.7	46.7	22.7	0	81
7	Knowledge of the head of village about ICT in public services.	30.7	58.7	10.7	0	84
8	Capacity of the head of village to drive the village apparatus to support the e-service program.	29.3	61.3	9.3	0	84
	Mean value	27.4	59.0	13.5	1.3	82.5

Source: *processed primary data*

The implementation of innovation in rural communities is heavily influenced by the leadership styles of village heads, who serve as key community leaders (Martiskainen 2017). Accordingly, the concept of leadership encompasses the evaluation of external demands and prospects, the establishment of objectives, the exertion of influence and guidance on others to achieve shared objectives, the stimulation of action, and the promotion of responsibility for performance. Effective leadership involves a crucial aspect of demonstrating dedication towards the endorsement and implementation of sophisticated service systems, particularly the e-service model. Nevertheless, scholarly research suggests that not all leaders possess the ability to facilitate transformative change (Lestari and Nasib 2020).

The Competency of Village Apparatus

The significance of human resources in organizations has been widely acknowledged (Lusthaus et al. 2002, 52). In order to facilitate the digital transformation of public services in rural areas, it is imperative to have a proficient workforce capable of effectively utilizing digital tools, specifically computer systems, to deliver services to the local community. The findings of this study indicate that a mere 28.4% of the village apparatus in 75 villages exhibited proficiency in fundamental computer skills, while the remaining 71.6% were found to be deficient in training in this domain. Furthermore, 38.7% of individuals demonstrated proficiency in operating computer systems, while the remaining 61.3% exhibited an inability to do so.

There was a correlation observed between the level of computer literacy among village apparatus and their educational attainment. Specifically, 69.6% of the village apparatus had completed high school, 11.22% had completed middle school, 17.86% had completed undergraduate programs, and 1.61% had completed primary school. The limited level of computer literacy presents challenges for village governments in effectively keeping up with advancements in ICT. Table 2 presents data on the operational capacity of computer sets within the village government apparatus.

Table 2. *The competency of village government apparatus in operating computer sets*

No	Competency indicator	Category			
		Advanced	Intermediate	Beginner	Incapable
1	Operating and mastering MS Word.	20	58	17	5
2	Mastering Excel.	10	17	33	40
3	Competency to create and deliver a presentation using a computer.	5	30	20	45
4	Competency to use the Internet.	36	38.7	20.3	5
5	Competency to use multimedia.	27	52.5	15.5	5
6	Competency to use YouTube.	60	21.3	18.7	0
	Mean value	26.3	36.3	17.8	16.7

Source: *processed primary data*

According to the data presented in Table 2, a notable proportion of individuals in the village demonstrated proficiency in computer usage. Specifically, 26.3% were classified as experts or skillful users, 36.3% were categorized as intermediate users, and 34.5% were deemed incapable or less capable of operating computers.

The Accessibility and Connectivity of the Village Government regarding Internet Connection

The successful implementation of digital transformation necessitates the availability of a reliable Internet connection and the establishment of a well-developed infrastructure network. Nevertheless, rural areas encounter difficulties as a result of the inequitable allocation of infrastructure networks, thereby impeding the ability of rural communities to access the Internet (Sparks 2013, 28). The presence of numerous hilly and mountainous areas in Banyumas Regency exacerbates the typological features of its villages, thereby influencing the accessibility and dissemination of Internet services. Internet service providers tend to allocate resources and prioritize regions that offer economic advantages and have a larger user base. Consequently, the current state of Internet connectivity in the regency indicates that only 75% of villages have access to the Internet. The Internet signal exhibits varying degrees of strength, with 70.7% of users experiencing a strong signal, 18.6% encountering a relatively strong signal, and 10.7% facing a poor signal. The delayed installation of network infrastructure in numerous village government offices can be attributed to inadequate commitment and limitations exhibited by village leaders. On a national scale, Indonesia encounters challenges in the form of a deficiency in Internet penetration, as evidenced by the fact that 13.76% of its villages (11,231 out of 81,616) lack access to the Internet (Village Digital Profile 2021).

The findings indicated that while Internet connectivity was established in all village offices within Banyumas Regency, the quality and speed of the connections varied. However, it was observed that certain villages lacked the necessary infrastructure to effectively facilitate the process of digital transformation. In a similar vein, it should be noted that the availability of Internet access in villages was not uniformly adequate due to the topographical characteristics of hilly and mountainous regions. The presence of these geographical features has presented unique obstacles in the pursuit of achieving equitable dissemination of Internet connectivity. Consequently, the availability of high-speed Internet is constrained to particular areas within villages, predominantly those in close proximity to the local governing body. The existence of disparities in the allocation of ICT network infrastructure has been acknowledged as a notable obstacle to the advancement of digitalization in public services within developing countries, particularly in rural areas.

Adequate allocation of resources, encompassing human resources, ICT network infrastructure, funding, and technology, is imperative for the effective execution of digital transformation initiatives in public services. These resources function as indicators of an organization's capacity to engage in transformation (Lusthaus et al. 2002, 61); in order to fulfill its role as a public entity, it is imperative for the village government to possess them.

Conclusion

1. The findings of this study indicate that local governmental entities in Indonesia, specifically those situated in rural regions, exhibit inadequate levels of preparedness for the process of digital transformation. These governmental bodies need additional time in order to effectively engage in a thorough process of digital transformation.
2. Human resources, particularly the capabilities of village apparatus, influence the occurrence of obstacles during the digital transformation process. In addition, the absence of robust village government infrastructure poses challenges to the effective implementation of electronic services.
3. Based on the obtained results, it is imperative to prioritize the improvement of ICT infrastructure and the expansion of Internet connectivity, particularly in geographically isolated areas that are distant from urban hubs. Moreover, it is imperative to cultivate motivation among village leaders in order to effectively facilitate the implementation of digital transformation endeavors.
4. This study emphasizes the adequacy of the current policies and leadership exhibited by the village heads. Nonetheless, it is crucial to address the challenges that have been identified. To enhance the implementation of public e-services, policymakers should prioritize the enhancement of human resources and digital infrastructure within village governments. Subsequent investigations should strive to adopt a more comprehensive methodology for data collection, such as by implementing a complete enumeration of all villages, in order to procure data that are more accurate and dependable for the purposes of decision-making.
5. In the final analysis, the research findings underscore the imperative for immediate measures to enhance the preparedness of village governments in Indonesia for the process of digital transformation. Indonesia can advance the digital transformation of its public services and ultimately benefit rural communities throughout the country by effectively addressing obstacles pertaining to human resources and infrastructure while simultaneously fostering effective leadership and motivation among village heads.

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KAIMŲ VADOVYBĖS PASIRENGIMAS SKAITMENINIŲ VIEŠŲJŲ PASLAUGŲ TRANSFORMACIJAI BANJUMO REGIONE INDONEZIJOJE

Anotacija. *Šio tyrimo tikslas – įvertinti kaimų vadovybių pasirengimo lygį viešųjų paslaugų skaitmeninei transformacijai. Informacinių ir ryšių technologijų (IRT) pažanga atnešė reikšmingų permainų tiek privačiame, tiek viešajame sektoriuose. Tai suvaidino lemiamą vaidmenį skatinant viešųjų paslaugų modernizavimą regioniniu lygmeniu ir ypatingas dėmesys skirtas kaimų valdymui. Indonezijoje ir kitose besivystančiose šalyse transformacijos procesas susiduria su įvairiais iššūkiais. Šie iššūkiai apima skaitmeninę atskirtį, atsirandančią dėl netinkamo IRT infrastruktūros tinklo, ribotos lyderystės inovacijų srityje ir skaitmeninio raštingumo trūkumo vietos valdžios institucijose. Šiame tyrime buvo taikomas aprašomasis kiekybinis metodas. Tyrime dalyvavo 75 Banjumo seniūnijos kaimų savivaldybės, o surinkti duomenys buvo analizuojami aprašomosios statistikos metodais. Išvados parodė, kad nepakankamas regionų ir kaimų vyriausybių dėmesys ir atsidavimas informacinių ir ryšių technologijų (IRT) pažangai atitinkamose srityse, taip pat ribotos investicijos į vyriausybės darbuotojų skaitmeninių įgūdžių gerinimą paveikė kaimų vyriausybių pasirengimo skaitmeninės transformacijos procesą ir jo lygį.*

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EUROPEANIZATION AND THE LOCAL POLITICAL CULTURE AS CHALLENGES FOR PUBLIC POLICY IN THE SLOVAK-UKRAINIAN BORDERLAND

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Abstract. *This article focuses on the interaction between local factors and the process of Europeanization as a factor of both residents' political orientations and public policy in the Kosice and Presov border regions of Slovakia and the Zakarpattia region of Ukraine. The study used data collected via the Delphi method along with statistical empirics, contemporary notions of Europeanization, and border and local studies to find answers to the main research questions. Local factors resulting from the historical path of development have a significant influence on residents' political culture and public policy, as demonstrated by nepotism, a general hostility toward elites, and a difference in activism between urban and rural areas. However, there is already evidence that the political culture in the Slovak-Ukrainian borderland and the relevant policy process have been significantly impacted by Europeanization. Both public participation in local and regional development and the influence of non-governmental organizations serve as examples of this trend. Changes in the political culture of borderland residents under the influence of other factors are not, however, the focus of this article, and will be an issue for future research.*

Keywords: *public policy, local political culture; Europeanization; borderland; local/regional development.*

Reikšminiai žodžiai: *viešoji politika; lokalinė politinė kultūra; europeizavimas; pasienio regionas; regionų vystymas.*

Introduction

Models of interaction between elites and citizens in border regions, as well as their orientations toward political action, are elements that either support or pose threats to the security of both neighbor states and have an impact on the region's economic prosperity. This is important both for the western regions of Ukraine – which was granted European Union candidate status in June 2022 as an unexpected positive result of Russia's full-scale invasion – and for the eastern regions of the Central European countries, which have been members of the EU for around 20 years. On the Slovak-Ukrainian border (the territory of *Kosice* and *Presov kraj* in Slovakia and *Zakarpattia oblast* in Ukraine), existing integration and differentiating factors between residents of neighboring regions both before and under the contradictory conditions of war and accelerated European integration should be investigated in detail. The Slovak-Ukrainian border can act as a testing ground for the study of the role of political culture among the citizens of neighboring countries as a factor of the security and development of the territory, without taking into account latent political or historical conflicts that can overshadow other orientations of citizens in borderlands in the case of Hungary, Romania or Poland.

In the conditions of the Russian-Ukrainian war and, at the same time, deepening European integration, it is important to study how cultural matrices affect the involvement of borderland residents in public policy and how these guidelines determine their assessments of the situation in the neighboring state and its citizens. We also assume that local factors are important and will continue to have an impact on citizens' political culture and behavior in Central Europe in the 2020s, while also being shaped by the external influence of Europeanization.

Taking into account the current state of play, the aim of this study is to determine the mutual influence of local factors and the Europeanization process on the political orientations of residents of the Slovak-Ukrainian borderland. Since the concept of political culture became vibrant in political science in the 1970s, it has been perceived as one of the most popular concepts, and, at the same time, one of the most controversial and confusing. Therefore, since theorizing about the content of the concept of political culture is not the subject of our research, we shall use the classical definition of political culture as a particular pattern of orientations to political action (Almond 1956, 396).

The following general *research questions* are examined in this article:

RQ 1. Do local factors caused by the historical path of development still have an impact on the political orientations of residents in the Slovak and Ukrainian parts of the borderland?

RQ 2. Does the Europeanization of the policymaking process have an impact on the political behavior of the residents of neighboring regions?

Generally, the answers to these questions will help to define in what way residents' political orientations influence the development of the peripheral regions of Slovakia and Ukraine.

Methodology

Neo-institutionalism is the main methodological approach that can be used to study political processes that are developing at the local/regional level because it allows one to account for the influence of both formalized political structures and informal rules of political interaction. This approach defines formal institutions and organizations as those that hold legitimate power within the political system, while informal institutions are defined as agreements between individuals, traditions, and moral codes. Although it is possible to change legal rules quickly, historical development and cultural patterns impede the change of rules developed within informal institutions (North 1990). Citizens' political culture is also regarded as a component of the *local/regional political system*, alongside relevant public authority institutions and political party infrastructure.

Ronald Inglehart's theory of *post-material political culture* was applied to the selection of indicators used for the measurement of the key elements of the political culture in the Slovak and Ukrainian border regions. The first step in analyzing a society is to determine how effectively its citizens can express themselves, how well its democracy is working, how well the economy is doing, and whether or not democratic institutions have ever existed there (Inglehart and Welzel 2003, 64).

The Delphi Method was used as the main method for gathering empirical data because it provides the most precise interpretation of public sentiment based on the opinions of experts in the political, economic, and social spheres. This approach enables the development of a predictive model of the phenomenon or process – in this case, at the regional and local scale – in addition to carrying out an up-to-date analysis of citizens' political views (Dixon 2004). The following list summarizes the main features of the Delphi Method: 1) *repeatability* – experts must respond to the inquiry at least twice, allowing them to modify their responses in light of the responses of other experts; 2) *answer confidentiality* – which helps prevent unintentional influence on experts' responses; 3) controllability – study coordinators' control over feedback; and 4) *the statistical dimension* – responses must be written in a way that allows for quantitative and statistical analysis (Landeta 2006).

To achieve the goal of this study, a survey of experts using the Delphi Method was conducted in January–March 2022. The research involved eight experts with both research and practical experience in order to ascertain the cultural orientations of the residents of the neighboring Slovakian and Ukrainian regions with the least amount of uncertainty. Four of the experts who participated in the study were from Slovakia, more specifically from the *Kosice* and *Presov* regions, and four were from the Ukrainian region of *Zakarpattia*. It should be taken into account that the research was carried out just before Russia's large-scale invasion of Ukraine (which began on February 24, 2022), and before Ukraine was granted EU candidate status on June 23 of the same year. Some data gathered earlier or later are also used when there are no mistakes regarding their correlation with experts' opinions.

The state of art

The concept of *political culture*, introduced into research circulation in the 1960s and then somewhat forgotten, was reborn two decades later for the analysis of democratization that began in Southern Europe and Latin America. Cultural factors began to be considered as belonging to the list of prerequisites for the success of democratization and the consolidation of this regime. According to the classical definition, political culture has three aspects, or more precisely, forms of human orientation towards politics: cognitive, emotional (affective), and evaluative (Almond and Verba 1980).

The possibility of the division of *local (regional) political subcultures* was brought up by proponents of the theory of political culture in the last quarter of the 20th century as part of the study of urban policy in the USA (Stone 1993). Civil society is viewed in communities as something that is not opposed to a “hostile political universe,” but that has the freedom to participate in local government and that affects the cultural orientations of residents.

At the same time, the cultural orientations of citizens are also determined by external factors, chief among which for the inhabitants of the “old continent” is *Europeanization*. This is viewed as the process of developing, institutionalizing, and disseminating formal and informal rules, practices, styles of political behavior, shared ideals and values that were initially developed within the political process in the EU and then added to the national political environment (Radaelli 2000). To conceptualize the phenomenon of Europeanization, we can take the stance that it has multiple dimensions, including the following: 1) the process of EU expansion; 2) the development of European supranational governance structures; 3) the introduction of European processes inside national political systems; 4) the export of political organization forms; and 5) the project of the political unification of Europe (Olsen 2002). Europeanization supports changes in the political cultures of national interest groups in favor of a more proactive strategy for influencing policy processes. However, it has not yet been sufficiently considered how these changes have affected interactions between governments and citizens.

Border studies give research a different perspective when it comes to the communities and neighboring regions of two states. After the start of post-communist democratization, these borders were no longer perceived only as political and legal lines that separate sovereign states, but instead as a system of demarcations – including visible natural boundaries and invisible social, cultural, linguistic, and interfaith boundaries – the purpose of which is to mark the division between “us” and “them” (Kolosov and Więckowski 2018). One of the main notions used within border studies is the concept of *borderland*. In short, researchers define such zones as spaces surrounding the borders between states that are lagging behind the state’s centers in terms of economic and technological development (Koch 2019, 73).

We must also point out that over the past 20 years a number of studies on the development of the Slovak-Ukrainian borderland have been published. Particularly, the legal base of cross-border cooperation between the regional and local governments of Slovakia and Ukraine, the impact of European integration on the range of powers, and the areas where cooperation is most successful or unsuccessful, have been studied (Duleba 2019; Lacny 2021; Lendel 2021). Nevertheless, the "game" between local politics and European public policy along the Slovakian-Ukrainian border, as well as the unspoken political rules in this region, remain unexplored. Due to time restrictions, the findings on the influence of Ukrainians' migration to Slovakia during the Russian invasion on the attitudes of Eastern Slovakians toward Ukrainians will only be made public from a short-term, at best, perspective. We hope that this article will serve as a starting point for this research.

Empirical findings

The historical legacy of development, which perfectly aligns with the content of the path-dependency concept, is one of the factors that contribute to the peculiarities of the political culture of the residents of the Slovak-Ukrainian borderland. In general, the historical trajectories of the border regions of Slovakia and Ukraine share some characteristics, such as Austria-Hungary's neglect of local residents' interests, "Magyarization" and the suppression of national consciousness, and the devaluation of regional culture. Since the turn of the 20th century, the region has seen a rise in national pride and the beginning of the fight for independence from the Habsburg monarchy. In light of this, it makes sense to draw the conclusion that the historical development of national self-awareness, which has been undergoing change under various state and political regimes over the past century and today, has influenced how Slovaks and Ukrainians view politics, particularly in their local communities.

In addition, we adhere to the hypothesis that local, historically determined factors that have influenced the political orientations of citizens on the Slovak-Ukrainian border since the turn of the 21st century have begun to combine with the influence of Europeanization. Initially, this happened in Eastern Slovakia, which began to converge with European practices before official accession to the EU in 2004; during the last few years, it has been happening in Ukrainian Zakarpattia.

Inglehart's theory of post-material culture can be used to determine the elements that appeared in the traditional political norms under the influence of modern external factors – i.e., the trends of Europeanization. According to this approach, citizens' political orientations and behaviors must meet certain criteria (Inglehart and Welzel 2003, 64). The collective active political position of citizens, which includes the following, is one of the best signs of the prevailing modern political culture: 1) *involvement in territorial development and discussion of particular issues with elite representatives*; 2) *election participation*; and 3) *contacting the local/regional representatives, submitting petitions, requests*, etc.

Figure 1 depicts the opinions of Slovak and Ukrainian experts who participated in the Delphi survey regarding the participation of borderland residents in the formulation of spatial development policy, which corresponds to Inglehart's first criterion. The concept of Europeanization involves the implementation of policies vital for the EU in the national environments of member states and candidates. One of them is the policy of cohesion and regional development.

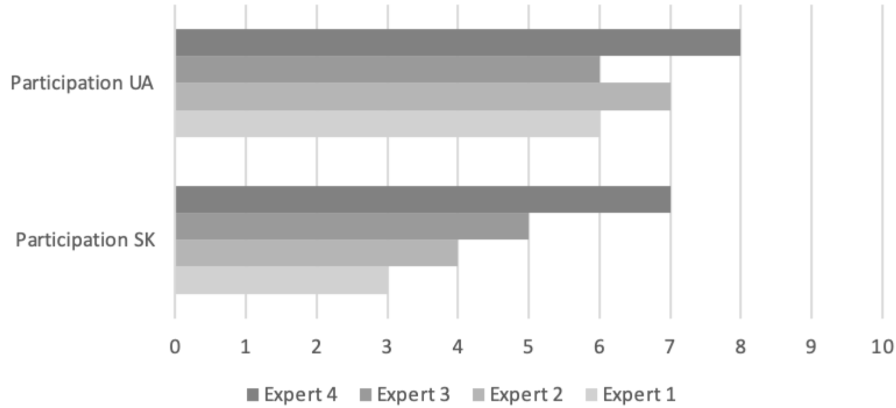

Figure 1. *UA and SK citizens' participation in regional development processes*
Source: *(Rishko 2023, 269)*

The main barriers to citizens' involvement in the creation of regional development strategies in the Kosice and Presov kraj, according to Slovak experts, were indicated as follows: 1) *insufficient expertise in long-term planning*; 2) *lack of enthusiasm on the part of municipalities to inform the public and involve citizens in regional development planning*; and 3) *inadequate human resources*. Experts involved from the Slovak side generally agree that the main problem is the regional authorities' refusal to consult with the expert community about the necessity of particular policies.

Despite some negatives in the evaluation of citizen participation in regional governance, experts also emphasized the benefits brought about by Slovakia's early-2000s public administration reform. The decentralization of EU member states means the competence of municipalities/regions to begin cooperating with foreign partners on this territorial scale and is crucial for both European integration and vital democracy. A fundamental change has been made in how citizens evaluate regional development. Particularly, the elected authorities must keep the public informed daily about the progress in implementing the regional development strategy and potential solutions to problems. However, besides certain opportunities, experts do not give the level of citizen involvement in the political life of the Kosice and Presov regions high marks.

The evaluation of the responses of Ukrainian experts focused on the level of citizen participation in developing regional policies is slightly higher. According to them, decentralization, which began in Ukraine in 2015, has a favorable impact on this process. It is critical to stress that although the EU strongly supported this reform, it did not make it one of Ukraine's integration requirements.

Regardless of the average participation indicators, both Slovakian and Ukrainian experts agreed that correlation by region would vary in the core and periphery because people in cities are more engaged in discussing local issues than those in rural areas. It is significant to note that all experts gave low ratings to the degree of citizen awareness of carrying out regional projects and fundraising (Figure 2).

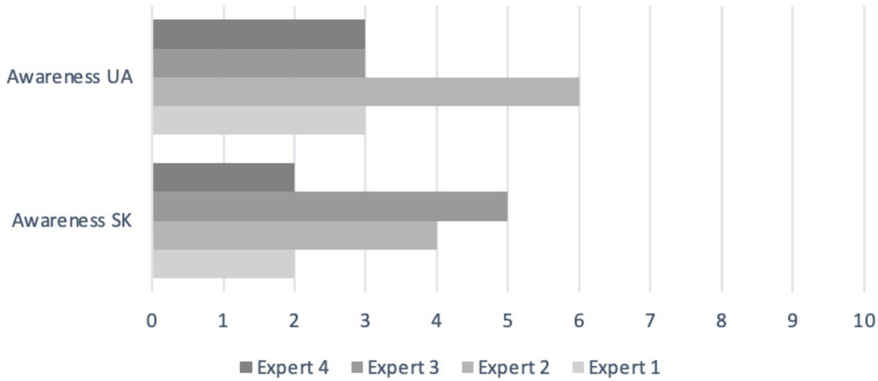

Figure 2. *UA and SK citizens' awareness concerning regional projects*
Source: (Rishko 2023, 270)

Despite the citizens of the Presov and Kosice regions' relatively low level of involvement in cross-border cooperation, which is caused by the political elites' lack of interest in informing them, Slovak experts claim that public awareness of regional development during the pre-election campaigns was relatively high due to communication between voters and candidates. Elites and the public in the Slovak-Ukrainian borderland continue to have low levels of awareness regarding the possibility of using EU funds as a tool for spatial development. The main obstacles to pursuing these opportunities, according to all experts, are a lack of knowledge, expertise, and administrative constraints. Regional elites are generally less aware of opportunities for cross-border cooperation than local elites, according to Slovak experts. The difference in citizens' awareness of fundraising for projects between residents of villages and cities was mentioned by Ukrainian experts.

Experts also evaluated the level of both electoral activity and trust that Slovakian and Ukrainian borderland residents had in local/regional elites. In October 2022, Slovakia held its first-ever combined regional/local elections, choosing council representatives, mayors, and leaders of districts and regions. This change contributed to a higher turnout (Figure 3), and experts contend that this is a result of the elites' improved performance during the pandemic, which raised public interest in local politics.

It is crucial to take note of another trend that first became apparent during this campaign. The majority of the deputies who were elected to regional councils have declared themselves independent. This is a result of disagreements among the major political parties represented in the parliament, which resulted in the dissolution of the coalition and the calling of early elections in September 2023. Independents make up 22 of the 57 deputies in the Kosice region and 27 of 65 in Presov region. In both cases, candidates for governors who had already been elected in 2017 were re-elected. The trend of electing independent candidates suggests a high level of trust in local authorities. The experts in this study assigned a trust score of 7–8 to regional (local) elites, on a scale of 1 to 10.

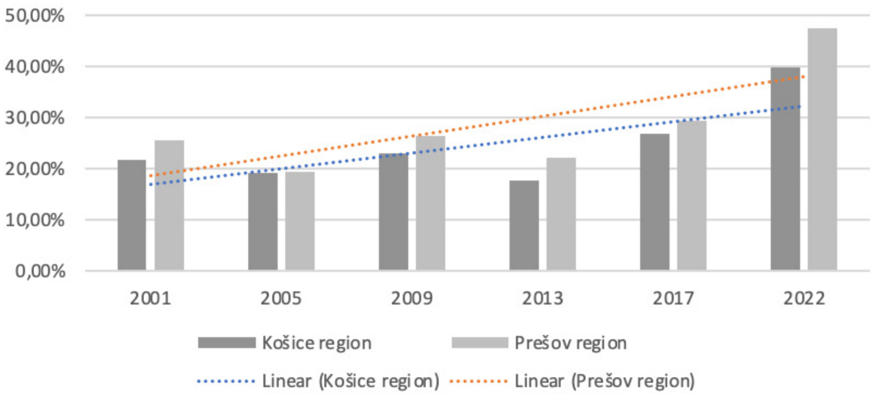

Figure 3. *Voter turnout in SK on regional elections (Kosice, Presov self-governing regions)*
Source: SME Vol'by (2022)

To begin an analysis of election activity in the Ukrainian borderland, we must examine the results of voter participation in local (regional) elections in the Zakarpattia region from 2010 to 2020 (the last election campaign; Figure 4) in order to compare the level of electoral activism and trust in politicians in the borderland.

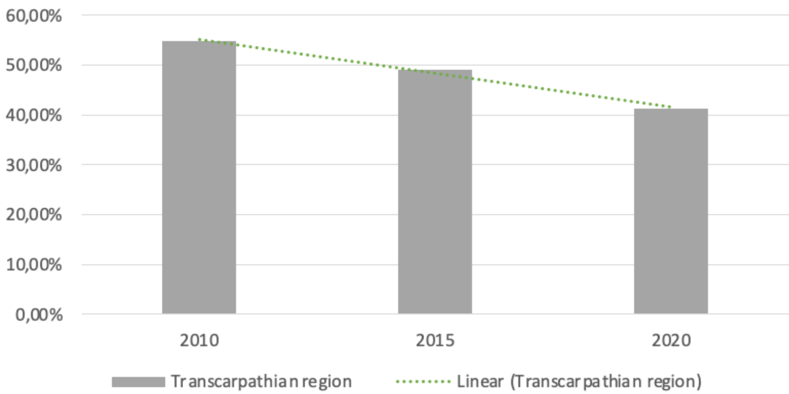

Figure 4. *Voter turnout in UA local (regional) elections (Zakarpattia region)*
Source: Ukrinform (2020)

When we examine the graph of participation in elections in Zakarpattia, we can observe a trend of waning public interest in the political life of the area. During the local (regional) elections in 2020, this pattern was noticeable not only in this area but also across the whole of Ukraine. Political scientist Oleh Saakian noted: "Epidemic threats have become the main factor in the decrease in voter turnout. An additional factor was the apathy as a result of the activities of the political elite, but it was the pandemic that kept a significant portion of voters from going to the polls" (Saakian 2020).

Contrary to Slovakian respondents, none of the Ukrainian experts had any positive opinions about locals' trust in political elites. The main arguments used by Ukrainian citizens of Zakarpattia to justify their disregard have been systematized into the list of local cultural factors below: 1) *nepotism among the elite and overt corruption are important issues*; 2) *management structures' incompetence and negligence*; and 3) *residents' disappointment stemming from unfulfilled election-related promises*.

Despite widespread dissatisfaction with governance, in 2022 residents of the Zakarpattia region, according to experts, attempted to ignore or minimize this negative stand to preserve tolerance and cohesion because of the challenges caused by Russia's invasion. On the other hand, particularly during this time of war, local politicians are trying to attract voters' attention by interacting with the media more and giving back to the community. Because of their close ties to Hungarian-speaking minorities and their support for the organization of humanitarian initiatives in the Zakarpattia region, experts claim that the presence of Hungarian parties in the area also increases voter loyalty.

According to Ukrainian experts, the large number of internally displaced persons (IDP) in the Zakarpattia region will contribute to a change in the political elite, particularly with regard to the group that gave most aid to the new residents during the war. There will be a sizable number of IDPs who remain in the area; in this case, there will undoubtedly be changes in political culture and behavior. According to experts that were surveyed, there has also been an increase in interest in local/regional politics as a result of the active implementation of decentralization in Ukraine. According to our forecasts, two new trends – the departure of a large number of citizens from other regions and the growth of interest in politics – will significantly affect the local political culture.

As was already mentioned, in addition to local factors, the behavior of individuals in politics is always influenced by external events: nationwide radical changes or the adaptation of the political system to a supranational one. This is exactly the kind of influence observed on the bordering regions of Slovakia and Ukraine in the context of the acceleration of European integration.

The decision to accept Ukraine as an EU candidate in June 2022 was a significant step in the rise of pro-European political elites. According to a sociological survey conducted by the Kyiv International Institute of Sociology, the western and central regions of Ukraine have the strongest support for joining the EU (European Integration Portal 2022).

In addition to the data from sociological surveys, experts involved in the Delphi study also emphasize the Euro-optimism of residents of the Zakarpattia region. However, both Slovak and Ukrainian participants were confident in the need for citizens to be informed about the socioeconomic development of the border territories of Ukraine after it joins the EU. It is necessary to communicate with residents to convince them that EU programs, as well as political and management Europeanization practices, will contribute to the wellbeing of the population. These opinions are currently connected to the EU member states' increased support for Ukraine in the war with Russia

Also important to note is that the Slovakian experts suggested that there are also Eurosceptic sentiments present in the area. These opinions are reflections of issues with public media and education that are brought on by anti-European organizations. The main prerequisite is citizens' dissatisfaction with their socioeconomic situation, which leads to protests against the government as a whole. Despite having been members of the EU for almost two decades, Slovaks still need to be made more aware of it, which is another important consideration. Slovakian Euroscepticism is also linked to an optimistic view of the "good old days," or the communist era. This tendency is linked to increasing populist sentiments on the negative influence of the war on the economy of Slovakia.

Local (regional) civil society organizations continue to play a significant role in how postmodern political culture functions, especially under the challenge of Euroscepticism. According to all experts, residents of self-governing regions such as Presov and Kosice are interested in joining NGOs to impact regional/local development. These types of organizations also support the development of the Kosice and Presov regions in a variety of fields, including the environment, education, sports, and culture.

According to Ukrainian experts, citizens of the Zakarpattia region are becoming more interested in starting NGOs or interacting with existing organizations and volunteer initiatives which, in contrast to the political elite, inspires more trust on both a local and cross-border level. We have to mention that Zakarpattia, as a border region of Ukraine, has already seen the emergence of a vast network of NGOs whose activities are very vital in the conditions of the war. They are heavily involved in regional/local politics, cross-border cooperation, and the social sphere. These organizations' primary spheres of activity are as follows: 1) *volunteer groups* (IDP aid, material and technical support for the military; 2) *protection of the environment*; 3) *preventing unauthorized construction*; 4) *support of decentralization*; 5) *education of different groups of citizens*; 6) *activities in the cultural field*; 7) *participation in cross-border and international projects*; 8) *research projects*, etc.

There is every reason to claim that the Ukrainian part of the borderland has developed the same civic structures as the residents of Eastern Slovakia. In the context of the Russian-Ukrainian war, there is also a thriving volunteer and charitable sector whose assistance has greatly benefited IDPs. For instance, the Carpathian Foundation, an international organization that has a representative office in Uzhhorod, has assisted a few charitable initiatives to aid IDPs since the start of the war (Shokina, 2022).

According to experts from Slovakia, NGOs also assisted the government in addressing crises brought on by the large influx of migrants from Ukraine. The government's ability to address all of the demands made by society during this time period was hampered by the crisis in parliament that resulted in the breakdown of the government coalition at the beginning of September 2022. However, Slovakia is in 11th place in the ranking of support for Ukraine by nation (Bomprezzi et al., n.d.).

Despite the fact that we study political culture, focusing on the concept of post-materiality, the *well-being of citizens*, *influenced by economic development*, is a factor that still influences their political behavior in this region of Europe. When discussing the socio-economic analysis of the borderland, it is important to note that Kosice and Presov kraj are regions where GDP level is among the lowest in the EU. The per-capita GDP of the Kosice region represents 85.1% of the national GDP, and in the Presov region this figure is only 61.4% of the national GDP (data as of 2021). Due to poor infrastructure and a low level of service, there are very few jobs in the area, especially in small towns and villages. However, Kosice is currently evolving as a logistical, industrial, and educational hub. Another significant regional investment mechanism is the machine-building industry, which is also starting to develop. According to experts, this industry will create around 3,000 direct and 10,000 indirect jobs.

Labor migration from Ukraine is an essential tool for the development of the Slovak borderland, as the high rate of emigration of Slovaks from the eastern regions to the west gradually reduces the workforce. This causes Ukrainians to impact demand and boost competition in the labor market, according to the statements of the experts that participated in the survey. Experts anticipate a further rise in migration from Ukraine to Slovakia due to the removal of the border as a barrier to labor migration, based on the economic growth of the Kosice region and new employment opportunities.

According to Ukrainian experts, the poor economic development of the border region, the high unemployment rate, the low wages (particularly in rural areas), and the proximity to EU states were the primary causes of the increase in migration from the Zakarpattia region to the EU prior to February 24, 2022, which caused a depopulation trend. After the beginning of Russia's invasion, however, more than half a million IDP from other parts of Ukraine migrated to Zakarpattia, thereby altering its socioeconomic and cultural patterns. However, the consequences of this demographic shift will be the focus of a future research article, as well as other factors influencing the local political culture.

Conclusions

This study carried out an analysis of expert opinions and relevant statistical data, and the conclusions of other researchers allows us to react to the identified research questions.

1. *Do local factors caused by the historical path of development still have an impact on the political orientations of residents in the Slovak and Ukrainian portions of the borderland?*

As it transpires, the influence of local factors has both positive and negative consequences for post-material political culture. Historical traditions of coexistence in multi-ethnic states, such as Austria-Hungary and the Czechoslovak Republic, led to a high level of tolerance towards representatives of other socio-demographic groups, not the ideology of their political activity. On the other hand, nepotism, and, as a result, a negative assessment of the elites by citizens; a lack of professionals who can deal with spatial development, particularly in rural, remote areas, and a trend towards Euroscepticism are obstacles to active citizen participation – in particular in rural, remote areas.

2. *Does the Europeanization of the policymaking process have an impact on the political behavior of the residents of the neighboring region?*

Despite strong signs of conservative culture on the Slovak-Ukrainian border, which does not promote participation in local and regional politics, staying in or approaching the accession to the EU significantly affects their political orientations. First of all, even to a limited extent, political elites, more local than regional, communicate with residents every day to develop strategies, programs, or development projects. Even if this is a tribute to the necessary rules of creating politics and is given by Europeanization, it is permissible that it will become an organic norm after a certain time. Thus, the very trend that politicians communicate more with residents before elections proves that these issues, which were not important for politicians before joining (or during rapprochement with) the EU, are now a necessary part of election campaigns at the level of communities and regions. The lingering significant mistrust of politicians, which can be traced on both sides of the border, is accompanied by the growth of citizen activity in the form of NGOs, thanks to which they can influence decisions without elites. The format of so-called civil policy is a trend that corresponds to the rest of the EU, so it can be considered a Europeanizing influence.

To conclude, we can predict that the border regions of Slovakia and Ukraine will experience deep cooperation on different levels due to Euro-optimistic views, and increased participation of citizens in regional development due to Ukraine's EU-aligned perspective. It is also important to consider the predictions of experts regarding changes in political elites in Zakarpattia, which will be brought about by shifts in the priorities of the population as a result of the country's ongoing war and the influx of IDPs.

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EUROPEIZAVIMAS IR LOKALINĖ POLITINĖ KULTŪRA KAIP VIEŠOSIOS POLITIKOS IŠŠŪKIAI SLOVAKIJOS IR UKRAINOS PASIENYJE

Anotacija. *Straipsnyje daugiausia dėmesio skiriama vietinių veiksnių ir europėjimo procesui kaip gyventojų politinės orientacijos ir viešosios politikos veiksniams, jų sąveikai Slovakijos pasienio Košicės ir Prešovo regionuose, taip pat Ukrainos Užkarpatės regione. Tyrime naudoti statistiniai duomenys, taip pat Delphi metodu surinkti duomenys. Siekiant atrasti atsakymus į pagrindinius tyrimo klausimus pasitelktos šiuolaikinės europeizavimo sampratos, pasienio regionuose atliktų lokalių tyrimų rezultatai. Vietiniai veiksniai, susiję su istorinio vystymosi ypatumais, stipriai veikia gyventojų politinę kultūrą ir viešąją politiką ir tą rodo nepotizmas, bendras priešiškumas elitui, pilietinio aktyvumo skirtumai tarp miesto ir kaimo. Tačiau jau esama įrodymų, kad politinę kultūrą Slovakijos ir Ukrainos pasienio regionuose ir atitinkamą politikos procesą reikšmingai paveikė europeizavimo procesai. Viena vertus, šios tendencijos pavyzdžiais laikytini: visuomenės dalyvavimas vietos ir regionų plėtroje, nevyriausybinių organizacijų aktyvumas ir plėtra, ir t. t. Kita vertus, pasienio gyventojų politinės kultūros pokyčiai, veikiami kitų veiksnių, nėra šio straipsnio dėmesio centre ir bus kito mokslinio tyrimo tema.*

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INSTITUTIONAL PROBLEMS REGARDING THE INTERACTION BETWEEN MONETARY AND FISCAL POLICY IN THE CONTEXT OF TARGETING INFLATION

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Abstract. *In this work, the nature of the mutual influence of monetary and fiscal policy on one of the key problems of the macroeconomic equilibrium of the economy of the Republic of Armenia and the accuracy of forecasting in the context of the application of policies targeting inflation is investigated. The problem of coordination between the two main macroeconomic pillars of economic policy is studied in the context of behavioral and institutional interactions between the Government and the Central Bank of the Republic of Armenia, which implies mutual adaptation and flexibility of reactions within certain rules of the game. Within the framework of the methodology developed in the article, the mutual influence of monetary and fiscal policy is studied using Markov transition models, taking the ratio of tax revenues to GDP and the interest rate on loans issued in the national currency in the Republic of Armenia as a basis.*

Keywords: *monetary policy; fiscal policy; inflation; econometrics; Tellor's law; inflation targeting; game theory; Markov transition models.*

Reikšminiai žodžiai: *pinigų politika; fiskalinė politika; infliacija; ekonometrija; Telloro dėsnis; infliacijos nustatymas; žaidimų teorija; Markovo perėjimo modeliai.*

Introduction

The nature of interactions between monetary and fiscal policies is of fundamental importance from the point of view of the development of the macroeconomic situation in any country. In this regard, issues of the effective implementation of fiscal and monetary policies and, even more so, their coordination are the subject of serious debates in terms of theoretical discussions and the implementation of practical policies. Nevertheless, even in the presence of certain contradictions, the effective coordination of monetary and fiscal policies is essential for the stable development of the economy. It is obvious that the aforementioned economic policies cannot be implemented completely independently of each other, because all processes taking place in the economy are connected by many visible and invisible threads. Therefore, monetary and fiscal policy instruments have tangible effects on each other. In this sense, it is also obvious that the effective coordination of these two most important pillars of macroeconomic policy is, first of all, a behavioral-institutional issue, and for the entities managing it (the central bank, the government) it means cooperation and mutual adaptation within the framework of certain rules.

In the framework of this review, the question of what kind of situation can develop in the economy of the Republic of Armenia (RA) was asked. As a result, the combination of different regimes (active/passive) of monetary and fiscal policies was employed. In this context, the experience of countries operating inflation-targeting regimes in the field of monetary and fiscal policy coordination was studied. Within the framework of the research, the consequences of the transition to the inflation-targeting policy in RA were addressed from the point of view of changes in the levels of the state budget deficit and inflation indicators.

Methodology

In this research, the question of the nature of the fiscal and monetary policies implemented in RA in 2000–2021 is considered. In this regard, the behaviors of the bodies implementing these policies were studied from the point of view of changes in the tax revenue/GDP ratio and the interest rates of loans provided in the national currency. At the same time, the impact of factors such as inflation, the gap between nominal GDP and the real effective exchange rate, and the foreign debt/GDP ratio were considered through a series of indicators. For this purpose, econometric models with Markov transitions describing the behavior of bodies implementing fiscal and monetary policies are put forward. Certain tools were used to obtain the corresponding 2000–2021 series of GDP and real effective exchange rate gap data which was included in the models. After completing the process of collecting statistical data regarding the above indicators, the dynamics of tax revenues to GDP and loan interest rates expressed in AMD were studied from different angles. Then, the statistical problems present in all the series were assessed, after which the econometric models with Markov transitions were evaluated. As a result of the evaluation of these models, not only were the dependencies between the relevant indicators obtained, but it was also possible to determine the prospects of staying in different modes or switching from one mode to another, as well as the optimal time of remaining in each mode.

Within the framework of this analysis, the relationship between the budget deficit and inflation was addressed in two periods: with inflation-targeting policy, 2006–2021;

and without inflation-targeting policy, 2000–2005. The state budget deficit is represented by the consolidated budget deficit/GDP ratio, and inflation is represented by the cumulative consumer price index (CPI) compared to the previous year. These indicators were taken from the RA Statistical Committee database. In order to study the behavior of the bodies implementing monetary and fiscal policy, the dynamics of two key indicators were studied: tax revenues/GDP; and the interest rates of AMD loans in the 2000–2021 period. The tax revenue/GDP indicator was taken from the World Bank, and the interest rates of AMD loans were taken from the Central Bank databases. Two econometric models with Markov transitions were proposed to study the behavior of the bodies implementing monetary and fiscal policy in the studied period. Taylor's rule was used to study CB behavior, where the proposed econometric model includes a dependent variable: the nominal interest rate of loans provided in AMD. Independent variables affecting it include the inflation index, nominal GDP, and real effective exchange rate gaps. The average interest rate of loans (with a term of up to 1 year, except for demand) was observed. Based on the available statistical data, the trend component of the two series was separated using the Hodrick Prescott filter in order to present the gaps between the nominal GDP and the real effective exchange rate. When describing the government's fiscal policy, an econometric model was considered, the explanatory variable of which is the ratio of tax revenues to GDP. The GDP gap, government expenditures/GDP, and external public debt/GDP act as explanatory variables. When evaluating the econometric models, the statistical data of the indicators included in the two behavioral models from 2000–2021 were used. All preliminary statistical procedures were performed prior to evaluation. During the assessment of models with Markov transitions, models with different specializations were considered, from which the models with the most acceptable statistical properties were selected.

Literatue review

Various experts, researchers, analysts and economists have addressed the study of various aspects of the possible coordination of monetary and fiscal policies. The latter have published many works, some of which were considered within the framework of this research.

From a monetary policy perspective, if central banks' actions are focused on price stability and economic growth, fiscal policy can be favorable to the extent that revenue collection is enhanced, spending efficiency is increased, and the cost of borrowing is reduced. The interaction between fiscal and monetary policies plays a fundamental role in the functioning of financial and currency markets, as well as in the rules that guide these policies (Lozano-Espitia and Arias-Rodríguez 2022). Inflation is influenced by numerous factors over the long term, including debt maturity, yields, and the primary surplus. In principle, coordination between monetary and fiscal policy can determine the combination of these factors with regard to the inflation target. Historical evidence suggests that the small impact of unconventional monetary policy on inflation is attributed to irresponsible fiscal policy (Reichlin, Ricco, and Tarbé 2022, 37).

There is a good chance that over the next decade, as the fourth industrial revolution unfolds, we will face some difficulties in effectively coordinating monetary and fiscal policies. This situation may also be aggravated by trade wars and associated deglobalization, which could neutralize some positive effects. However, this complexity aside, the recipe for monetary policy over the longer term is likely to look very similar to that of the Greenspan era. As long as inflation remains low, economic growth should be allowed to continue, as this is a good way to provide growth potential for those who are adversely affected by new technologies. Meanwhile, developments in the field of financial stability should be closely monitored. Finally, better strategies must be developed to synthesize macroeconomic and financial stability risks and take into account the implications of macroprudential policies for risk management purposes (Poloz 2021, 12). Monetary and fiscal policies are implemented by different government agencies, which may have different objectives and focus on different aspects of ensuring macroeconomic stability. Although monetary policy is primarily responsible for price stability, fiscal policy is primarily aimed at stabilizing debt and output. As fiscal and monetary authorities implement their policies according to their own objectives, these policies sometimes lead to backlash depending on the state of the economy and their priorities. Thus, the interplay between monetary and fiscal policy is vital in understanding and managing macroeconomic policy. Therefore, the study of this interaction has attracted a lot of interest among both government agencies and scientists. This type of policy analysis is important not only for developed economies, but also for emerging markets (Büyükbaşaran, Çebi, and Yılmaz 2020, 1). In the context of COVID-19, both in developed countries and in countries with emerging markets, an unprecedented fiscal expansion took place, which resulted in an inflationary jump around the world in 2021–2022. Under these conditions, the central banks of many countries were forced to restrain further price growth through high interest rates and by consolidating inflation expectations. However, according to many theorists, while such steps may have a short-term effect, in the future they will lead to a new spiral of higher inflation. To solve this problem, some – in particular, Princeton University Professor John Cochrane – recommend the more effective coordination of monetary and fiscal policy. Cochrane observed that: “To reduce inflation, fiscal and monetary policy must be coordinated. Without fiscal contraction, an unpleasant arithmetic holds: The Fed [Federal Reserve] can reduce inflation now, but only by increasing inflation later. If the Fed wishes to lower inflation durably via interest rate rises, those must come with fiscal support to pay higher costs on the debt and a windfall to bondholders” (Cochrane 2022, 1). The same point of view was expressed by Fernando Bianchi and Leonardo Melossi (2022, 31), who argued that stable, low inflation can be achieved only in combination with a consistent and appropriate fiscal policy.

Modern theoretical models which take into account the interaction between fiscal and monetary policy lead their authors to the conclusion that to stabilize the rate of inflation and the dynamics of public debt, an active policy regime on the part of the Central Bank/Government is needed, and a passive one on the part of the opposing institution, respectively. In this study, empirical works were considered, which, using the Markov transition model, distinguish the periods of active and passive modes of state economic policy (Belova and Perevyshin 2017).

Analysis

This research was based on the following questions:

- What was the nature of the monetary policy of the Central Bank of Armenia in 2000–2021?
- What was the nature of the government's fiscal policy in 2000–2021?
- What was the relationship between the budget deficit and inflation during the transition to an inflation-targeting strategy?

In order to study the relationship between the budget deficit and inflation, the 2000–2021 period was considered, which was divided into two parts: the period of inflation targeting, 2006–2021; and the period of no inflation targeting, 2000–2005. The dynamics of the budget deficit/GDP and inflation indicators were observed for these two periods, and are presented below.

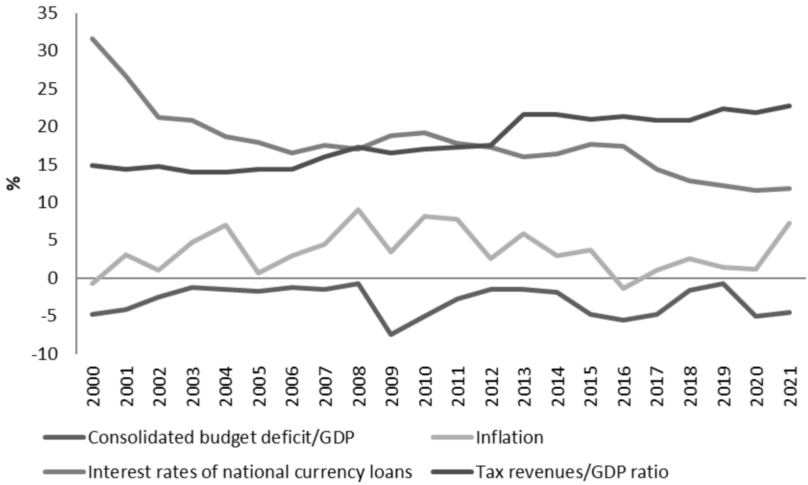

Figure 1. *The dynamics of the consolidated budget deficit/GDP ratio, inflation, interest rates of national currency loans, and tax revenues to GDP ratio indicators in 2000–2021*
Source: *RA Statistical Committee and Central Bank*

In Figure 1, the separate periods are clearly visible. As a result of the analysis of statistical data, it becomes clear that when there was no inflation targeting, in 2000–2005, the maximum deficit was 4.8% (2000); from the point of view of prices, deflation at the level of 0.8% was observed (2000). On the other hand, it can be seen that during the period of inflation-targeting policy, the minimum deficit was 1.5% (2004). In this case, maximum inflation was recorded at 7% (2004). During the implementation of inflation-targeting policy, it is observed that there was a minimum deficit of 0.7% (2008) and a maximum inflation of 9% (2008). On the other hand, a maximum deficit of 7.5% (2009) was also observed, at which inflation was 3.4% (2009). When conducting a correlation analysis in the observed period, it becomes clear that the correlation between the consolidated budget deficit and inflation is quite weak. In addition, the analysis conducted shows that the average budget deficit increased by 0.5 percentage points when switching to an inflation-targeting strategy.

In the next stage, the nature of the monetary policy conducted by the Central Bank in 2000–2021 was studied from the perspective of the implementation of the Taylor rule. In this particular context, it is imperative to examine the dynamism of interest rates on AMD loans during the 2000–2021 period.

Armenia's economy continues to be under the influence of loans. The volumes of the latter play a significant role in the processes taking place in various sectors of the economy. Therefore, fluctuations in the price of loans, the interest rate, can lead to changes in attitudes or behavior towards loans. As can be seen in Figure 1, the interest rate of AMD loans shows a decreasing trend. In 2000, before the inflation-targeting strategy was implemented, the interest rate on loans was around 32%. In the 2000–2005 period, the average interest rate was 23%. After 2005, when the inflation-targeting strategy was in place, a continuous decline in loan interest rates can be observed. In particular, by 2021, the interest rate on loans had reached around 12%. The interest rate on loans in the 2006–2021 period was 16% on average. As a result, we can state that the interest rate on loans decreased by 6.9 percentage points, or around 30%, after switching to the inflation-targeting strategy.

In the context of Taylor's rule, the gaps in GDP, the real effective exchange rate, and inflation were considered as factors influencing the interest rate of loans. In order to study the nature of the monetary policy of the Central Bank, the following econometric model with Markov transitions was put forward.

$$i_t = \alpha_0(s_t) + \alpha_1(s_t)\pi_t + \alpha_2(s_t)y_t + \alpha_3(s_t)ex_t + \varepsilon_t \qquad (1)$$

Where:

π_t – is the inflation rate in year t;

y_t – is the GDP gap in year t;

ex_t – is the real effective exchange rate gap in year t;

$\alpha_0(s_t)$, $\alpha_1(s_t)$, $\alpha_2(s_t)$, and $\alpha_3(s_t)$ are the unknown parameters of the model;

s_t – is an unobserved state variable that can exist in 2 modes;

ε_t – is the random error of the model in the year t;

t – is the index of the year.

Before evaluating the presented model, all variable series were tested for stationarity. According to the results of the latter, all series in the model are non-stationary, and were included in the model with first- or second-order differences. The models were evaluated with different specifications, from which the model with the most significant statistical properties was selected. As a result, we observed the following results.

Table 1. *Estimated econometric model results in both regimes*

Variables	Mode 1: 2009–2010, 2012–2015, 2017–2019, 2021	Mode 2: 2011, 2016, 2020
D(D(EXCHG))	−0.03***	0.12**
D(GDPG(-8))	0.00000000000321***	0.0000000000037*
D(PRICE(-1))	0.26***	−0.21**

Source: *author's own calculations*

As can be seen from the obtained results, the inflation index is affected with a lag of 1; in the case of both regimes, this index is significant. In the case of the first regime, we have a positive dependence, and in the case of the second regime, we have a negative dependence. In the case of the first regime, the effect of split GDP is also significant, the coefficient of which is extremely small and has a positive direction. The indicator of the effective real exchange rate gap is significant in both regimes. In the case of the first mode, there is a negative effect, and in the case of the second mode, there is a positive effect. In the case of both regimes, the coefficient in front of inflation was less than 1, which implies that the policy is passive in this regime. The probability of the situation remaining in the second mode is small. The probability of staying in the first mode is 68%. The probability of switching from mode 1 to mode 2 is 31%, and the probability of switching from mode 2 to mode 1 is 97%. The length of stay in mode 1 is around 3 years, and the length of stay in mode 2 is around 1 year.

When describing the behavior of the government, a key indicator is considered: the ratio of budget tax revenues to GDP, the dynamics of which are shown in Figure 1 for 2000–2021. Statistical data prove that the ratio of tax revenues to GDP showed a growing trend during the considered period. In particular, in 2000, the tax revenue to GDP ratio was 14.8%, and by 2021 it reached 22.7%. During the period of the inflation-targeting strategy, the level of the tax revenue to GDP ratio was, on average, 19.4%. In 2000–2005, when an inflation-targeting strategy was not in force, the tax revenue to GDP ratio was 14.4%. In other words, when switching to the inflation-targeting strategy, there was an increase in the budget tax revenues to GDP ratio by 5 percentage points, or 35%. In order to describe the nature of the fiscal policy in this period, a model was considered. The tax revenue to GDP ratio is influenced by the external public debt to GDP ratio, the GDP gap, and the government expenditure to GDP ratio. In order to identify these connections, we will consider the following econometric model with Markov transitions.

$$\tau_t = \beta_0(s_t) + \beta_1(s_t)b_t + \beta_2(s_t)y_t + \beta_3(s_t)g_t + \varepsilon_t \qquad (2)$$

Where:
b_t − is the external debt/GDP ratio in year t;
y_t − is the GDP gap in year t;
g_t − is the ratio of state budget expenditures/GDP in year t;
$\beta_0(s_t)$, $\beta_1(s_t)$, $\beta_2(s_t)$, and $\beta_3(s_t)$ − are the unknown parameters of the model;
s_t − is an unobserved state variable that can exist in 2 modes;
ε_t − is the random error of the model in year t.

Before evaluating the presented model, all variable series were tested for stationarity

According to the results of the latter, all series in the model are non-stationary, and were included in the model with first- or second-order differences. The models were evaluated with different specifications, from which the model with the most significant statistical properties was selected.

Table 2: *Estimated econometric model results in both regimes*

Variables	Mode 1: 2006, 2008, 2010, 2012, 2015, 2017 , 2020	Mode 2: 2005, 2007, 2009, 2011, 2013–2014, 2016, 2018–2019, 2021
D(D(DEBTGDP(-1)))	0.16***	0.12***
D(D(DEBTGDP(-3)))	−0.1*	−0.24***
D(GDPGAP(-3))	−0.00000000000419*	−0.0000000000168***
D(EXPGDP(-2))	0.29*	1.92***

Source: *author's own calculations*

As can be seen from the obtained results, the external public debt/GDP indicator is affected by a lag of 1. In the case of both regimes, this indicator is significant and has a positive direction of influence. In both cases, the obtained coefficient is positive, which means that the government's policy is characterized as passive. In the case of the first regime, only the external debt/GDP indicator is significant. As with the second regime, the increase in the GDP gap reduces the tax revenues to GDP ratio, but the coefficient is quite small. The public expenditure/GDP indicator has a positive effect, but with a lag of two.

The probability of the situation remaining in the same regime is small. The probability of switching from mode 1 to mode 2 is extremely high, and the probability of switching from mode 2 to mode 1 is 75%. The period of stay in both mode 1 and mode 2 is around 1 year.

Conclusion

1. Within the framework of this study, the long-term behavior of the government and the Central Bank was considered from the point of view of the probability of it being in two modes: active and passive. As a methodological starting point, a statement was adopted, according to which, from the point of view of economic development, the behavior of the government and the Central Bank in combination is considered effective when their policies are simultaneously in different regimes. For example: if the budget policy of the Government of the Republic of Armenia is in active mode, then in this case the policy of the Central Bank should be in passive mode, and vice versa. Meanwhile, when both institutions utilize the same regime (whether active or passive), economic policy is considered ineffective.
2. The article discussed the mutual actions of monetary and fiscal policy in the context of the transition to inflation targeting in the Republic of Armenia, from which it transpired that the relationship between the deficit of the consolidated budget and inflation is rather weak. In addition, this analysis shows that during the transition to an inflation-

targeting strategy, the average annual budget deficit increased by 0.5 percentage points. The main reason for this appears to be that the government, in turn, when implementing programs to attract public debt and spending policy, sometimes violated the standards of financial stability and was guided by aspirations of political expediency.

3. To assess the behavior of the Central Bank, the Taylor rule was adopted in the framework of the study, which considered the impact on interest rates on loans of factors such as the inflation rate, the real effective exchange rate and the GDP gap. To evaluate the proposed dependencies, econometric models of Markov transitions were used, as a result of which two modes covering different time intervals were obtained. The results show that the Central Bank's policy is characterized as a passive policy. In addition, the following results were obtained for the two modes: the probability that the situation will remain in the second mode is small, while the probability of staying in the first mode is 68%; the time spent in mode 1 is around 3 years, and the time spent in mode 2 is around 1 year.
4. The nature of fiscal policy for 2000–2021 was considered. To this end, the impact of the budget deficit/GDP, the gap between real GDP, and external public debt/GDP on the budget revenue to GDP ratio was described. The dynamics of the budget revenues to GDP indicator in 2000–2021 were studied, where the impact of the transition to inflation-targeting policy was also assessed. A model with econometric Markov transitions was considered, as a result of which two modes were obtained; in each of them, different results regarding the relationship of the variables described above were obtained. It turned out that from the point of view of fiscal policy, both regimes also have a passive policy. In addition, the following results were obtained: the probability that the situation will remain in the same modes is small, the probability of transition from mode 1 to mode 2 is extremely high, and the probability of transition from mode 2 to 1 is 75%.
5. Thus, based on the results of the analysis, it can be concluded that during the period under review, both the central bank implementing monetary policy and the government implementing fiscal policy implemented a passive policy, which from the point of view of the effectiveness of economic policy is considered ineffective and undesirable. In these conditions, the level of risks and policy uncertainty increases, which, particularly in conditions of external shocks, can increase the level of instability of the financial system, and in some cases lead to serious financial shocks and crises.

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Anotacija. *Moksliniame straipsnyje nagrinėjamas pinigų ir fiskalinės politikos tarpusavio poveikis vienai iš pagrindinių Armėnijos Respublikos ekonomikos makroekonominės pusiausvyros problemų, taip pat tiriamas prognozavimo tikimybės infliacijos nustatymo politikos taikymo kontekste pobūdis. Dviejų pagrindinių makroekonominių ekonominės politikos ramsčių koordinavimo problema buvo nagrinėjama Armėnijos Vyriausybės ir Armėnijos Respublikos Centrinio banko elgesio ir institucijų sąveikos kontekste, o tai reiškia abipusį prisitaikymą ir reakcijos lankstumą laikantis tam tikrų taisyklių. Taikant straipsnyje sukurtą metodiką, pinigų ir fiskalinės politikos tarpusavio poveikis buvo tiriamas pasitelkus Markovo pereinamojo laikotarpio modelius, remiantis mokestinių pajamų / BVP santykiu ir paskolų, išduotų Armėnijos nacionaline valiuta, palūkanų norma.*

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A CO-PRODUCTION MODEL OF DIGITAL VILLAGE TRANSFORMATION IN INDONESIA

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Abstract. *The Smart Village Nusantara project in Indonesia indicates the existence of digital transformation that includes the involvement of several stakeholders: the government, the private sector, and the community. However, there remain few comprehensive models that explain the bottom-up demand process and integrative approach, and few previous studies have produced evidence-based data on digital village transformation. The purpose of this study is to produce a co-production model of digital village transformation. In co-production, various stakeholders are involved in the transformative process. The concepts of co-production and community-based digital village development are elaborated in this study, which employs a grounded theory approach as a method, involving both citizen producers and users as participants. This study elucidates a co-production model for digital village transformation, with several aspects outlined: context, stakeholders, co-production process/activities, institutional design, output, and outcome. The development of local potential, in this case tourism, is one of the driving factors for digital village transformation. At the level of assistance from professional actors, co-production in the Smart Village Nusantara project in Indonesia has succeeded in providing the foundation for the early* *stages of digital transformation. Meanwhile, sustainability also remains a challenge for the purpose of achieving a higher stage of digital village transformation.*

Keywords: *bottom-up and integrated model; co-production; digital village transformation; smart village.*

Reikšminiai žodžiai: *iš apačios į viršų ir integruotas modelis; koprodukcija; skaitmeninio kaimo transformacija; išmanusis kaimas.*

Introduction

The term *digital transformation* indicates change, modernization or innovation, which is also interpreted as an effort to revise processes, move through stages, or mature from the current situation to higher levels of digitalization (Barcevičius et al. 2019, 17; Mergel, Edelmann, and Haug 2019, 2). Likewise, in rural areas, digital support has a significant role for transformations that enable a better and more sustainable future (Rijswijk et al. 2021, 79; Beranič et al. 2019, 281). The smart village method is a holistic and inclusive approach, serving as an effective tool in the digital transformation of rural areas (Cāne 2021, 43; International Telecommunication Union 2020, 2). Smart villages can be illustrated by three issues: first, focusing on the village as an ecosystem, community, and people; second, the generation of additional value from the application of ICT that focuses on the needs and challenges faced by rural communities; and third, the creation and application of effective and targeted policies requires dialogue with policy makers (Visvizi, Lytras, and Mudri 2019, 3). Digital village transformation, along with the smart village concept, is designed to encourage rural areas to be more advanced, to overcome the digital divide, and to build partnerships with urban and rural communities (Cāne 2021, 48; European Network for Rural Development 2020, 2)

There are some challenges that occur during digital village transformation. With nearly 80 percent of the world's extreme poor living in rural areas, in order to achieve the SDGs through digital transformation, villages must be the main focus of intervention (International Telecommunication Union 2020, 1). Likewise in Indonesia, the challenges of rural development include the gap between rural areas and urban areas in terms of the percentage of their area marked by poverty (13.47% and 7.20%, respectively) (Cabinet Secretariat 2020). Additionally, there are disparities in infrastructure development and the digital divide. Based on the Information and Communication Technology Development Index 2021 (Central Bureau of Statistics, 2021), this disparity is seen in the percentage of household computer ownership in urban areas (25.4%), which is considerably higher than in rural areas (8.82%). In Indonesia, household internet usage in urban areas has reached up to 88.53%, while in rural areas it sits at only 73.57%; 71.81% of individuals access the internet in urban areas, and only 49.30% in rural areas; and 5,705 villages have not yet received cellular network connections. Other challenges in the digital transformation of Indonesia also include digital and literacy skills (Hadi 2018, 18) and the digital divide amongst generations in rural contexts (Onitsuka, Hidayat, and Huang 2018, 17).

There is a high proportion of older people in Indonesia living in rural areas, with mostly young people migrating to cities or rapidly developing areas (Utomo et al. 2019, 1).

Responding to various challenges in digital development in rural areas, the Indonesian Government launched the Smart Village Nusantara project for rural growth and digital inclusion. Smart Village Nusantara is an initiative project from the private sector (namely Telkom) that seeks to create an independent and productive village by connecting every entity in the village into a digital ecosystem community to improve the quality of government, services, and the village economy. The first phase of development of the Smart Village Nusantara pilot project was carried out in two villages: Kemuning and Pangandaran. The stages carried out included starting a digital village by providing internet access and ICT infrastructure, then moving to the smart village stage using digital tools in daily life through smart government, smart economy, and smart society. Smart Village Nusantara is carried out by involving various stakeholders, namely the government, the private sector (Telkom), and the village community. Thus, this phenomenon is a new framework in digital village transformation.

The shortage of data in the literature that specifically highlights the success of digital village transformation involving various stakeholders represents the theoretical gap of this study. The concept of digital village transformation and smart villages remains underdeveloped (Fennell et al. 2018, 1), as earlier research on digital development in rural areas focused more on one aspect of connectivity and inclusion (Salemink, Strijker, and Bosworth 2017, 9). Therefore, some recommendations emphasize a bottom-up approach, as well as an integrated approach in digital village development (van Gevelt et al. 2018, 139). Digital development in rural areas can be achieved by empowerment and participation through bottom-up demand processes (Fennell et al. 2018, 2). Furthermore, integrated development involves public and private cooperation and support, creating a supportive, coherent, and flexible policy framework at the national level, as well as thinking about financing mechanisms (van Gevelt et al. 2018, 140; Henderson 2020, 1). This integrative approach is in line with the "smart" element of smart villages, which is defined as the development of new forms of cooperation and building partnerships, including bottom-up and top-down cooperation (Cāne 2021, 43; European Network for Rural Development 2020, 1). There are few comprehensive studies and a lack of empirical evidence regarding the bottom-up and integrated approaches to digital village transformation. Further studies that empirically examine the concepts and roles of various stakeholders are needed for the success of this approach, so that the smart village support system can help rural communities to be involved in the digital transformation process. The findings of this study can help build the evidence base needed to advance villages in this way (Rijswijk et al. 2021, 87; Cāne 2021, 48; Hadi 2018, 31; van Gevelt et al. 2018, 142)

Hence, the problem statement of this study is that the Smart Village Nusantara program in Indonesia indicates a phenomenon of digital village transformation which involves various stakeholders. However, the concept of a bottom-up and integrated model of digital village transformation has not been extensively developed. Based on the limitations in the literature, to better understand bottom-up demand processes and an integrated approach to digital village development, the author uses a comprehensive co-production concept. Therefore, the purpose of this study is to produce a co-production model of digital village transformation. This study also highlights the necessary conditions for successful digital village transformation through the involvement of various stakeholders.

Literature Review

Public administrations invest heavily in digital transformation – both citizen-oriented and regarding their internal administrative processes. They use a co-production approach and involve multiple stakeholders to improve service quality and generate public value (Scupola and Mergel 2021, 1). In the digital era, co-production has become one of the latest buzzwords in the literature related to how citizens contribute to the delivery of public services (Mergel et al. 2018, 2). Co-production is understood as an impact-oriented form of collaboration between public administrations, professionalized service providers and citizens (Jarke 2021, 24; Brandsen, Steen, and Verschuere 2018, 11), where there is direct input from citizens during the production phase that affects the service (Lember, Brandsen, and Tõnurist 2019, 1667; Brandsen, Steen, and Verschuere 2018,11).

Apart from co-production, there are various ways to involve the community, such as co-creation. Although the concepts of co-production and co-creation have different histories, it is generally agreed that both co-production and co-creation relate to the involvement of citizens (Lember, Brandsen, and Tõnurist 2019, 1667). These two concepts can be differentiated based on the type of input contributed by citizens. When citizens are involved in planning at a strategic level and starting the development of a digital platform, co-creation is observed. In co-production, citizens shape the service in the next phase of planning at the strategic level. Co-production is generally associated with services that citizens receive during the implementation phase of the production cycle, where citizens actively engage in the design and delivery of their personal services through a digital platform provided by the service organization (Brandsen and Honigh 2018, 13).

In the case of the Smart Village Nusantara project, we use the co-production concept because the Smart Village digital platform was provided by the service organization for the further development and implementation phase of the production cycle with the community. Based on a review of previous literature, dimensions of co-production are evidenced here, including: context, stakeholders, co-production process/activity, output, outcome, and value. The development of these co-production dimensions in the form of a co-production model in digital village transformation will be discussed in the findings and discussion section of this paper.

Research Methods

To achieve the research objectives, the grounded theory method was used, which is useful for developing the researcher's theoretical analysis. The grounded theory method helps to generate new concepts in scientific disciplines and the wider research literature (Charmaz and Thornberg 2021, 306). This research was conducted in Kemuning Village and Pangandaran Village as a pilot project of the Smart Village Nusantara concept in Indonesia. Kemuning Village is in Central Java Province, while Pangandaran Village is in West Java Province. The list of participants is provided in Table 1.

Table 1. *List of participants*

Village	Code of participants	Role
Kemuning Village	1	Support team
	2, 3, 6	Village apparatus
	4	Village apparatus and admin
	5	Community
Pangandaran Village	7, 15	Village apparatus
	8, 11, 12, 13, 18, 19, 20	Community
	9, 10, 16	Village consultative board
	14	Village apparatus and admin
	17	Village assistant

In essence, there are two groups of actors involved in co-production: state actors or professional actors as regular producers (from outside the village); and citizens. There are two main roles of citizens: producers and users. In these groups, there are also drivers and supporters. Drivers are actors who initiate, operate, and manage innovation at every stage of the process, while supporters facilitate the diffusion of innovation, offering specific knowledge, funding, and connections to policy programs and service providers (Pestoff 2018, 30; Zerrer and Sept 2020, 83; Nabatchi, Sancino, and Sicilia 2017, 769). Based on this classification, Table 2 outlines the stakeholders involved in the Smart Village Nusantara project.

Table 2. *Stakeholders involved in the Smart Village Nusantara project*

Stakeholders	Positions	Roles
Telkom (as a state-owned enterprise)	Professional stakeholder – top-down drivers	– Provision and development of digital infrastructure and the Smart Village Nusantara application – Funding support in the form of grants – Training and mentoring
Central and regional government	State stakeholder – supporters	– Policy support – Providing support in accordance with the main tasks and functions – Disseminating information and outreach to various parties – Supervisor and companion
Village government	Citizen producers and bottom-up drivers	– Liaising with various stakeholders – Conducting socialization and training – Determining the administration of Smart Village Nusantara – Running and maintaining Smart Village Nusantara – Developing village innovation

Stakeholders	**Positions**	**Roles**
Admin (from village apparatus and community)	Citizen producers and supporters	– Operating the application – Maintaining Smart Village Nusantara
Support team (from the community)	Citizen producers and supporters	– Assisting the admin in operating the application – Providing creative ideas – Village assistants serving as liaisons between professional stakeholders and the community
Villagers	Users	– App users – Submitting ideas and suggestions

Source: result of the study

After obtaining 20 interview transcripts, data analysis was then carried out using the instrument created by Qureshi and Ünlü (2020). This instrument is an analytical tool for grounded theorists, consisting of four steps: code, concept, category, and theme. The stages of data analysis used in the study using the Qureshi and Ünlü instrument are depicted in Figure 1.

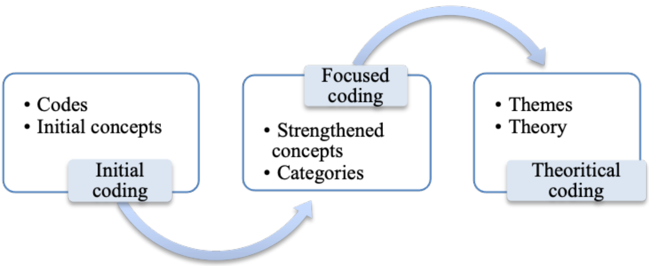

Figure 1. *Data analysis stages based on the Qureshi and Ünlü (2020, 7) instrument for grounded theory*

The first stage was initial coding, namely determining the code and concepts. The next stage, focused coding, involved determining categories. Next, at the theoretical coding stage, we determined themes and conceptualized how these themes relate to each other. The selected major themes were then obtained and explored further until saturation was achieved. Comparisons were also made with existing literature to produce new theories. Based on Charmaz and Thornberg (2020, 309), because researchers do not know in advance where the basic theory will take them, it was necessary to conduct a systematic literature search when completing this study.

Findings and Discussion

From the results of the interview, the initial coding and focused coding stages were then carried out to obtain codes, concepts and categories, as shown in Table 3.

Table 3. *An overview of the codes, concepts and categories determined in the study (initial coding and focused coding stages)*

Interview results	Codes	Concepts	Categories
P6: Telkom provided grants in the form of tools and applications for the smart village.	Grant support from Telkom (private sector) in the form of tools and applications	Grant support from the private sector	Professional support
P2: Telkom conducted a survey to study and observe the condition of the village. Our village met the criteria and had excellent value as a pilot project.	Activities carried out by Telkom (private sector) in implementing the pilot project	Support from the private sector	
P15: Digital village development is a national priority program, as well as a priority program for the use of village funds.	There is a national priority program that supports digital villages	Policy support	Policy, political and legislative support
P7: After the project started, there was a lot of support from the central government, local government, and legislature.	There is support from central government, local government, and legislature	Political/ legislative support	
P14: The central and local governments are incredibly supportive regarding the equipment needed in smart villages.	Equipment support from the government	Political/ government support	
P5: Applications are mostly used by the millennial group aged 15–50 years.	Application used by millennial groups	Skills	Social (characteristics of society, demographic diffusion, skills)
P18: There are obstacles, especially the elderly who have not mastered technology.	Limited skills of the elderly	Skills	
P10: We are used to using technology and the internet in everyday life.	Familiarity with using technology and the internet	Diffusion	
P20: The community can move in unison.	The characteristics of society are in unison	Social characteristics	
P9: Pangandaran Village has beautiful tourism and cultural potential, so this village was chosen to be a pilot village.	The village's potential advantages from tourism and culture	Potential in tourism and culture	Local potential
P5: Kemuning Village has lots of natural, artistic, cultural and tourism potential that can be developed.	The village's potential advantages from tourism and culture	Potential in tourism and culture	

The results of the complete focused coding stage were 28 categories. In the next stage, theoretical coding, these 28 categories were grouped to obtain 6 themes: context, stakeholders, institutional design, co-production processes/activities, outputs, and outcomes. Below, in Table 4, the 6 themes are outlined alongside their comparison with the literature review.

Table 4. *Dimensions or supporting factors for co-production from the literature and interview results (theoretical coding stage)*

Dimensions or supporting factors for co-production from the literature review	Themes and categories generated from grounded theory
I. Context	**I. Context**
Professional support (Steen 2021; Cepiku et al. 2020) Policy, political and legislative support (Loeffler 2021; Salemink, Strijker, and Bosworth 2017) Economic and financial (costs and subsidies) (Loeffler 2021; Salemink, Strijker, and Bosworth 2017) Social (demography, community characteristics, diffusion, skills) (Loeffler 2021; Salemink, Strijker, and Bosworth 2017; Cepiku et al. 2020) Attitudes towards ICT (Salemink, Strijker, and Bosworth 2017) Technological factor, digital connectivity (Loeffler 2021; Salemink, Strijker, and Bosworth 2017)	Supply side: Professional support Policy, political and legislative support Cost support Demand side: Social (characteristics of society, demographic diffusion, skills) Attitudes towards ICTs Technological factors Local potential
II. Stakeholders	**II. Stakeholders**
Motivation of stakeholders (Cepiku et al. 2020; Steen 2021; Benjamin and Brudney 2018) Knowledge, ability (Cepiku et al. 2020; Steen 2021; Benjamin and Brudney 2018)	Selection of stakeholders Producer motivation Knowledge, ability User motivation
III. Co-production process/activity	**III. Co-production process/activity**
Meetings, direct interaction (Loeffler 2021; Cepiku et al. 2020; Lember, Brandsen, and Tõnurist 2019) Collective learning processes (Loeffler 2021) Training and motivating staff (Loeffler 2021; Lember, Brandsen, and Tõnurist 2019; Cepiku et al. 2020; Tuurnas 2021) Sharing decision-making (Lember, Brandsen, and Tõnurist 2019) Accountability and performance management (Cepiku et al. 2020) Leadership (Loeffler and Bovaird 2021; Cepiku et al. 2020; Schlappa and Imani 2018)	Meetings, communication The collective learning processes Training and motivating Sharing decision-making Accountability and performance management Leadership Deliberative decision making
	IV. Institutional design Guide to using digital platforms Cooperative contract
IV. Output	**V. Output**
Improved service quality (Loeffler 2021)	Digital services Digital infrastructure
V. Outcome and value	**VI. Outcome**
Citizen-based, economic, administrative, and social public value (Cepiku et al. 2020; Scupola and Mergel 2021)	Increased participation, improved service quality, transparency, digital skill and literacy, increased welfare, and awards

In the context section, a comparison is also made with the concept of community-based digital village development from Salemink, Strijker, and Bosworth (2017). As a result of this comparison, findings were obtained in the form of new concepts that had not been discussed previously in the literature. In the context factor, the findings of this study suggest that local potential can be developed as a driving factor for digital village transformation. Regarding stakeholders, the findings of this study emphasize the selection of stakeholders and the motivation of users, where the latter desire convenience and that their needs be met. As for the co-production process/activity, the findings of the study suggest the existence of deliberative decision making. In accordance with the characteristics of rural communities, problems that have not been covered in institutional design can be solved through deliberative decision making. Another new aspect is institutional design: the rules that facilitate, guide, and limit the behavior of individuals and organizations (Ostrom 2011, 17). In the output aspect, this study finds that digital infrastructure is the result of the digital village transformation. They key outcomes of this are digital skills, digital literacy, and receiving awards. This is an important aspect as the first step in developing a digital village. In the early stages there is a stronger need to support physical investment to bring internet and digital infrastructure to rural areas, along with soft interventions for building digital skills capacity (European Network for Rural Development 2020, 7). Digital infrastructure is therefore the first stage of digital transformation (Janowski 2015, 226).

Thus, Figure 2 provides a visual representation of a co-production model for successful village digital transformation.

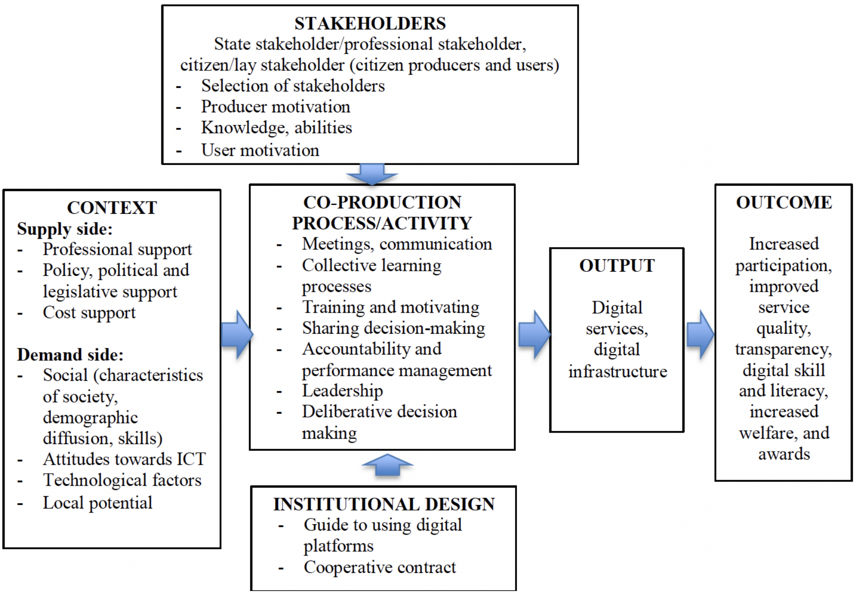

Figure 2. *A co-production model for successful digital village transformation*

Source: result of the study

This model has six variables, namely: context, stakeholders, institutional design, co-production processes/activities, outputs, and outcomes. The co-production process/activity variable is at the core of the model, with bottom-up (namely the active involvement of the community) and integrated approaches (in the form of cooperation between the community, the government, and the private sector) outlined. Meanwhile, the variables of context, stakeholders, and institutional design are factors that influence co-production processes/activities.

Context is defined by factors to support co-production. Context is a key factor at the macro level in the external environment, consisting of a supply side and a demand side. The supply side is determined by connectivity, namely the availability of telecommunications technology infrastructure and the supply mechanisms behind it. The supply side includes professional support, policy support, political and legislative support, and cost support. The demand side is a bottom-up element in the form of the conditions and needs of the local community. The demand side includes social attitudes (society characteristics, demographic diffusion, skills) towards ICT, technological factors, and local potential.

The next variable is stakeholders. The co-production process/activity involves various public and private stakeholders who demonstrate cooperation in an integrated approach. There are state stakeholder groups, professional stakeholders (private sector), and citizen groups. This group of citizens is also known as co-producers, citizen producers, or lay stakeholders, and involves citizens as users of public services. In terms of stakeholders, it is necessary to pay attention to the selection of stakeholders, producer motivations, knowledge, abilities, and user motivations. There is also institutional design in the form of guidelines for using digital platforms and cooperation contracts that regulate the behavior of stakeholders.

These three factors (context, stakeholders, and institutional design) contribute to the success of the co-production process/activity. Co-production processes/activities are collaborations between various public and private stakeholders (integrated) centered on empowerment and the active involvement of the community (bottom-up or demand side) in the transformation of digital services. Communities are actively and collaboratively involved in the planning, design, development and delivery of public services through platforms provided by professional stakeholders. There is therefore direct input from the community which will affect services. Co-production processes/activities include meetings, communication, collective learning processes, training and motivating staff, sharing decision-making, accountability and performance management, leadership, and deliberative decision making. Furthermore, co-production processes/activities produce outputs and outcomes. The output of this process is digital infrastructure and innovative digital services. Outcomes are in the form of increased participation, improved service quality, transparency, digital skills and literacy, increased welfare, and awards.

Conclusion

1. Digital village transformation requires support from parties outside the village and the involvement of the village community. This is a bottom-up demand process (citizen

centric) and an integrated approach that is carried out through co-production.

2. This study resulted in a co-production model for digital village transformation – a necessary condition for the success of digital village transformation through community involvement. This model has six variables: context, stakeholders, institutional design, co-production processes/activities, outputs, and outcomes.
3. Empirical evidence showed that at the stage of assistance from professional actors, the Smart Village Nusantara project in Indonesia has succeeded in providing the foundation for the early stages of digital transformation in the form of having built digital infrastructure and services. However, several obstacles remain, where not all people use and understand smart villages and the development of applications and other stages of smart villages are needed.
4. In order to gain support and participation from the community, it is recommended that digital village transformation is built according to local potential and designed according to users' desire to receive services that meet their needs.
5. The limitation of this study is that it has not yet assessed the further stages of digital village transformation. This study was carried out during the phase of mentoring by professional stakeholders. Thus, the next challenge is sustainability so that digital transformation in villages can reach a higher digital transformation stage. Furthermore, a wider chance to discuss sustainable digital transformation based on local capabilities in villages could also take place in future research. In addition, the co-production model of this research was formed from an Indonesian case; there are opportunities for future research to form co-production models within the contexts of different countries.

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KOPRODUKCIJOS MODELIS SKAITMENINIO KAIMO TRANSFORMACIJOS KONTEKSTE INDONEZIJOJE

Anotacija. *Pokyčiai išmaniajame kaime Nusantaroje (Indonezija) rodo, kad egzistuoja skaitmeninė transformacija, apimanti keletą suinteresuotų šalių: vyriausybę, privatų sektorių ir bendruomenes. Viena vertus, keli išsamūs modeliai paaiškina paklausos procesą iš apačios į viršų ir integracinį požiūrį. Kita vertus, nėra daug tyrimų ir įrodymais pagrįstų duomenų apie skaitmeninio kaimo transformacijas ir pokyčius. Šio tyrimo tikslas – sukurti skaitmeninio kaimo, kuris keičiasi, bendros įmonių produkcijos modelį. Bendroje įmonių produkcijoje į transformacijos procesą įtraukiamos įvairios tuo suinteresuotos šalys. Šiame tyrime buvo išplėtota koprodukcijos koncepcija ir bendruomeninio skaitmeninio kaimo plėtros koncepcija. Teorinis metodas pasitelktas siekiant išanalizuoti piliečių (vartotojų) ir gamintojų įsitraukimą į koprodukcijos ir skaitmeninio kaimo koncepcijos realizaciją. Šis tyrimas atskleidė įvairius skaitmeninio kaimo transformacijos koprodukcijos modelio aspektus, t. y. suinteresuotų šalių kontekstą, bendros gamybos procesą, veiklą, institucinį dizainą, produkciją ir rezultatus. Vietos potencialo, šiuo atveju turizmo, plėtra yra vienas iš skaitmeninio kaimo transformacijos varomųjų veiksnių. Nusantaros išmaniojo kaimo Indonezijoje pokyčių analizė padėjo sukurti pagrindą ankstyviesiems skaitmeninės transformacijos etapams. Tvarumas taip pat išlieka iššūkiu siekiant aukštesnio skaitmeninio kaimo transformacijos etapo.*

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APPROACHES TO ASSESSING THE FOOD SECURITY OF THE REGIONS OF KAZAKHSTAN IN MODERN CONDITIONS

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Abstract. *This article proposes a methodology for comprehensively assessing the level of food security in the regions of Kazakhstan based on three components: physical accessibility, economic accessibility and food safety. A system of indicators and their threshold values are justified for a component-by-component assessment. As a result, a comprehensive assessment of the food security of the regions of Kazakhstan in 2021 is carried out.*

The paper uses the method of mathematical modeling to assess the food security of the region, which includes the method of logical analysis in the selection of statistical and legal data to ensure the completeness and consistency of their coverage of the studied area. The methods of systematization, comparison, ranking and visualization are used to interpret the results.

The information base for the study was the data of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan.

Keywords: *food security, food security indicators, food quality, region.*

Reikšminiai žodžiai: *aprūpinimas maistu, aprūpinimo maistu rodikliai, maisto kokybė, regionas.*

Introduction

In light of recent events (the COVID-19 pandemic, military conflicts, sanctions), food security issues are becoming even more relevant. After all, any crisis can affect food production, supply chains, prices, as well as financial opportunities and consumer preferences, and food security is a critical aspect of human well-being and sustainable development.

Currently, the evaluation of food security is carried out by the Ministry of Agriculture of Kazakhstan only at the level of the whole country. To ensure food security, it is necessary to regularly assess and monitor the food systems of the regions. Regional assessments of food security complement nationwide studies, and allow researchers to identify unique challenges and problems in each region and then develop targeted measures to address them, including specific agricultural development programs, support for local producers, and strengthening infrastructure. This provides opportunities to prevent possible crises in some regions while there is a surplus of food in others, to assess the effectiveness of ongoing regional policies, and to identify successful practices and best approaches to food security for distribution. The purpose of this study is to develop an approach to the comprehensive assessment of the level of food security in the regions of Kazakhstan in the context of digitalization in order to better manage its condition.

Literature review

The assessment of the food security of the regions can be carried out using various approaches.

According to the Food and Agriculture Organization of the United Nations (1996), which leads international efforts to combat hunger, the following definition is used: "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life."

The work of Frantsisko et al. (2020) considered methodological approaches to assessing the physical availability of food products, which involve assessing the level of development of marketing infrastructure, taking into account FAO food safety metrics.

Some countries use extended food security indicators. For example, the methodology of the Global Food Security Index includes 68 quantitative and qualitative indicators of food security distributed in three areas. At the same time, the index also has a fourth direction, "Sustainability and adaptation," which reflects the quality of the environment in the territories used for agriculture (GFSI 2022). The Integrated Food Security Phase Classification (IPC) protocols provide for the collection and analysis of a wide variety of data similar to GFSI, including data on the availability and accessibility of food (IPC Global Partners 2021).

At the same time, the Global Hunger Index (GHI) uses indirect indicators that are not directly related to food security – for example, stunting, low weight and child mortality (GHI 2023).

Hart (2009) explored in greater depth such concepts as "vulnerability," dividing it into internal and external components, as well as the notion of a "lack" of food security, relating it to duration and intensity.

The set of indicators of food security may also vary depending on the purpose of the study: some were created to measure the current state of food security and compare countries with each other (GFSI, IPC), while others are aimed at forecasting changes in the level of food security and the early warning of possible threats, including from worsening climatic conditions (FEWS NET 2018).

Some researchers determine the state of food security mainly at the national level, while assessments at the level of administrative territories within countries are not carried out due to the unity of certain countries' food markets. For Kazakhstan, the main factors of food security are formed at the regional level, taking into account climatic and geographical features, living standards, and income distribution. Thus, the assessment of food security at the regional level is justified. Therefore, the control object in this study consists of socio-economic subsystems which are characterized by the heterogeneity of their development in each region.

Maulana and Yulianti (2022), in examining the problems of fishing in the Karangantu coastal region in Serang (Indonesia), found that multi-stakeholder cooperation has a positive impact on the development of the industry. At the same time, the role of local authorities was defined as being among the most important. Firyal Akbar et. al (2022), when examining the influences of stakeholder relationships on the effectiveness of public policies to ensure food security, came to the same conclusion.

Using an indicator approach, Jatav et al. (2022) assessed the food security status of the districts of Rajasthan in India, which showed that due to climatic differences, the levels of food security of each district also differ.

In this regard, the authors of this study attempt to determine a methodology for assessing food security at the regional level in Kazakhstan.

Methodology

To assess the food security of the region, a methodology is needed that has a simple calculation algorithm and that involves the use of both quantitative and qualitative data. The choice of food security indicators is an important step in the monitoring and evaluation process, where the key criteria for selecting indicators are their significance, validity and data availability. The indicators used for evaluation should have a number of characteristic features:

1. Reliability – the indicator reflects the real state of agricultural producers and the processing industry, and is officially recognized and documented;
2. Constancy – the indicator can be observed (measured, recorded) continuously in time (daily), or at regular intervals;
3. Public availability – the indicator should be made publicly available on the official Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, allowing for detailing by region.

Based on these indicators, the required indices can be calculated.

Table 1. *The system of indicators and indices for assessing food security used in this study*

Indicator/Index	**Calculation formula, interpretation**
Physical security (Physical accessibility)	
PA 1: Regional output per capita, in tenge.	Enables differentiation between the regions regarding the production of food products, thus denoting regions of suppliers and consumers.
PA 2: The volume of production of certain types of agricultural products per capita, in kilograms.	This is an indicator on the basis of which the food security level in the region is assessed. The threshold value (standard) of the indicator is the permissible values at which the region is considered to be provided with a specific type of food.
Economic security (Economic affordability)	
EA 1: Food import coverage ratio.	The ratio of food imports to exports (a standard value would be no more than 1.6:1). A high food import coverage ratio may indicate a region's low self-sufficiency in food production and dependence on external supplies. A low coverage ratio, on the contrary, indicates a higher self-sufficiency of the region in food production.
EA 2: The purchasing power of the average monetary income of the population per capita reflects the potential of the population to purchase goods and services, and is expressed through the commodity equivalent of average monthly monetary income.	The indicator of the ratio of average per capita income to the subsistence minimum directly characterizes the standard of living of the population in the country. Its optimal value should be 7–8:1 or more (taking into account the approach used to determine the subsistence minimum); it is advisable to set the threshold value at the level of 6:1.
EA 3: Funds ratio (income differentiation ratio).	This characterizes the degree of social stratification and is defined as the ratio between the average levels of the monetary incomes of the 10% of the population with the highest incomes and the 10% of the population with the lowest incomes.
EA 4: The Engel coefficient reflects the share of household expenditure on food from total expenditure. It is used to measure the standard of living and social well-being of the population, as well as to assess the patterns of food consumption in different countries and regions.	The Engel coefficient is calculated as the ratio of household food expenditures to their total expenditures. A high Engel coefficient indicates that households spend a large share of their income on food, which may be indicative of poverty or a low standard of living in the country. In contrast, a low Engel coefficient means that households spend a smaller share of their income on food. However, this indicator does not take into account the quality of food and may not reflect the real situation in the country if, for example, households save on quality food due to a lack of funds.

Our proposed algorithm for assessing the food security of the region consists of 4 consecutive stages:

1. Forming a system of indicators for a comprehensive assessment of the state of the food market according to physical accessibility (PA), economic affordability (EA), and food quality and safety (QS);
2. Substantiating the system of indicators and their threshold values for component-by-component assessment;
3. Compiling a summary table and calculating the level of regional FS;
4. Analyzing and developing proposals for improving the provision of food security.

The assessment of the level of the region's FS is determined as the average of the sum of the assessments of the main FS criteria:

Assessment of FS level of region = ω_1 PA + ω_2 EA + ω_3 QS (1)

Where ω_i satisfy the relations:

$$\sum_{i=1}^{3} \omega_i = 1$$

Each of these criteria has its own evaluation levels: 1 (unacceptably low), 2 (low), 3 (acceptable), 4 (high).

To measure the assessment of the components of each region's FS level, we introduce the following classification:

- high level assessment of the level of the region's FS: 3.5–4 (green in the table);
- acceptable level: 3–3.5 (blue in the table);
- low level: 2–3 (yellow in the table);
- unacceptably low level: 1–2 (white in the table).

If the criterion contains sub-criteria, then the criterion score is calculated as a weighted average of the sub-criteria.

For regions with a low score, priority areas of state regulation should be formulated and goals and methods for improving the indicator should be determined. Thus, assessing the level of food safety in the region is an objective basis for the formation of a strategy and tactics for ensuring food safety both at the regional and national levels.

A comprehensive assessment of the FS level is calculated via the weighted average assessment of its components.

Results

Food security management is a multi-level hierarchical system based on the subject that solves the food problem and its functions.

The most difficult task is to quantify the quality of food. The most applicable indicator (although it characterizes the general quality of food only incidentally) can be recognized as the ratio of the number of products recognized by control bodies as meeting the quality requirements to the total number of products inspected. According to the database for 2021 from the register of non-conforming products (CSEC 2021), the number of non-conforming products by regions of Kazakhstan for 2022 is depicted (Table 2).

Table 2. *The number of non-conforming products in the regions of Kazakhstan in 2022*

Region	Falsified products	Violation of phys.-chemical value	Violation of information label (date, deadline)
Zhambyl	1		59
Almaty city	3	5	57
North Kazakhstan	6		36
Astana city	5	2	25
Atyrau	1	6	25
Shymkent	2		15
East Kazakhstan	1		7
Karaganda	1	1	6
Turkestan	1		6
West Kazakhstan	1		5
Pavlodar	1		5
Mangystau	1		3

Based on these data, it is not possible to determine how many verifications were carried out, including laboratory tests, in order to calculate the proportion of nonconforming products. Most of the violations in the regions of Kazakhstan relate to compliance with the requirements for providing information on labels.

Unlike quality requirements, which can change depending on the requirements of specific consumers, food safety requirements are constant. Food hazards can occur at any stage of the food chain, and therefore good management throughout the food chain is essential. Food safety is ensured through the joint efforts of all parties involved in the food chain. At present, due to the lack of data, it is difficult to adequately assess food quality assurance processes. In this regard, food safety for all regions will be considered to be at the minimum acceptable level.

The next section considers the indicators characterizing the magnitude of PA and EA.

Indicator PA 1: Regional output per capita, in tenge.

To analyze the sphere of production, it is first of all necessary to estimate the regional volumes of output by the type of “Agriculture, fisheries and forestry” economic activity per capita (Table 3).

Table 3. *Output volumes for “Agriculture, fisheries and forestry” in thousand tenge at current prices per capita*

Region	Gross output, million tenge	Population	Gross output of agricultural products per capita, thousand tenge	PA 1
Turkestan	931,043	540,391	1,722.9	4
North Kazakhstan	899,985	749,034	1,201.5	4
Akmola	740,621	734,733	1,008.0	4
Karaganda	493,443	663,585	743.6	3
Pavlodar	428,194	730,232	586.4	3
Almaty	1,088,280	2,092,567	520.1	3

Region	Gross output, million tenge	Population	Gross output of agricultural products per capita, thousand tenge	PA 1
Kaostanay	604,598	1,373,926	440.1	3
East Kazakhstan	875,641	2,059,937	425.1	3
Zhambyl	478,135	1,144,553	417.7	3
Aktobe	374,973	900,266	416.5	3
Kyzylorda	170,840	861,204	198.4	2
West Kazakhstan	242,007	1,360,098	177.9	2
Atyrau	112,946	662,600	170.5	2
Shymkent city	44,498	1,093,468	40.7	1
Mangystau	21,668	821,255	26.4	1
Almaty city	8,059	1,212,078	6.6	1
Astana city	503	2,001,060	0.3	1

This indicator allows certain decisions to be made regarding the nature of a region's specialization.

The leading regions (suppliers) producing agricultural products are Turkestan, North Kazakhstan, Akmola and Karaganda. The regions of the middle producers (suppliers) are East Kazakhstan, Pavlodar, Almaty, Zhambyl, Aktobe, and Koastanay, with output volumes from 416,000 to 587,000 tenge per capita. The outsider regions (suppliers) are Kyzylorda, Atyrau, and West Kazakhstan, with production volumes of more than 200,000 tenge. The consumer regions are Shymkent city, the Mangystau region, Almaty city, and Astana city, with issue volumes of less than 41,000 tenge.

Indicator PA 2: Volume of production of certain types of agricultural products per capita in kilograms, 2021.

This FS indicator is an indicator on the basis of which the level of the region's FS is assessed. The threshold value (standard) of the indicator represents the permissible value of the indicator at which point the region is considered to be provided with a particular type of food. Calculations are shown in Table 4, where the indicators of the standards are taken from Kaygorodtsev (2019).

Table 4. *Gross production of certain types of agricultural products per capita in kilograms and estimated indicators*

Region	Gross harvest of grain and leguminous crops	Gross potato harvest	Gross harvest of vegetables	Milk of all kinds	Meat (in slaughter weight)	Eggs of all kinds, pcs.	PA 2
North Kazakhstan	6,341.0	1,020.4	345.0	1,175.6	112.9	1,033.3	4.00
Almaty	650.7	377.4	509.6	405.0	113.5	385.3	3.83
Pavlodar	1,342.1	776.7	309.3	562.5	78.1	341.3	3.83
Akmola	5,275.2	364.8	65.3	552.9	172.5	1,079.5	3.67
East Kazakhstan	721.1	327.6	209.5	763.9	132.5	117.2	3.50
Kostanay	3,299.2	193.1	77.5	507.7	72.8	695.9	3.50

Region	Gross harvest of grain and leguminous crops	Gross potato harvest	Gross harvest of vegetables	Milk of all kinds	Meat (in slaughter weight)	Eggs of all kinds, pcs.	PA 2
Aktobe	280.7	117.4	98.7	393.5	91.0	258.7	3.00
Zhambyl	479.3	233.9	1,024.4	291.9	70.6	130.5	3.00
Karaganda	624.9	285.7	86.5	387.2	64.2	478.5	3.00
Turkestan	285.2	152.1	575.6	375.2	64.5	110.8	3.00
West Kazakhstan	249.6	87.5	88.2	362.2	79.4	292.5	2.83
Kyzylorda	562.5	67.0	127.9	120.1	25.0	9.7	2.33
Atyrau	0.0	44.6	150.2	106.2	44.9	59.0	2.00
Shumkent city	8.1	4.4	35.6	44.4	7.9	142.1	1.17
Mangystau	0.0	0.0	9.6	10.2	11.8	1.4	1.00
Almaty city	0.0	0.7	0.0	0.9	0.0	0.2	1.00
Astana city	0.6	0.5	0.0	0.2	0.1	0.0	1.00
Standard	1,000	97	146	405	82	292	

Kazakhstan exports mainly agricultural products in the form of raw materials, and imports finished food products. It is well known that finished products are much more expensive than raw materials. Therefore, it is necessary to increase the volume of products processed in the republic.

Table 5. *Food import coverage ratio – EA 1*

Region	Food import coverage ratio, thousand $	EA 1
West Kazakhstan	16.3	1
Almaty city	15.3	1
Mangystau	13.6	1
North Kazakhstan	8.0	1
Almaty	6.9	1
Karaganda	6.4	1
Astana city	4.6	1
Pavlodar	4.0	1
Kostanay	3.5	1
East Kazakhstan	3.3	1
Almola	2.7	1
Republic of Kazakhstan	2.0	1
Aktobe	1.7	1
Shymkent city	1.3	2
Zhambyl	0.9	3
Atyrau	0.4	4
Kyzylorda	0.3	4
Turkestan	0.1	4

In 2021, the amount of food products and raw materials exported for production in the Mangistau region was 17 times higher than imports, which corresponds to an extremely strong indicator level (a score of 1). The higher the score, the worse this indicator is represented. If a region provides itself with products of its own production and its imports do not exceed 30%, then the level of the indicator is high (a score of 4); if the share of imports exceeds exports by 30%–60%, the level is acceptable (a score of 3); if the share of imports exceeds exports by 60%, then the level is acceptably low (a score of 2); if the share of imports exceeds 80%, then this is unacceptably low (a score of 1).

The value of the allowable level of food coverage ratio should not exceed 0.8. For regions with a large proportion of imported food, this can be provided through the supply of products from the internal regions of the republic, contributing to their development. To this end, the Government of the Republic of Kazakhstan should annually draw up a balance of the required volume of food in each region which is not provided with its own production. This is the basis for calculating the level of food security and the basis for planning regional cooperation for the production of vital food.

Indicator EA 2: Purchasing power of the average monetary income of the population per capita, which reflects the potential of the population to purchase goods and services.

The purchasing power coefficient is the ratio of the average per capita income to the established minimum subsistence level for the population of the region. The ratio of the average per capita income to the subsistence minimum reflects the population's potential to purchase goods and services. Its optimal value should be 7–8:1 or more (taking into account the approach used to determine the subsistence minimum), and it is advisable to set a threshold value at the 6:1 level.

Table 6. *Purchasing power of the average per capita monetary income of the population (EA 2)*

Region	Cost of living, tenge	Average salary, tenge	Purchasing power ratio	EA 2
Atyrau	36,229	406,166	11.2	4
Astana city	41,232	344,691	8.4	4
Mangystau	42,948	349,503	8.1	4
Almaty city	39,685	295,985	7.5	4
Karaganda	35,778	240,608	6.7	3
West Kazakhstan	34,275	226,537	6.6	3
Aktobe	34,264	217,597	6.4	3
Kyzylorda	35,140	212,777	6.1	3
Pavlodar	37,031	220,291	5.9	3
East Kazakhstan	37,791	224,700	5.9	3
Zhambyl	34,811	195,922	5.6	2
Kostanay	35,897	201,923	5.6	2
Shymkent city	34,634	193,682	5.6	2
Almaty	37,230	207,592	5.6	2

Region	Cost of living, tenge	Average salary, tenge	Purchasing power ratio	EA 2
Akmola	36,665	203,006	5.5	2
Turkestan	35,770	195,302	5.5	2
North Kazakhstan	35,660	187,501	5.3	2

Increasing the affordability of food products should be based, first of all, on positive economic changes. These changes should be manifested in an increase in: increasing the income of the population, especially the poorest; ensuring reasonable retail prices for food products; and providing a powerful program of targeted budget support for food.

Indicator EA 3: coefficient of funds.

This indicator characterizes the degree of social stratification and is defined as the ratio between the average monetary income level of the 10% of the population with the highest incomes (Svinukhova 2019) to that of the 10% of the population with the lowest incomes (Table 7).

Table 7. *Income differentiation coefficient*

Region	Funds ratio	EA 3
Almaty city	7.5	1
Karaganda	6.9	1
East Kazakhstan	6.8	1
North Kazakhstan	6.7	1
Pavlodar	6.5	1
Akmola	5.9	1
Almaty	5.4	1
Aktobe	5.2	1
Kostanay	5.1	1
Astana city	4.7	2
West Kazakhstan	4.5	2
Kyzylorda	4.2	2
Zhambyl	3.9	2
Atyrau	3.8	2
Turkestan	3.4	3
Mangystau	3.3	3
Shymkent city	3.2	3

The values of the coefficient of funds have an inverse relationship with the assessment of the level of food security. At the same time, some industrial regions have the highest coefficient of funds values, with an estimate of 1 (unacceptably high). One of the priorities of social development is to reduce the level of social differentiation of the population and reduce excessive social distances, equalizing the level and quality of life of the population in different regions.

Indicator EA 4: the Engel coefficient.

This represents the share of household spending on food from the total volume of consumer spending.

Table 8. *Engel coefficient*

Region	Engel coefficient	Expenditures on food products, tenge	EA 4
Akmola	48%	392,801	2
Aktobe	52%	382,038	2
Almaty	59%	473,577	1
Atyrau	58%	395,832	1
East Kazakhstan	54%	502,818	2
Almaty city	50%	567,665	2
Astana city	46%	450,748	2
Shymkent city	49%	286,237	2
Zhambyl	62%	395,796	1
West Kazakhstan	58%	394,544	1
Karaganda	45%	466,415	2
Kostanay	46%	376,269	2
Kyzylorda	52%	339,838	2
Mangystau	57%	385,007	1
Pavlodar	55%	509,570	2
Republic of Kazakhstan	53%	427,330	2
North Kazakhstan	47%	427,961	2
Turkestan	62%	339,746	1

The share of food expenditure in total income in each country/region can be classified as follows:

- 50%–60% – low, needs are barely met, the region is considered extremely poor;
- 40%–50% – below average, basic needs are met;
- 30%–40% – average, a relatively wealthy population;
- 20%–30% – above average, a wealthy society;
- 20% or less – a very wealthy society.

In Kazakhstan, regions where EA 4 = 1 are extremely poor, while the remainder are below average.

A comprehensive assessment of the level of PS in each region with the equal influence of factors can be seen in formula (2), and is presented in Table 9.

$$\text{Comprehensive assessment of the region's FS} = \frac{1}{3}(\text{PA} + \text{EA} + \text{QS}) \quad (2),$$

$$\text{where PA} = \frac{1}{2}(\text{PA1} + \text{PA2}); \;\; \text{EA} = \frac{1}{4}(\text{EA1} + \text{EA2} + \text{EA3} + \text{EA4}).$$

Table 9. *A comprehensive assessment of the level of regional food safety*

Region	PA 1	PA 2	EA 1	EA 2	EA 3	EA 4	QS	PA	EA	Comprehensive assessment	Rank
Turkestan	4	3	4	2	3	1	2.5	3.50	2.5	2.83	1
Pavlodar	4	3.83	1	3	1	2	2.5	3.92	1.75	2.72	2
Kostanay	4	3.50	1	2	2	2	2.5	3.75	1.75	2.67	3
North Kazakhstan	4	4	1	2	1	2	2.5	4.00	1.5	2.67	4
Akmola	4	3.67	1	2	1	2	2.5	3.83	1.5	2.61	5
Aktobe	4	3.00	1	3	1	2	2.5	3.50	1.75	2.58	6
Almaty	4	3.17	1	2	1	2	2.5	3.58	1.5	2.53	7
Zhambyl	3	3.00	3	2	2	1	2.5	3.00	2	2.50	8
Atyrau	2	2.33	4	4	2	1	2.5	2.17	2.75	2.47	9
Karaganda	3	3.17	1	3	1	2	2.5	3.08	1.75	2.44	10
Kyzylorda	2	2.17	4	3	2	2	2.5	2.08	2.75	2.44	11
West Kazakhstan	3	2.83	1	3	2	1	2.5	2.92	1.75	2.39	12
East Kazakhstan	1	3.50	1	3	1	2	2.5	2.25	1.75	2.17	13
Shymkent city	1	1.5	2	2	3	2	2.5	1.25	2.25	2.00	14
Mangystau	1	1.17	1	4	3	1	2.5	1.08	2.25	1.94	15
Astana city	1	1	1	4	2	2	2.5	1.00	2.25	1.92	16
Almaty city	1	1	1	4	1	2	2.5	1.00	2	1.83	17

An unacceptably low level of FS (1 ≤ Assessment of the level of FS of the region < 2) is observed in the Astana, Almaty and Mangistau regions, although they have a high purchasing power based on the average per capita monetary income of the population (EA 2 – 4 points). All other regions have a low level of FS (assessment of the level of FS of the region – 2–3 points). At the same time, the North Kazakhstan, Almaty, Pavlodar, Akmola, East Kazakhstan, Kostanay, Aktobe, Zhambyl, Karaganda, Turkestan regions have a high level of gross production of certain types of agricultural products per capita in kilograms.

Discussion

The state of food security is mainly analyzed and assessed at the country level. However, country indicators are made up of regional indicators that reflect the significant geographical, territorial, climatic, economic and other features of the functioning of the food markets of different regions. This actualizes the need for a differentiated approach to decision-making in order to ensure FS at the regional level.

The assessment of the food security of the regions of Kazakhstan has the following fundamental differences from the national model:

1. The highest level of dependence is typical for regions with unfavorable natural and economic conditions for agriculture. The state must build a regional balance for the distribution of food from the regions that supply products to consumer regions. With the loss of food independence of the country, its food security is violated. There is no such correlation at the regional level.
2. At the national level, the task is to create and maintain strategic food stocks, which is not the function of the regions.
3. To protect FS, the state uses customs tariffs, compensation fees, excises, sales taxes, quotas, etc., which are only within the competence of the government of the country.

One of the important elements of FS management is the system of transport and logistics infrastructure with the participation of the republic's budget. The implementation of logistics should focus on improving the movement of goods, optimizing inventory and costs, as well as providing high-quality customer service. It is necessary to remove all obstacles to the movement of food products, both within the regions and internationally, by: improving customs procedures; ensuring the safe transportation of goods without extortion; and organizationally developing key indicators for ensuring food security and including them in the assessment of the activities of state bodies, primarily customs and law enforcement agencies.

Conclusions and recommendations

Based on the proposed methodology for comprehensively assessing the food security level of regions, an automatic system of ratings of regions for differentiated management will be built. This will involve an analysis of risks and opportunities, taking into account the population, natural and climatic conditions, geographical location (border, logistics), the level of development of agricultural production, the state of the domestic market, and the position of consumers in it.

In the information system for the protection of consumer rights, it is necessary to provide for the coverage of not only trade entities, but also public catering points that allow its safety to be assessed. This is especially true for the working urban population and the youth. It is also decisive to ensure the level of food security of social security facilities, including kindergartens, schools, and hospitals. To motivate business entities, developing a rating system for food outlets by category, such as restaurants, cafes, and canteens, is advisable.

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POŽIŪRIAI Į KAZACHSTANO REGIONŲ APRŪPINIMO MAISTU VERTINIMĄ ŠIUOLAIKINĖMIS SĄLYGOMIS

Anotacija. *Straipsnyje siūloma visapusiško aprūpinimo maistu lygio Kazachstano regionuose vertinimo metodika atsižvelgiant į tris komponentus: fizinį prieinamumą, ekonominį prieinamumą ir maisto saugą. Rodiklių sistema ir jų ribinės vertės yra pateisinamos vertinant kiekvieną komponentą. Išsamus Kazachstano regionų aprūpinimo maistu įvertinimas buvo atliktas 2021 m. Tyrimo metu, siekiant įvertinti regiono aprūpinimą maistu, buvo taikytas matematinio modeliavimo metodas. Jis apima loginę analizę, kai atrenkami statistiniai ir teisiniai duomenys siekiant užtikrinti jų aprėpties išsamumą ir nuoseklumą tiriamoje srityje. Rezultatams interpretuoti buvo pasitelkti sisteminimo, palyginimo, reitingavimo ir vizualizavimo metodai. Tyrimo informacinė bazė buvo Kazachstano Respublikos Strateginio planavimo ir reformų agentūros nacionalinės statistikos biuro duomenys.*

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THE IMPACT OF OPEN GOVERNMENT DATA ON THE TRUST AND SATISFACTION OF CITIZENS WITH STATE INSTITUTIONS IN KAZAKHSTAN

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Abstract. *In an era characterized by increasing demands for transparency and accountability, Open Government Data (OGD) initiatives have emerged as a critical tool for fostering public trust in government institutions. This paper examines the direct impact of the results of OGD on the satisfaction of citizens and the activities of state institutions. The main purpose of this paper is to study whether there is a link between the availability of OGD and institutional trust, and, if so, to establish whether this effect can guarantee the satisfaction of citizens. The study involved a large-scale survey conducted among residents of the Turkestan region. The survey encompassed questions related to trust in various government entities, the usage of OGD, satisfaction with government services, and socio-demographic factors. Data collected from 360 respondents were subjected to rigorous statistical analysis. A substantial positive correlation between OGD availability and usage and citizens' trust in government institutions, particularly among frequent internet users, was found. Additionally, the study revealed that OGD positively influences citizens' satisfaction, which, in turn, contributes to increased trust in government. OGD initiatives play a vital role in enhancing trust in government institutions, particularly in digitally connected populations. Recognizing the mediating role of satisfaction presents opportunities* *for policymakers to refine strategies aimed at delivering higher-quality public services and strengthening democratic processes.*

Keywords: *Open Government Data; trust and satisfaction of citizens; analytical statistics; linear regression; SEM methodology; E-government.*

Reikšminiai žodžiai: *atviros vyriausybės duomenys; piliečių pasitikėjimas ir pasitenkinimas; analitinė statistika; linijinė regresija; SEM metodika; e. valdžia.*

Introduction

In the rapidly evolving landscape of modern governance, the effective utilization of Open Government Data (OGD) has emerged as a critical determinant of public trust and satisfaction with governmental institutions (Talukder et al. 2019). With societies becoming increasingly reliant on data-driven decision-making, understanding the interplay between OGD, citizens' trust, and satisfaction has taken center stage in the realm of public policy and administration (Almuqrin et al. 2022).

The urgency of this research stems from the evolving landscape of governance, marked by increasing expectations for transparency, accountability, and citizen participation. OGD, with its potential to enhance government-citizen interactions, has become an important tool. Understanding how OGD influences trust and satisfaction is vital for policymakers striving to strengthen the foundations of democratic governance (Pickering et al. 2022).

Academic findings reveal that the government digitalization process is expected to bring a wide range of potential benefits which are usually linked to Public Value Management (Luna et al. 2015) – an approach that balances efficiency and a set of social and democratic values (Tagscherer and Carbon 2023).

In particular, this paper assesses the effect of OGD on citizens' trust, one of the potential effects of openness (Grimmelikhuijsen and Meijer 2014).

The development of Web 2.0, together with previous findings in the areas of information and communication technologies (ICT) and e-government, leads governments and academics to explore the potential benefits of OGD, such as fostering citizens' trust in public institutions (Alexopoulos et al. 2013). The reasons for this are the necessity of the transparency of government administration and the effective interaction of government bodies at all levels with civil society institutions, which increases the quality of state services in order to improve the activity of the state (Junusbekova 2013).

OGD can also contribute to the development of new public services in many different ways. While it is the basis for open government initiatives, which promote transparency and allow citizens to improve democratic accountability, its economic benefits are not limited to the public sector, and there is some evidence which supports the notion that OGD positively affects innovation and the economy.

However, the utilization of OGD by private companies is in its early stages, so its effect on the creation of economic value is still unclear (Maikova and Simonova 2014).

This work sheds light on this relationship by considering the direct effect of OGD on citizens' satisfaction with public institutions and outcomes. Additionally, it also assesses how citizens perceive public services, democracy and economy, which is an antecedent of institutional trust in the context of OGD.

Previous studies have shown that ICT applications in government have different impacts on expected outcomes, such as trust, when social and demographical variables are considered (Yuan et al. 2023). Nevertheless, little is known about these moderating effects in the field of OGD and trust. In this article, the attempt is made to bridge this gap by studying the moderating role of gender, age, level of education, use of the Internet and political ideology in the proposed relational model.

The relevance of this paper is based on its capacity to contribute empirically grounded knowledge, offering an understanding of the role of OGD in shaping citizens' perceptions and expectations. This understanding, in turn, can inform strategies to strengthen public policy and administration in the contemporary, data-driven context.

This paper sets out to establish whether there is a link between the availability of OGD and institutional trust and, if there is, whether its impact is mediated by citizens' satisfaction. In a context in which trust in institutions has been declining in many countries, anything that could reverse this trend is likely to be of interest.

The remainder of this paper is organized as follows. First, it outlines the background of this study in terms of OGD, citizens' trust and satisfaction. Consequently, the research hypothesis is developed, and then the data and methodology are explained. Next, the results are reported, before conclusions, limitations, and proposals for further research are explained.

Literature review

E-government has evolved toward open government, an innovative governance method based on the availability of OGD to promote transparency and interaction between government and citizens (Susha et al. 2015). The reason for this is the necessity of the transparency of government administration and the effective interaction of government bodies at all levels with civil society institutions, which increases the quality of state services in order to improve the activity of the state (Tavares and da Cruz 2020).

In addition, the OECD considers that OGD promotes transparency, accountability and value creation by making government data available to all (OECD 2017).

Public value is considered as a valid theory to assess the impact of OGD on trust because, according to this management method, governments should not only provide public services stressing value for money and financial performance, but should also promote a range of social public values through participation and collaboration (Bannister and Connolly 2011). For instance, Benington (2011) proposed four dimensions for public value: economic, social and cultural, political, and ecological. Other authors identified three key categories of public value: services, outcomes, and trust (Kelly et al. 2002).

One of the first attempts to clarify how trust is connected to OGD was carried out by Grimmelikhuijsen and Meijer (2014), who studied the effects of open data in terms of transparency, privacy, security, and trust, considered as intangible public values, as well as the relationships and trade-offs between them. Through the analysis of two case studies, they stressed that when OGD can be reused and results can be replicated, trust is enhanced. Lee et al. (2019) also found that OGD has a positive effect on social capital that comprises institutional trust, but only when mediated by the rule of law or control over corruption. Accordingly, for the purposes of this paper, citizens' trust in the following national institutions is assessed: the national parliament, the legal system, politicians, and the political parties of the Republic Kazakhstan.

Since 2010, Kazakhstan has officially introduced a system of annual assessment of the effectiveness of the activities of state bodies (Decree of the President of the Republic of Kazakhstan No. 136, August 26, 2019). Within the framework of this system, an assessment is carried out regarding the activities of state bodies, including in the direction of the "interaction of the state body with individuals and legal entities," according to the following criteria: the quality of the provision of public services, the openness of the state body (open government), as well as the consideration of complaints and applications from individuals and legal entities. In the authors' opinion, it is necessary to analyze and evaluate the effectiveness of each body considering the peculiarities of its functioning in modern conditions (Junusbekova 2015).

Trust and satisfaction are closely connected, but it is necessary to clarify the causal relationship between both. Following the definition of citizens' trust in institutions, it reflects citizens' beliefs and expectations about how individuals from different institutions will behave in the future. On the other hand, satisfaction is an expression of how citizens' current needs and expectations are met by governmental institutions. In other words, as stated by Weber et al. (2017), "trust is a future-based belief that politicians will be able to generate expected outcomes, whereas satisfaction is a retrospective view of outcomes generated by government." These authors considered satisfaction with the government, democracy and economy, as well as trust in politicians, political parties and policies.

The quality of public services can be improved by new regulations, standards and innovative solutions to solve social problems that rely on OGD (Yung 2015).

The improvement of education and health care, among other services, adds social value for citizens thanks to OGD (Pereira et al. 2017).

To summarize, there is evidence to support the idea that citizens' satisfaction with public service and public performance have a significant positive effect on institutional trust, but this relationship still needs to be empirically tested in the context of OGD. This paper contributes to this debate by testing the following hypotheses.

Hypothesis 1: OGD has a positive impact on citizens' trust and satisfaction in institutions.

Hypothesis 2: The relationship between OGD and citizens' trust in institutions is mediated by citizens' satisfaction.

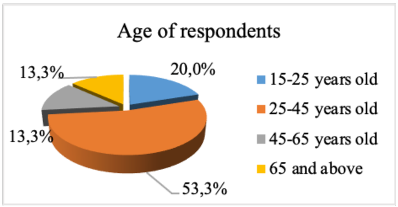
Materials and methods

This study employs a structural equation modeling (SEM) methodology (Ringle et al. 2023). This method collects several statistical and analytical techniques that allow a hypothesized set of relationships of a conceptual model established by the researcher to be translated into equations. It tests both direct and indirect effects on pre-assumed causal relationships and is applied in the following methods: descriptive analytics (the Kolmogorov–Smirnov, Shapiro–Wilk tests of normality and the normal Q–Q plot of standardized residuals); diagnostic analytics (partial correlations, linear regression); and predictive analytics (chi-squared test statistics).

These instruments collectively facilitated our in-depth analysis of the relationships between OGD, trust, satisfaction, and demographic factors, providing valuable insights into citizens' perceptions in the Turkestan region of Kazakhstan.

The social survey data was collected between September 2022 and March 2023. For the purposes of this paper, the analysis was conducted in the Turkestan region, considering a sample of 360 observations. To select our participants, we employed a stratified random sampling technique. This method involved dividing the Turkestan region into distinct strata or groups based on relevant demographic characteristics such as age, gender, and education level. We then randomly selected participants from each stratum to ensure a representative and balanced sample.

Figure 1 shows information about the demographic profile the age and the level of education of the respondents.



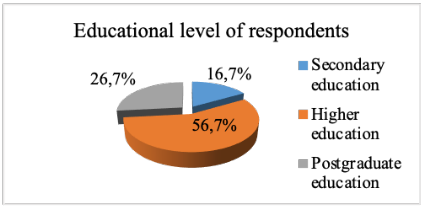


Figure 1. *Age and educational level of respondents*
Source: Authors' elaboration

Among the 360 respondents, 42% were male and 58% female. The questionnaire was distributed using a diversified approach to ensure a diverse and representative sample. Firstly, we employed traditional e-mail distribution. Secondly, we utilized group posts within community organizations and local forums. This approach helped us tap into community networks and gather responses from individuals who are actively engaged in regional affairs and governance discussions. Additionally, direct interaction was employed through interviews. This method ensured that respondents who may have limited literacy or internet access could still participate and share their perspectives. The choice of the Turkestan region as the distribution area was deliberate: it was selected because it represents a microcosm of broader governance challenges and opportunities in Kazakhstan. The region's demographic diversity, including urban and rural areas, provided a well-rounded view of citizens' attitudes towards OGD, trust, and satisfaction.

To conduct the SEM methodology, SPSS 23 and R statistical software were used.

The proposed SEM model is composed of fourteen variables that were obtained directly from the survey sources cited in Table 1.

Table 1. *Descriptive analysis of variables and percentages*

No.	Variable	Assessment		
1	Trust in Kazakhstan Parliament (TRST-PT)	High – 3.3 %	Average – 63.3 %	Low – 33.3 %
2	Trust in legal system (TRST-LS)	High – 6.7 %	Average – 63.3 %	Low – 30.0 %
3	Trust in politicians (TRST-PLT)	High – 6.7 %	Average – 66.7 %	Low – 26.7 %
4	Trust in political parties (TRST-PP)	High – 3.3 %	Average – 56.7 %	Low – 40.0 %
5	Trust in President of Kazakhstan (TRSTP-PRS)	High – 33.3 %	Average – 56.7 %	Low – 10.0 %
6	Trust in to be democratic country in the future (TRST-DC)	High – 20.0 %	Average – 56.7 %	Low – 23.3 %
7	Satisfaction with the country's economy (STFE-ECO)	High – 10.0 %	Average – 66.7 %	Low – 23.3 %
8	Satisfaction with the government (STFE-GOV)	High – 10.0 %	Average – 56.7 %	Low – 33.3 %
9	Satisfaction with the life (STFE-LIFE)	High – 40.0 %	Average – 56.7 %	Low – 3.3 %
10	Satisfaction with the state of education (STFE-EDU)	High – 10.0 %	Average – 76.7 %	Low – 13.3 %
11	Satisfaction with the state of health care services (STFE-HLTH)	High – 16.7 %	Average – 70.0 %	Low – 13.3 %
12	Internet access method	Computer 12.7%	Smartphone 73.3 %	Laptop 14.7%
13	Internet usage rates	Sometimes 23.3 %	Daily 73.3 %	Never 3.3 %
14	Ideology	50–70 53.3 %	0–50 46.7 %	70–100 0.0 %

Source: Authors' elaboration

Results and discussion

The principal objectives of this study were the investigation and analysis of how OGD affects citizens' trust in institutions and citizens' satisfaction, as well as the mediating role of satisfaction between OGD and citizens' trust. The results shed light on the relationship between OGD, trust, and satisfaction among citizens. Figure 2 demonstrates information about the index of respondents' assessments of the quality and availability of information in the OGD portal.

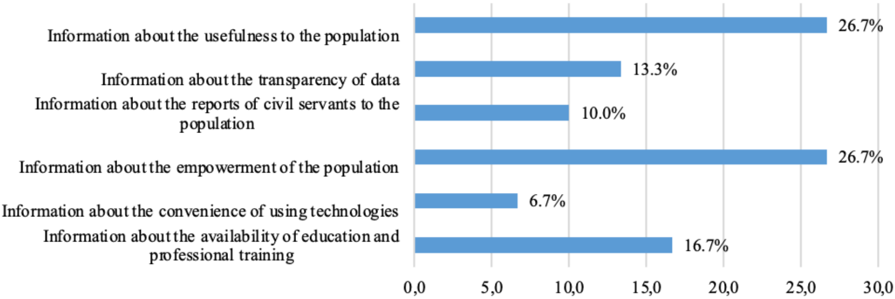


Figure 2. *The index of respondents' assessments of the quality and availability of information in the OGD portal*
Source: Authors' elaboration

Initially, we conducted a descriptive statistical analysis of the variables (Table 2) to assess their normality, aiding in the selection of subsequent analytical methods. Subsequently, diagnostic analytics and predictive analytics were applied.

Table 2. *The Kolmogorov–Smirnov and Shapiro–Wilk tests of normality*

Tests of Normality							
Variables		**Kolmogorov–Smirnov[a]**			**Shapiro–Wilk**		
		Statistic	**df.**	**Sig.**	**Statistic**	**df.**	**Sig.**
1	Age	0.320	360	***0.000***	0.821	360	***0.000***
2	Gender	0.506	360	***0.000***	0.449	360	***0.000***
3	Education degree	0.294	360	***0.000***	0.790	360	***0.000***
4	Use of internet	0.460	360	***0.000***	0.552	360	***0.000***
5	Internet usage rates	0.449	360	***0.000***	0.586	360	***0.000***
6	Ideology	0.358	360	***0.000***	0.635	360	***0.000***
7	Trust in Kazakhstan Parliament	0.406	360	***0.000***	0.625	360	***0.000***
8	Trust in legal system in Kazakhstan	0.402	360	***0.000***	0.638	360	***0.000***
9	Trust in politicians in Kazakhstan	0.419	360	***0.000***	0.619	360	***0.000***
10	Trust in political parties in Kazakhstan	0.371	360	***0.000***	0.647	360	***0.000***
11	Trust in to be democratic country in the future	0.355	360	***0.000***	0.710	360	***0.000***
12	Trust in President of Kazakhstan	0.353	360	***0.000***	0.721	360	***0.000***
13	Satisfaction with the life	0.363	360	***0.000***	0.693	360	***0.000***

Tests of Normality							
Variables		Kolmogorov–Smirnov[a]			Shapiro–Wilk		
		Statistic	df.	Sig.	Statistic	df.	Sig.
14	Satisfaction with the country's economy in Kazakhstan	0.415	360	***0.000***	0.630	360	***0.000***
15	Satisfaction with the state of education in Kazakhstan	0.465	360	***0.000***	0.545	360	***0.000***
16	Satisfaction with the state of health care in Kazakhstan	0.427	360	***0.000***	0.619	360	***0.000***
17	Satisfaction with the government's job	0.364	360	***0.000***	0.678	360	***0.000***
Significance: $p > 0.05$							

Source: Authors' elaboration

According to the results the Kolmogorov–Smirnov and Shapiro–Wilk tests of normality, the variables have a normal distribution and a direct linear relationship, which means that we should use parametric tests. It is clear that the statistical significance of the *p* value is less than 0.05 ($p < 0.05$), which means that we can use further parametric tests for more in-depth analysis. The parametric tests that we used were diagnostic analytics and predictive analytics.

Several scholars, such as Metilelu et al. (2023), have emphasized the significance of normality tests such as the Kolmogorov–Smirnov and Shapiro–Wilk tests in determining whether a dataset follows a normal distribution.

Moreover, the utilization of Q–Q plot graphs, as demonstrated in Figure 3, is in line with the broader statistical literature. These graphs are widely recognized for their effectiveness in assessing the normality of data distribution visually. They allow researchers to observe deviations from normality, if any, through the pattern of data points on the graph.

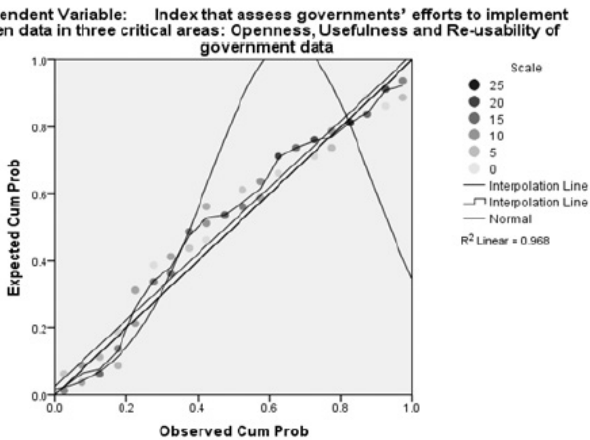


Figure 3. *Normal Q–Q plot of standardized residuals*

Source: Authors' elaboration

On the graph, the values of the quintiles of the standard normal distribution are plotted on the X-axis of the normal Q–Q plot graph, and the corresponding values of the quintiles of the dataset are plotted on the Y-axis. From the perspective of this research, it may be concluded that the observed data is normally distributed.

Table 3. *Partial correlation estimation*

Control Variables		(STFE-ECO)	(STFE-HLTH)	(STFE-LIFE)	(STFE-EDU)	(STFE-GOV)
(TRST-PT)	Strength Correlation	-	0.589	0.666	0.575	−0.129
	Significance (2-tailed)	-	***0.000***	***0.000***	***0.000***	***0.014***
	df.	0	360	360	360	360
(TRST-LS)	Strength Correlation	0.589	-	0.586	0.322	−0.060
	Significance (2-tailed)	***0.000***	-	***0.000***	***0.000***	***0.258***
	df.	360	0	360	360	360
(TRST-PLT)	Strength Correlation	0.666	0.586	-	0.726	0.090
	Significance (2-tailed)	***0.000***	***0.000***	-	***0.000***	***0.090***
	df.	360	360	0	360	360
(TRST-PRS)	Strength Correlation	−0.129	−0.060	0.090	-	0.016
	Significance (2-tailed)	***0.014***	***0.258***	***0.090***	-	***0.765***
	df.	360	360	360	0	360
(TRSTP-DC)	Strength Correlation	0.098	0.076	0.148	0.389	0.082
	Significance (2-tailed)	***0.000***	***0.000***	***0.000***	***0.000***	***0.122***
	df.	360	360	360	360	360
***Dependent variable*:** Index that assesses the government's efforts to implement OGD in three critical areas: openness, usefulness, and re-usability of government data. *Significance: p > 0.05*						

Source: Authors' elaboration

As we can see, there is a relationship between the variables and OGD in terms of the strength of the correlation. The significance of the correlation coefficients show the strong correlation between variables. The variable *satisfaction with the work of the government* had a strong correlation with the following variables: trust in the Kazakh parliament (0.014); trust in the legal system of Kazakhstan (0.258); trust in the politicians of Kazakhstan (0.090); trust in the President of Kazakhstan (0.765); and trust that the country will be democratic in the future (0.122). Then, the variable *trust in the President of Kazakhstan* also had a strong correlation with the following variables: satisfaction with the country's economy in Kazakhstan (0.014); satisfaction with the state of health care in Kazakhstan (0.258); and satisfaction with life (0.090). Between OGD and people's satisfaction with the government and the president of the country, significant aspects are shown. This means that these two types of spheres should be improved. That is, these two areas are becoming more crucial for people in this region in terms of trust and the satisfaction of people with state institutions.

Satisfaction with the government's performance emerged as a key mediator between OGD and citizens' trust. The strong correlation between satisfaction with the government's work and trust in political institutions indicates that a satisfied citizenry is more likely to trust its leaders. This finding aligns with previous research, highlighting the importance of public satisfaction in building trust (Maragno et al. 2023).

Table 4. *Linear regression*

Model Summary[b]					
Model	*R*	*R* **Square**	**Adjusted** *R* **Square**	**Std. Error of the Estimate**	**Durbin–Watson**
1	0.688[a]	0.474	0.447	1.533	***1.886***
Durbin–Watson (*D* = complete absence of multicollinearity) *D* < 2.0					

Linear Regression Coefficients[a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**		
		B	**Std. Error**	**Beta**	***t***	***p***
2	(Constant)	−1.154	1.605		−0.719	***0.474***
	Age	1.084	0.217	0.479	5.001	***0.000***
	Gender	−1.278	0.396	−0.231	−3.228	***0.001***
	Education degree	−0.299	0.238	−0.094	−1.257	***0.209***
	Use of internet	0.954	0.470	0.205	2.030	***0.043***
	Internet usage rates	−1.661	0.351	−0.424	−4.731	***0.000***
	Ideology	1.483	0.234	0.359	6.339	***0.000***
	(TRST-PT)	0.856	0.196	0.389	4.368	***0.000***
	(TRST-LS)	0.334	0.240	0.147	1.394	***0.164***
	(TRST-PLT)	−0.476	0.292	−.203	−1.628	***0.105***
	(TRST-PP)	0.887	0.290	0.417	3.057	***0.002***
	(TRST-DC)	0.180	0.172	0.073	1.047	***0.296***
	(TRSTP-PRS)	0.442	0.198	0.144	2.228	***0.027***
	(STFE-LIFE)	2.099	0.322	0.573	6.528	***0.000***
	(STFE-ECO)	−1.543	0.381	−0.632	−4.055	***0.000***
	(STFE-GOV)	0.698	0.209	0.312	3.335	***0.001***
	(STFE-EDU)	−0.512	0.328	−0.176	−1.562	***0.119***
	(STFE-HLTH)	−0.619	0.239	−0.215	−2.583	***0.010***
Dependent variable: Index that assesses the government's efforts to implement OGD in three critical areas: openness, usefulness and re-usability of government data. *Significance: p > 0.05*						

Source: Authors' elaboration

A weak regression relationship was observed between OGD and both degree of education (0.209) and type of internet use device (0.043). In other words, people with higher education and more free and frequent internet users are more interested in the activities of state institutions. In addition, we saw a moderate connection between OGD and trust in the Legal System (0.164), trust in Parliament (0.105), trust in the president (0.027), and the belief in being a democratic country in the future (0.296). The population expects improvement in these spheres. Moreover, the results of the analysis show the presence of public dissatisfaction with the low quality of the health care system (0.119) and education (0.010) in Kazakhstan. As a result of this, we applied the following research method to find out whether the hypotheses which we put forward were accepted or rejected.

Our regression analysis results align with previous studies in the field of OGD and citizens' engagement. Studies conducted in similar contexts have also identified a positive correlation between OGD accessibility and educational attainment. For instance, Chen et al. (in press) found that individuals with higher levels of education were more likely to engage with OGD platforms, echoing our own findings. This suggests that educational background consistently emerges as a crucial determinant of OGD utilization.

Moreover, the positive relationship between OGD and institutional trust has been a recurring theme in OGD research. Tejedo-Romero et al. (2022) conducted a comprehensive analysis in a different national context and reported that as citizens gain access to government data, their trust in public institutions tends to increase. Our results corroborate this pattern, further underlining the role of OGD in fostering trust in government.

Table 5. *Chi-squared test statistics*

Chi-Square Estimation			
Valid	**Chi-Square**	**df.**	**Assumption of Significance**
(TRST-PT)	194.400[a]	2	***0.000***
(TRST-LS)	175.200[a]	2	***0.000***
(TRST-PLT)	201.600[a]	1	***0.000***
(TRST-PP)	160.800[a]	2	***0.000***
(TRST-DC)	88.800[a]	2	***0.000***
(TRSTP-PRS)	117.600[a]	2	***0.000***
(STFE-LIFE)	160.800[a]	2	***0.000***
(STFE-ECO)	189.600[a]	1	***0.000***
(STFE-GOV)	117.600[a]	2	***0.000***
(STFE-EDU)	304.800[a]	2	***0.000***
(STFE-HLTH)	218.400[a]	1	0.000
*a. 0 cells (0.0%) have expected frequencies less than 0.05. The minimum expected cell frequency is 120.0.			
Dependent variable: Index that assess the government's efforts to implement OGD in three critical areas: openness, usefulness and re-usability of government data.			

Source: Authors' elaboration

The chi-squared criterion provides a way to assess how well the sample matches the characteristics of the general population (Ottenbacher 1995).

For these tests, degrees of freedom are used to determine whether a certain null hypothesis is rejected based on the total number of variables and samples in the experiment. In this case, the assumption of significance should be less than 0.05.

In our application of the chi-squared criterion, we followed the standard protocol of assessing the assumption of significance, with a threshold set at $p < 0.05$. This practice is consistent with the conventions outlined by Doğan et al. (2021) in their methodological framework. Our results, presented in Table 5, confirm that all assumption of significance values fell below this threshold, leading to the rejection of the null hypothesis and the acceptance of both alternative hypotheses. This adherence to established statistical procedures enhances the validity of our study's outcomes.

Conclusion

1. The first aim of this study was to confirm the direct effect of OGD on trust. This impact is significant and positive. As commonly suggested, OGD does not generate benefits immediately, but in the long term. According to our results, this relationship could soon be noticeable. In addition, because of the analysis of the moderating effect of different variables, it is possible to conclude that this relationship is stronger for those who use the Internet on a daily basis. These results could reveal that the development of OGD strategies is in its early stages in Kazakhstan, and citizens, in general, are still unfamiliar with OGD. While OGD policies are starting to increase citizens' trust, there is significant room for improvement. Specifically, national governments should make a greater effort in order to spread knowledge and promote the use of OGD tools by developing specific actions for people over 65 years of age who do not use the Internet as frequently.
2. The second aim was to study whether citizens' satisfaction plays a mediating role in the relationship between OGD and trust. To achieve this, we studied two different paths. First, we assessed whether OGD increases citizens' satisfaction, which was confirmed for the whole sample. When governments make OGD available to citizens, they are more satisfied with the quality of public services. At the same time, satisfaction with democracy increases, which is aligned with a theoretical OGD framework that poses policies which promote the quality of democracy. Second, the link between citizens' satisfaction and trust was explored. The results of our analysis show that this relationship is significant and positive. At the same time, the implementation of OGD positively affects citizens' satisfaction.
3. We can conclude that the relationship between OGD and trust is mediated by satisfaction. According to these findings, when citizens are able to access OGD related to the past, they feel more satisfied. Then, this satisfaction is projected to the future by increasing trust in institutions. OGD allows citizens to monitor governmental performance and management, which increases their satisfaction with the quality of democracy and

public services. When this happens, citizens' expectations that the government will meet their interests in the future increase, which is the definition of trust.

4. The statistical tests employed not only validated our research assumptions, but also revealed specific relationships and correlations. These findings underscore the importance of OGD in shaping citizens' trust in institutions and highlight the critical role of transparency and effective governance in fostering trust and satisfaction among citizens.
5. Further OGD developments together with future research on this topic will determine whether the more widespread use of OGD will lead to an increase of this mediator effect or whether it is irrelevant compared with the direct impact of OGD on trust. This study considered the Turkestan region, so carrying out similar studies in other countries or regions would help to perceive differences in these relationships, as well as enabling researchers to assess global patterns of public value generation by OGD strategies in the field of institutional trust.

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ATVIRŲ VYRIAUSYBĖS DUOMENŲ POVEIKIS PILIEČIŲ PASITIKĖJIMUI IR PASITENKINIMUI KAZACHSTANO VALSTYBINĖMIS INSTITUCIJOMIS

Anotacija. *Šiuolaikiniame viešajame sektoriuje, kuriam būdingi didėjantys skaidrumo ir atskaitomybės reikalavimai, atviros vyriausybės duomenų (OGD) iniciatyvos tapo svarbia priemone skatinant visuomenės pasitikėjimą valdžios institucijomis. Šiame darbe nagrinėjamas tiesioginis atvirų duomenų poveikis piliečių pasitenkinimui ir valstybės institucijų veiklos rezultatams. Pagrindinis šio darbo tikslas – ištirti, ar yra ryšys tarp atvirų vyriausybės duomenų prieinamumo ir institucijų pasitikėjimo, o jei taip, išsiaiškinti, ar šis poveikis gali garantuoti piliečių pasitenkinimą. Tyrime buvo vykdyta plataus masto Kazachstano Turkestano regiono gyventojų apklausa. Apklausa apėmė klausimus, susijusius su pasitikėjimu įvairiais valdžios subjektais, OGD naudojimu, pasitenkinimu valstybinėmis paslaugomis ir socialiniais-demografiniais veiksniais. Surinkus duomenis iš 360 respondentų atlikta statistinė analizė. Nustatyta esminė teigiama koreliacija tarp OGD prieinamumo ir naudojimo bei piliečių pasitikėjimo valdžios institucijomis, ypač tarp daž-*

nų interneto vartotojų. Be to, tyrimas atskleidė, kad OGD teigiamai veikia piliečių pasitenkinimą, o tai atitinkamai prisideda prie didesnio pasitikėjimo valdžia. OGD iniciatyvos yra itin svarbi didinant pasitikėjimą vyriausybinėmis institucijomis. Pasitenkinimo tarpininkavimo vaidmens pripažinimas suteikia politikos formuotojams galimybių tobulinti strategijas, skirtas teikti aukštesnės kokybės viešąsias paslaugas ir stiprinti demokratinius procesus.

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MULTICHANNEL COMMUNICATION IN KAZAKHSTANI PUBLIC SERVICE: EXAMINING THE ROLE OF DIGITAL TOOLS

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Abstract. *This article explores how alternative multichannel service provision can improve the way in which governments and citizens interact. Improvement is necessary because there is a gap between the communication channels that governmental bodies prefer and those that relate to citizens' preferences.*

Obviously, the government chooses channels based on their cost efficiency, while citizens may choose channels depending on availability, context, and trust.

Based on the results of a survey of 4,606 civil servants in Kazakhstan, the authors consider which channels civil servants use to interact with the public, explore the role of digital tools in relation to public involvement in government decision-making, and analyze how this affects the effectiveness of the provision of public services.

The results of this study show that the effectiveness of communication directly depends on the availability of communication channels. When communicating with government *agencies in Kazakhstan, the population uses well-known formal platforms in most cases. In addition, preference is given to personal communication channels, while public communication channels are not used to inform the population. In internal communications, civil servants use formal channels of communication. Finally, lines of personal communication are more developed in local executive bodies.*

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Keywords: *communication; civil servants; digital tools; channel of communication; Kazakhstan.*

Reikšminiai žodžiai: *komunikavimas; valstybės tarnautojai; skaitmeniai įrankiai; komunikavimo kanalai; Kazachstanas.*

Introduction

Kazakhstan occupies 28th place in the United Nations (UN) Global E-Government Development Index (EGDI) for the development of electronic government, and is in the top 10 among Asian countries (UN E-Government Knowledgebase 2022). The EGDI is a composite measure of three important dimensions of e-government: the provision of online services, telecommunications connectivity, and human capacity (UN E-Government Knowledgebase, n.d.).

According to the report of 12th edition of the UN E-Government Survey in 2022 (United Nations Department of Economic and Social Affairs 2022), governments are publishing information about people's voices being included in policymaking, with specific e-participation measures implemented for vulnerable groups. Do these numbers actually demonstrate the current status of online services in Kazakhstan?

In order to achieve large-scale efficiency, public organizations digitalize their services. However, these efficiency goals can only be met if citizens adopt the digital services offered. Even though the government regularly assesses and evaluates the most effective ways to improve e-government, traditional offline channels such as telephone or in-person visits are still popular among citizens in Kazakhstan.

For government organizations, digitalization brings opportunities for enhanced efficiency and service improvement, but also presents new challenges related to managing public service encounters across multiple channels and organizations (Kernaghan 2013).

To meet public expectations, the government tries to provide credible responses, accountability, transparency and effective implementation. Only properly chosen and clearly defined communication channels can ensure effective dialogue between the population and the public sector. In order to deliver services most effectively and efficiently, governments should manage and position their service channels (Madsen and Hofmann 2019).

In terms of reliable lines of communication that facilitate the participation and interest of all parties, citizens should be able to communicate with governments about the services they need or want (Kernaghan 2013).

In this article, the main focus is on channels that facilitate the exchange of information between citizens and the government in Kazakhstan.

Citizens' preferences might differ in terms of which channel of communication they use. Moreover, users tend to prefer e-government services, but mostly when their use is mandated (Madsen and Kræmmergaard 2016). Starting as a business model, multichannel services rapidly changed the world (Moriarty and Moran 1990; Webb and Hogan 2002). The proliferation of multichannel services created opportunities for academics to produce insights that can help address this challenge (Neslin et al. 2006).

The tragic events of January 5, 2022 in Kazakhstan showed the low level of communicative competence of civil servants, as well as the lack of effective channels of communication between the state and the population (PR Drive 2022).

In this regard, this study aims to answer the following questions:

What digital communication channels are suitable for work with the public?

Why is it important to use multichannel communication in public service?

Literature review

The role of public institutions is to maintain the relationship between the government and citizens through communication. Thus, efficient communication implies taking into consideration and removing disruptive factors, communication barriers, and noise (Fiske 1994). As a consequence, channels for communication between the government and citizens have become more essential. Subsequently, public servants tailor their services to meet customer needs because there is a strong relationship between problem-solving and improving public service distribution.

At present, the greatest threat to democracy is limited, incomplete access to information by the general public. This might lead to various problems such as misleading reforms, a lack of legitimacy, and a low level of trust. For this reason, information availability has changed significantly. By using new technologies, the government increases its capacity to disseminate a great deal of information. Moreover, through the process of communication, public authorities seek to establish a close relationship with citizens and become more focused on their demands and complaints.

Various types of channels are used by citizens to communicate with government organizations. The channels of communication chosen must be appropriate for the target audience, as using channels that are unsuitable might also result in information gaps.

The emergence of further channels (e.g., social media, SMS, mobile apps) and the public demand to interact through different means have increased the complexity of interaction and made governmental multichannel management even more important (Wirtz and Kurtz 2016). Therefore, there is strong interest within public service in the question of how to replace traditional channels with online channels.

When forming e-Government channels, key aspects need to be considered to make sure that the channels in place are used (Verdegem and Verleye 2009). Knowledge on how to employ channels to satisfy citizens and organizations comes from concepts of Customer Relationship Management (CRM). This research area provides valuable ideas and experiences to cope with changing citizens (or customers) and a multitude of user preferences (Klievink and Janssen 2009; Schellong 2005).

The founders of all communication models consider communication channels as one of the most important elements of communication. Thus, according to the founder of the classical linear model of communication, Harold D. Lasswell, channels are an important element of the communication process and are considered an integral part of all communication processes (Lasswell 1948).

Researchers of communication models have paid special attention to the types of communication channels, how channels are perceived by recipients, and the accessibility of channels for target groups. This is where channel reliability and stability are important (McQuail and Windahl 2013).

The canons of public administration prescribe that civil servants must inform the public in an easily accessible form and ensure the availability of public documents (Figenschou et al. 2021).

Communication is implied by subtler elements such as relationship management and identity projection. The way a message is conveyed is as important as the content of the message, and Hargie et al. (2003) defined news and information credibility as a guiding principle that can mitigate the tension between bureaucracy and the market.

Liu and Lai (2018) explored the importance of online communication channels, especially in times of crisis. Agostino and Arnaboldi (2017) consider social media channels as a potentially powerful tool in the hands of the public and authorities to support the evaluation of public service performance.

According to Maziashvili et al. (2022), the intensity of the use of digital tools by governments should involve identifying tools that are trusted and popular with their audience and using these tools more to increase opportunities for feedback, citizen engagement, and commitment. Ease of use, transparency, ease of communication with the municipality, and security are cited as reasons for citizens' positive perception of social media. Therefore, local authorities should consider these features and develop the quality of online tools.

This concerns the idea of providing information in an accessible way by the state and effectively disseminating information to its citizens – in short, a way to make relations more equitable and increase the transparency of government activities (Matheus and Janssen 2020).

According to Hofmann et al. (2013), the bad reputation of government communication can be partly explained by the traditional use of one-way, offline mass communication channels that do not promote influential feedback and hinder productive dialogue between society and government.

Research method

As part of this study, a sociological survey was conducted among 4,606 civil servants, of which 891 respondents were civil servants in central government bodies and 3,715 were civil servants in local executive bodies.

The survey was conducted from September to December 2022 in all regions of Kazakhstan, including the cities of Astana, Almaty and Shymkent. Participants were given the opportunity to complete the survey in Russian or Kazakh. The Google Forms platform was used to conduct the survey.

The questionnaire consisted of 42 questions related to: the socio-demographic characteristics of respondents; identifying the level of assessment by civil servants of the communicative competencies of colleagues, managers, local and central government bodies; determining the level of use of communication tools and channels by civil servants at the local and central level; identifying problems and barriers in communication with the population; and outlining the classification of effective means and channels used in the communication of a civil servant or a state body.

Findings and discussion

The Internet penetration rate in Kazakhstan was 90.92% in 2021 (Von Kameke 2023), which represented a significant increase from 2011, when only 50.6% of the population had access to the internet. Experts predict that Kazakhstan will achieve 100% high-quality internet coverage, with 95% home broadband access, by 2025 (Satubaldina 2022).

Despite this, the implementation of e-governance in the country faces many challenges. The accessibility of updated and well-structured communication channels affirms existing interactions with authorities. One result of this study was to determine the most frequently used channel of communication between state bodies and the population, where 44.3% of respondents selected E-Otinish as the main channel of communication with the population. As the main channel of communication, respondents also noted the following: personal reception – 29.4%; meetings with the population – 23.1%; phone calls –18%; and social networks – 13.5%. The remaining channels, such as the leader's blog (2.9%), the WhatsApp application, IS-koldau, E-license, the Akimat website and physical letters (0.32%), are used in rare cases.

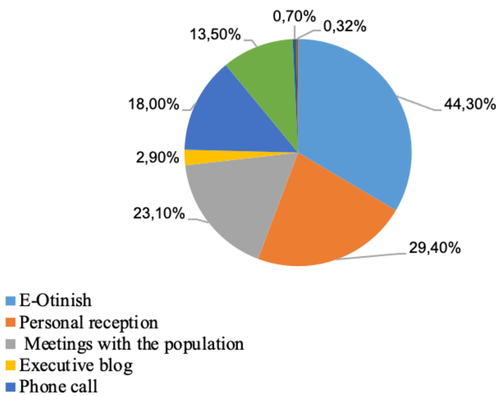

Figure 1. *The main channels of communication with the population*

Among the structural division and other government agencies, the usage of the Unified electronic document management system (hereafter the UEDMS) channel and e-mail (59.9%) prevail. Moreover, 51.6% of respondents use telephone calls with responsible executors as a communication channel (Figure 2).

Obviously, the telephone is seen as the only channel by which civil servants can have direct contact with other government bodies today; electronic channels such as e-mail and e-services are not so prevalent in their work. Since the telephone can enable direct feedback, it has significance for customer service; however, in public service, communication via telephone is constrained by time. From civil servants' point of view, telephone communication causes much distraction as this is a very demanding job, and it is more difficult to handle than e-mail. Using e-mail largely depends on how each employee organizes their daily work. Personal contact, however, is conducted over the telephone because it establishes good relations and increases visibility.

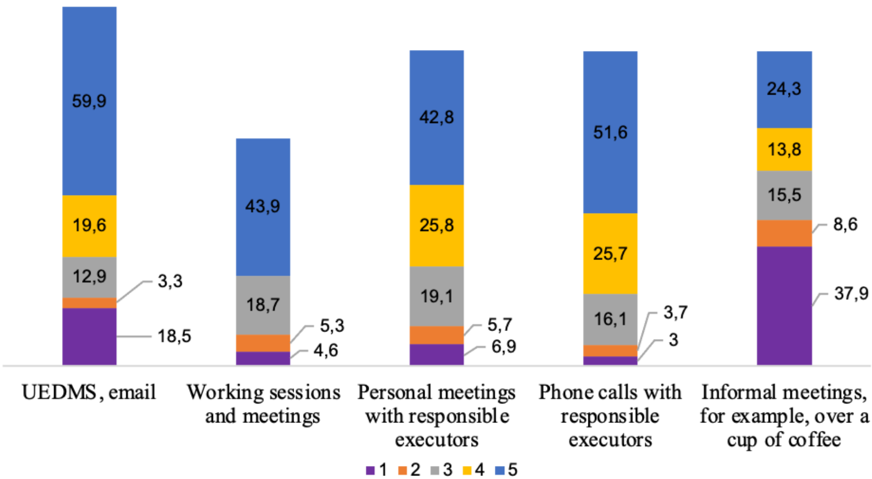

Figure 2. *Frequency of use of communication channels by civil servants with other structural units in their government agency (%)*

These research findings show that despite great efforts in multichannel communication, the contribution of public service to e-governance has not increased – it has even fallen.

As with any communication process, it is normal that interventions and barriers arise and complicate the communication process. The communication channels used have to be in accordance with the level of the target audience; as we can see, this is still inappropriate and not advanced.

As stated previously, the main formal channel of communication is the E-Otinish electronic system. Initially, the goal of launching this system was to optimize work with citizens' appeals and control their execution (Bokayev et al. 2022). E-Otinish is a computerized system that monitors the processing and handling of all complaints and is an integrated system among all government bodies. The main characteristics of E-Otinish are that it is public, informative, real-time, and accessible for any kind of platform (Bokayev et al. 2022). Even though the system has proved its effectiveness, it is still only one channel of communication. Other electronic platforms and websites of government bodies are practically not considered as communication channels, demonstrating insufficient work on communication channels by state bodies.

Having different channels of communication for users means a free choice between channels to access a service. However, for public servants, the separate development of different channels for a single service (multichannel delivery) can lead to inconsistencies such as different data formats or interfaces.

In terms of channel selection, channels must be selected from the available range of potential channels. To realize their potential value, however, channels also need to be properly implemented and operated.

According to a study by Reddick and Anthopoulos (2014), besides traditional channels (i.e., face-to-face contact, phone calls, and surface mail) and e-government options (i.e., web sites and e-mailing), new digital media (e.g., text messaging, social media, and mobile apps) are also used to access governments. Channel choice also seems to be dependent on the reason behind contacting governments; for example, e-government services are preferred for retrieving information and advice, whereas phone calls are primarily used in order to solve problems (Reddick and Anthopoulos 2014).

Public sector and government organizations must develop effective communication channels and commitments that directly link communities (Bokayev et al. 2021). More channels and more services do not necessarily lead to better customer orientation nor to a service that is more effective, particularly if channels and services are delivered improperly (Gagnon et al. 2010).

In order to improve their service provision, governments try to redesign service delivery channels. Existing delivery channels employed by government organizations through their websites, telephones, mail and front-desks do not answer the contemporary requirements of groups of citizens and the business segment (Klievink and Janssen 2008). Through the Internet, it became possible to connect to the user without the need for a front-desk or other channels. Additionally, because of the historical reliance of the public sector on hierarchy and bureaucracy, resistance to change is more deeply entrenched and more difficult to overcome. Even in the nations with the highest rates of internet usage, the results of online service delivery in the public sector have been modest and variable (Roy 2007).

While public organizations move towards electronic public service delivery, traditional channels of public service delivery continue to be leveraged for various reasons such as the digital divide, privacy and security concerns, as well as legislative requirements (European Commission 2004). This produces what is known as multichannel public service delivery, as public services are delivered through both online and offline channels (Lenk 2002; Wimmer 2002).

However, online public service delivery has generally failed in completely superseding traditional offline channels. From an operational viewpoint, such a multichannel approach actually creates more inefficiencies and increases operating costs. Better customer service, more consumer trust, and enhanced operational management are just some of the advantages that have been discovered through the optimal blending of online and offline channels.

Conclusion

Experience and scholarly research show that the public sector, due to bureaucratic obstacles, fails to keep pace with rapid changes in service standards in the digital age (Dunleavy et al. 2006).

1. The introduction of information technology required special government equipment and the development of appropriate technological solutions, especially when creating a coherent government in a decentralized environment (Fishenden and Thompson 2013). The problem faced by most governments was fragmentation. Instead of this, we suggest the creation of integrated government portals. There is frequently a lack of integrity across government agencies, departments, and organizations, necessitating systemic adjustments on a fundamental level.
2. To overcome the drawbacks of multiple-channel service delivery, different channels should be integrated and coordinated (Caldow 2001). To enable this, the common data that are used by front office applications should be stored centrally so that they can be shared by different applications. Storing data centrally means that they need to be collected only once and that they can be accessed by back office applications. At present in Kazakhstan, the eGov and E-Otinish platforms use such a kind of shared application format.
3. To assess the results of digitization, we suggest the use of the Consulting in Public Administration Economy and Society Index as a tool, as recommended by the European Commission (2020) in the DESI report, according to which we can measure the development of: (1) high-speed Internet connectivity infrastructure; (2) ultra-structures of human capital development; (3) the use of the Internet; (4) the integration of digital technologies into business; and (5) the digital coverage of the public sector.
4. From our research, the different interpretations of multichannel services by different government bodies became obvious. Therefore, our suggestion is to adopt an internal or external perspective on multichannel management from diverse levels of public management.
5. Our findings also suggest that in order to comprehend employees' work obligations and content, it is crucial to comprehend how access points between citizens and public officials are changing in a multichannel environment.

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DAUGIAKANALIS KOMUNIKAVIMAS KAZACHSTANO VALSTYBĖS TARNYBOJE: SKAITMENINIŲ ĮRANKIŲ ANALIZĖ

Anotacija. *Straipsnyje nagrinėjama, kaip alternatyvus daugiakanalis paslaugų teikimas gali pagerinti Kazachstano Vyriausybės ir piliečių sąveiką. Tobulinimas būtinas, kadangi egzistuoja atotrūkis tarp komunikavimo kanalų, kuriems vyriausybinės institu-*

cijos teikia pirmenybę, ir kanalų, kurie susiję su piliečių pageidavimais. Akivaizdu, kad Vyriausybė pasirenka kanalus pagal jų ekonomiškumą, o piliečiai gali pasirinkti kanalus atsižvelgdami į prieinamumą, situaciją ir pasitikėjimą.

Remdamiesi 4606 Kazachstano valstybės tarnautojų apklausos rezultatais autoriai svarsto, kokius kanalus valstybės tarnautojai naudoja bendraudami su visuomene: tiria skaitmeninių įrankių vaidmenį visuomenės įtraukimo į vyriausybės sprendimų priėmimą lygmeniu ir analizuoja, kaip tai daroma ir kiek tai turi įtakos viešųjų paslaugų teikimo efektyvumui.

Tyrimo rezultatai rodo, kad komunikavimo efektyvumas tiesiogiai priklauso nuo komunikavimo kanalų prieinamumo. Kazachstano gyventojai, bendraudami su vyriausybinėmis įstaigomis, dažniausiai naudojasi gerai žinomomis oficialiomis platformomis. Be to, pirmenybė teikiama asmeniniams komunikacijos kanalams. Viešieji komunikacijos kanalai nenaudojami kaip gyventojų informavimo kanalai. Vidinėje komunikacijoje valstybės tarnautojai naudoja formalius komunikavimo kanalus. Asmeninio bendravimo linijos labiau išplėtotos vietinio lygmens vykdomosiose institucijose.

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THE ADOPTION OF PROJECT MANAGEMENT PRACTICES BY A LOCAL GOVERNMENT IN KAZAKHSTAN: BARRIERS AND SOLUTIONS

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Abstract. *The introduction of project management is increasingly perceived as a response to the declining performance of governments and ineffective programs. The goal of this article is to identify barriers to the implementation of project management tools in a local government in Kazakhstan and develop solutions for their mitigation. In-depth interviews and document analysis were utilized as research methods. Overall, the adoption of project management was evaluated as poor. The analysis uncovered four major hindering factors. The first barrier was an ineffective change strategy when bringing about this reform. Secondly, it was revealed that real changes in the government's management approaches were overshadowed by technical aspects of the project management adoption policy. Thirdly, project management methods were not tailored to the specifics of the government. The final obstacle was the ill-conceived distribution of responsibilities among government employees, which caused coordination and interaction issues. This paper contributes to the empirical enhancement of the existing body of knowledge on management reforms in the public sector.*

Keywords: *government; reforms; changes; public management; performance.*

Reikšminiai žodžiai: *vyriausybė; reformos; pokyčiai; viešasis valdymas; veiklos rezultatai.*

Introduction

Governments worldwide are increasingly being challenged to be more results-oriented and reactive to public needs. In recent decades, this has spawned debates on reconfiguring the public sector. One of response has been so-called "projectification," which involves the proliferation of project management (PM) practices and switching to a project-based mode of work (Hodgson et al. 2019). Motives for embracing project-based approaches are well known (Jalocha and Prawelska-Skrzypek 2017): they are expected to overcome issues that governments have been traditionally accused of, such as inflexibility and inefficiency. The diffusion of project-based forms of management has attracted unprecedented interest from both academic and expert circles in recent years (Kuura 2020). Projectification today goes beyond restructuring and organizational changes, and its conceptualization has broadened to include individual, digital, and even social dimensions (Hodgson et al. 2019). Meanwhile, the implications of PM proliferation in government settings are fragmentary and have not been sufficiently addressed (Jensen et al. 2018; Fred 2020). Projectification is sometimes associated with the increased innovativeness of public employees and upgrading communication and reporting practices (Fred 2020). On the other hand, it contradicts traditional organizational logic, since workers have to balance between their permanent functions and the temporality brought about by projects (Nesheim 2020). It is widely argued that adopting PM practices involves many complications which need to be investigated further (Jensen et al. 2018; Jalocha and Prawelska-Skrzypek 2017). Without a deeper understanding of the problems arising when applying PM methods, governments run the risk of the dispersion of human, time, and budget resources and reputational losses.

Kazakhstan, having inherited many features of the inefficient Soviet bureaucracy, did not avoid the wave of public management reforms and has been consistently introducing changes in the work of public organizations. In line with the Decree of the Kazakh Government (Adilet 2021), all public bodies have been instructed to apply modern PM methods when implementing programs. This was followed by the approval of PM rules and methodologies and the creation of PM offices within central and regional public organizations. However, the implications of these processes on governments' format of working have not been subjected to scrutiny. Thus, the problem which laid a basis for the present research is the lack of critical assessment of PM adoption efforts in public administration in Kazakhstan.

This research aims to identify problems in applying PM techniques based on the case of the Almaty city government and develop ways for tackling them. It uses in-depth interviews and document analysis to achieve these objectives. Previous research in this field has had a broader scope, looking at the institutional logic of projectification (Fred 2020), its politico-administrative rationality (Fred and Hall 2017; Gustafsson 2017; Jensen et al. 2013), its wider impacts on governance and people (Schoper and Ingason 2019; Wagner 2021), and its perspectives within traditional governance frameworks (Nesheim 2020). The novelty of this paper is that it is rather straightforward and essentially considers the change management reform specifically designed for adopting project-based methods in government. It systematically tracks the reform throughout its realization and for one year after its formal completion. The findings complement existing knowledge of PM in a public context by adding some empirical insights which could be of use when developing and realizing projectification strategies.

Literature review

Although the concept of PM in its modern form started to gain momentum only a few decades ago, it has received considerable attention in the literature (Kuura 2020). PM has traditionally been driven by the private sector, but in the last few decades it has also become one of the most significant agendas for the public sector (Hodgson et al. 2019). Many believe that private projects are more challenging since businesses operate in a more dynamic environment, but, in truth, governments operating within regulatory and budgetary frameworks experience more pressure when executing projects (Wirick 2009). For this reason, the use of PM approaches in government settings deserves more attention.

PM is increasingly seen by governments as a response to bureaucratization and declining performance and trust amid budgetary and public pressure. This has caused a new trend labeled "projectification" (Hodgson et al. 2019). The driving factors of projectification are well documented, yet how it manifests in practice remains an insufficiently explored area (Jensen et al. 2018). Despite the enthusiastic perception of project-based methods in the public sector, their effects have been multifold. When considering these implications, the literature has mainly covered individual, organizational, and social dimensions (Kuura 2020). One important consequence is the changing mindset and behavior of civil servants. Olausson and Svensson (2019) argued that the increasing use of PM has contributed to the growth of political entrepreneurship and innovativeness among public servants. On the other hand, projectification processes do not automatically lead to the replacement of the traditional bureaucratic framework with project logic. Fred (2020) showed that these two institutional logics may not only coexist, but can also lead to "rebureacratization," as described by Hodgson (2004), strengthening bureaucracy and control. Furthermore, this layering of logics causes an unhealthy environment in public settings, since public servants have to balance between project-based and permanent jobs (Ballesteros-Sanchez et al. 2019). Recognizing this issue, Palm and Lindahl (2015) coined the term "deprojectification," which means making distinctions between project and line functions less observable. In line with this view are the findings of Godenhjelm et al. (2015), who advocated for the better alignment of permanent and temporary structures in the public sector in a European Union context.

When scrutinizing more specific challenges in incorporating PM into a government's work, weak commitment or communication, insufficient competencies, inappropriate methodologies, and inefficient IT systems are usually reported as important hindering factors (Lappi et al. 2019; Mihic et al. 2015). A broader look is found in Blixt and Kirytopoulos's paper (2017), which considered an operational environment as a major obstacle to realizing the potential of PM in the Australian public sector.

In the discourse on the diffusion of PM practices in the public sector, more administratively developed countries are usually discussed. This is quite expected, since in developing nations PM is yet to become an integral part of public management (Amoah et al. 2022). Research on introducing PM techniques in developing countries accordingly remains very limited and fragmentary (Amoah et al. 2022). When assessing the implications of applying PM in emerging states, many authors tend to focus on its mechanical side. Lawani and Moore (2016), for instance, noted that the existing research leans towards positivism by emphasizing the role of PM tools and other control systems, rather than the human aspect of PM. It has also become common to use PM maturity models for assessing the integration of PM in organizations (Pulmanis 2013; Narbaev 2015). While providing some rich data, maturity models mainly rely on pre-determined measures, and might not be appropriate for observing informal aspects of projectification. Lawani and Moore (2016) therefore encouraged the examination of PM practices through the lens of critical realism, i.e., by looking at the human aspect, organizational culture, beliefs, and interaction of people and leadership. This view is of particular relevance to a Kazakh context because many works have dealt with normative and regulatory aspects of adopting PM in the public sector, or have observed these processes very fragmentarily (Kartov 2020; Ibadildin et al. 2022: Tileubayeva et al. 2017).

The review of the literature indicates the ambiguity of the implications of projectification in the public sector. There have been discussions and debates on the perspectives of these processes. As Jensen et al. (2018) put it, public sector projectification carries inherent complications which need to be investigated deeper. Many reviewed studies provide valuable insights but hold a broader view, looking at the politics and sociology of projectification, while this research intentionally narrowed its scope to a single PM adoption reform to scrutinize it in a more holistic and detailed way. Another point is that similar studies investigated the use of PM in a public sector context, from the view of methodology and actual project delivery. In contrast, the present paper puts transitional problems at the forefront by tracking a PM adoption project in a traditional bureaucratic setting from its very inception. Lastly, there has been a dearth of empirical research devoted to the introduction of PM tools in developing countries. This paper attempts to address this gap in the literature and generate some new insights into projectification problems in the public sector.

Methods

Before describing the methods used in this study, it is appropriate to provide brief contextual information to familiarize readers with the case (Table 1). In 2021, the Almaty city government launched an initiative for adopting modern PM techniques in its departments and units. For ease of reference, this initiative will be referred to as the Reform throughout the text.

This paper uses a case study approach to address the research questions. The rationale for this was that a case study can help to obtain in-depth knowledge about a complex issue within its real-life context (Crowe et al. 2011). As shown in the literature review, the practical introduction of PM in the public sector, particularly in developing countries, has not been studied extensively. Using Stake's (1995) characteristics of a case study, this article is instrumental since it explores a particular case to explore the broader phenomenon of applying PM in the Kazakhstani public sector. Since the purpose of the research was to garner a deeper appreciation of the issue, data collection methods included qualitative techniques such as interviews and document analysis. Two eligibility criteria were used to recruit potential participants: (1) having professional experience in the public sector or PM of more than 5 years; and (2) being directly involved in the PM Reform.

Table 1. *Brief Contextual Information*

Aim of the Reform: Reforming existing project management practices by adopting new project management methods in the Almaty city government (Akimat). Overall, 32 public bodies (departments) of the Akimat were covered by the Reform. **Place of the Reform:** Almaty city, the Republic of Kazakhstan. Almaty is the largest city in Kazakhstan and the economic center of the country and the Central Asia region (Kangalakova and Sabden 2017). Kazakhstan is a unitary state, and regional governments (or Akimats) are subordinated to the central government on strategic issues, although Almaty enjoys a special status and has independence on some issues of local significance. **Background:** In 2021, the Central Government of Kazakhstan adopted project management rules and procedures. Central and local public bodies were also instructed to use project management tools when implementing public programs and projects (Adilet 2021). **Period of the Reform:** Formally, it lasted from June 2021 to January 2022, but the project management office continued its operations in 2022–2023. **Cost of the Reform**: 90.2 million KZT (approximately 212,000 USD) were allocated from the local budget for the services of the YCG Ltd contractor (a consulting firm in Kazakhstan). **Key stakeholders:** *Almaty city government* – main governing body; *Department of Strategy and Budget* (a structural unit of the Almaty Akimat) – author and sponsor of the Reform, supervised and monitored the implementation of the Reform; *YCG Ltd* – a private consulting firm specialized in strategic management (referred to as the Consultancy). This firm was hired by the Department of Strategy and Budget to implement the Reform by providing consulting services, promoting project management techniques, etc.; *Project Management Office* (PM Office) – an informal team consisting of representatives of Akimat's Departments. It acted as an operational headquarters and was led by Akimat employees and experts of the Consultancy. **How the work was organized:** The sponsor of the Reform retained control functions, while the Reform was in fact implemented by the PM Office in conjunction with the Consultancy. Members of the PM Office were employees of the Akimat departments. The Consultancy worked mainly with members of the PM Office, who were then expected to disseminate PM practices in their structures. These persons were seen not only as contact points, but also as change agents in the public bodies they represented.

Source: Authors.

Overall, 15 individuals were approached for interview, 8 of whom showed interest and ultimately participated in the study. A more detailed classification is presented in Table 2, which provides only aggregate information related to age, gender, and position, since a breakdown by participants may compromise anonymity. These participants held responsible roles in the Reform, closely interacted with the 32 bodies of the Almaty city

Government (Akimat), and thus well represented the specifics and problems as well as organizational and individual problems in implementing the Reform.

The initial interview questionnaire was pretested on a small scale to check the appropriateness and validity of the questions. As a result, it was revised and simplified to include more essential and relevant questions. The interviews were conducted from October to December 2022, and were held both face-to-face and individually. The interviews had a semi-structured and conversational format. The participants were directly asked to assess the quality of the adoption of PM in the Almaty Akimat based on four descriptive grades developed by the authors (Table 3), and to share their views on the difficulties and nuances of this process. For research purposes, the authors also used openly accessible quarterly reports prepared by the Consultancy (6 reports in total, comprised of 681 pages) within the PM contract (Department of Finance of Almaty 2021).

Table 2. *Description of interviewees*

	Department (Company)	Type of Employment	Gender	Age (from 26 to 42)	Position
1	YCG Ltd	Temporary employment (service supplier)	5 men 3 women	Average age 31.3	Consultant
2		Temporary employment (service supplier)			Consultant
3	Strategy and Budget Department	Full-time employment			Chief specialist Head of divisions Deputy Director of Department
4	Ecology Department				
5	Construction Department				
6	Education Department				
7	Energy Department				
8	Entrepreneurship Department				

Source: Authors.

Table 3. *Assessment of the Adoption of the PM Reform*

Assessment	Description
Very good	Comprehensive transformation of PM practice in the Almaty Akimat. Local state bodies actively use methods and techniques of PM, which overall comply with internationally recognized standards (Prince2, IPM, etc.) at all stages of implementing projects. This transformation allows project goals to be delivered successfully.
Good	The Almaty Akimat has not experienced a full transition to new forms of PM. However, it has adopted some important instruments such as the agile approach, risk matrixes, and Gantt charts, and routinely employs them. This has helped the Akimat to improve its performance in terms of realizing projects.

Assessment	Description
Poor	The transition to new forms of PM has been very limited. Only a few PM tools are taken into consideration. However, this process was not consistent and has had an insignificant impact on existing PM practices in the Akimat.
Very poor	The Almaty Akimat has retained its management practices, and no changes have been observed. Techniques and methods promoted by consultants and the PM Office have not become a part of the Akimat's business processes.

Source: Authors.

The researchers conducted a thematic analysis to address the research questions and followed a classical framework (Figure 1). As a data management and analysis tool, NVIVO (https://www.qsrinternational.com/) was used. During this process, the authors thematically analyzed YCG reports and field notes to ensure data triangulation, gain a deeper understanding of research questions, and enrich the research (Denzin 1973). Any inconsistencies with the interview data were further interrogated to learn more about their nature and causal factors.

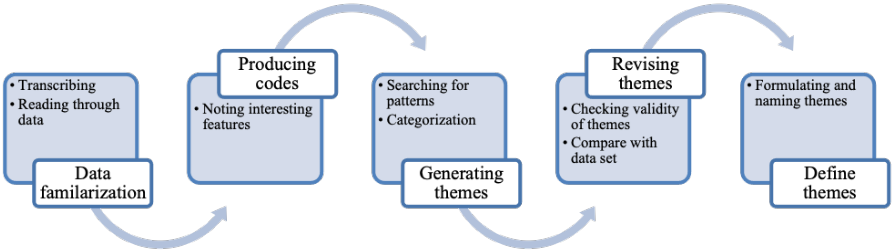

Figure 1. *Phases of Thematic Analysis*
Source: Adapted based on Kiger and Varpio (2020)

Results and Discussion

Before presenting the main findings, it is appropriate to observe an overall assessment of the Reform. Based on the rubric (Table 3), 6 participants (out of 8) evaluated the Reform as poor – interestingly, the two employees of the Consultancy were among them. The remaining two interviewees gave the Reform the lowest grade: very poor. Those who assessed the Reform as poor justified their view with the fact that there have been only slight changes, which are mainly related to the adoption of legal acts in the sphere of PM and the launch of the online PM platform. Despite these improvements, the Reform's impact on business processes and management practices was negligible. When it comes to the participants who evaluated this as very poor, they hold the view that even if there were changes, they were mainly superficial and did not affect behavior or culture.

It must be admitted that the Almaty government managed to build a basic regulatory framework for adopting PM. However, this did not transform the current state of affairs, and public agencies retained existing PM practices. When discussing a government's failure to accept business-like practices, one would rush to blame sluggish bureaucracy which rejects any external intervention. However, the research showed that the problems here were primarily due to inappropriate approaches and tactics when realizing the Reform, rather than human-related challenges such as a lack of skills, knowledge, and an unwillingness to change, as usually reported (Ylinen 2021; Zurga 2018; Ribeiro and Domingues 2018; Zwikael 2020). The research identified 4 major barriers to this.

1. Ineffective Communication of Change

The analysis revealed that the failure to communicate both the need for change and the concrete benefits of applying PM was one of the key issues. After the formal inception of the Reform, the PM Office was established. Further actions included making sure that Akimat departments delegated their representatives to the office and conducting daily meetings with departments. Meetings centered on monitoring how well departments were filling in information about projects in the project information system. However, the supervisors and leaders of the PM Office did not practically set the groundwork for the Reform. First of all, before starting the Reform, Akimat departments were faced with the fact that the format of their work would be subjected to some changes. Akimat employees were not informed or consulted about why the current format of managing projects in the Akimat required revision. Furthermore, the supervisors of the Reform did not take reasonable steps to communicate the practical implications of applying PM tools. The Consultancy's operation plan within the Reform did not include any of these undertakings. Another issue was that no assessment of the existing format of managing projects in Akimat was made. During 2021 and 2022, the PM Office experienced frequent personnel changes, which was even recognized by the Consultancy (Department of Finance of Almaty 2021). This situation did not contribute to the consistent and productive implementation of the Reform. When it comes to PM policy, interviewees repeatedly noted that they felt as if they were treated like objects, rather than equal participants in the process. The findings in this context show that the "action learning" approach, a methodology for learning and acquiring skills while working and solving problems, clearly did not work.

It is argued that the failure to build a strong case for change and confidence in the Reform, as well as incentives for embracing new management techniques, isolated Akimat departments, which did not feel part of the change project and saw the Reform not as a promising opportunity, but as an administrative task. Consequently, the behavior of department leaders and employees indicated that PM was not seen as a priority. Support for such findings comes from studies by Ribeiro and Domingues (2018) and Nuottile et al. (2016), who observed a lack of commitment and resistance to change as important obstacles.

2. The Prevalence of Technicalities

The discussions and efforts of the PM office revolved around the PM information system, while reforming existing approaches and ways of managing projects was largely ignored. The data analysis illustrated that 8 out of 11 functions of the PM Office outlined in the report of the Consultancy were directly related to the PM information system (Department of Finance of Almaty 2021). The recommendations given to the 32 state bodies of Almaty were technical and did not entail more in-depth conceptual changes. For instance, in the final report of the Consultancy, the Department of Culture was recommended to keep information on project charters, objectives, and budget up to date in the system (Department of Finance of Almaty 2021). When the PM platform did not work or worked intermittently for technical reasons, the interaction between Akimat structures and the PM Office was practically paralyzed. This once again illustrates that the PM platform was central to the work of the PM Office. The software mentioned was based on the popular EasyProject platform, and represented an online PM tool. The PM Office attempted to digitize all projects implemented by Akimat by filling out relevant sections of the platform, which included information on project sponsors, deadlines, and budget. Employees felt overwhelmed because they did not expect extra paperwork. In contrast to this, Nuottila et al. (2016) pointed out that many wrongly assume that PM involves a complete rejection of documentation, while this remains an important practice even in agile methodologies.

However, it is argued that what concerned the Reform supervisors most were the technicalities and PM software, rather than the conceptual and institutional aspects of PM. Consuming significant time and human resources to fill up the information system with project information, while a real state of affairs was practically left untouched, gave rise to two parallels. Utilizing the information system of PM became an additional superstructure in the Akimat's already bureaucratic system. State bodies continued their practice of managing projects, and simultaneously followed the instructions of the PM Office related to the information system. Unlike Fred (2020) and Nesheim's (2020) studies, which showed that bureaucratic and project logic are not necessarily mutually exclusive and may co-exist, this research observed a clear asynchrony between these two working modes.

3. A One-Size-Fits-All Approach

The analysis of data indicated that the PM Office did not make adequate attempts to design tailor-made approaches for Akimat departments, operating in different fields and having different specifics. To illustrate, it is worth comparing the activities of some Akimat departments mentioned in the interviews – one of which is the Department of Religious Affairs, which is in charge of cooperation with religious organizations. The environment in which this department operates is relatively predictable and stable; therefore, it would be appropriate to apply more traditional PM methodologies to it. The departments of entrepreneurship, construction, public transport, and the energy sector, in contrast, operate in much more dynamic settings, where projects may be liable to changes influenced by a variety of external factors. Therefore, for this type of state body, the Consultancy could offer more agile PM methodologies as opposed to linear approaches.

The inappropriateness of some PM procedures required by the Office was emphasized in another interview. Specifically, an overly detailed breakdown of project activities in the PM platform did not make a lot of sense in the Akimat departments, since when realizing a project the departments followed established practices. As a rule, they hire private companies to implement projects through tendering procedures and retain only control functions, while the actual realization of projects is performed by suppliers. Therefore, the EasyProject system might not be functional for them.

Another illustration of poor adaptation of the PM Reform is the fact that the Department of Construction, for example, has already been using an online public platform for developing and tracking budget documentation of projects for some time, and it was unclear how this platform interplayed with the EasyProject platform. Furthermore, planning and implementing multi-million-dollar projects is a comprehensive and strictly regulated process, and complementing EasyProject with project data according to the PM Office requirements had little in common with this process. The Reform overlooked these nuances and, despite being intended to improve efficiency, led to more bureaucracy, a paradoxical observation also reported by other authors (Mukhtar-Landgren 2021).

As a result, the insufficient customization of policies caused demotivation and disappointment among public employees, since they did not feel the practical implications of the Reform in their professional lives. This view accords with the findings of Murphy and Cormican (2015), who emphasized the role of psychological motives in adopting new management methods.

4. A Scheme of Interaction with Departments

The PM Office attracted different employees of departments who acted as change agents and were supposed to introduce and implement PM methods in the sending departments. Many were physically located in the office, but many representatives continued working in their departments and simultaneously carried out the functions of applying PM. Thus, the Reform created an additional administrative workload. This research also revealed that the appointment of PM office personnel was done on the leftover principle. In other words, departments appointed whoever was available as their PM representatives. However, the problem ran deeper. One vicious practice in the activity of local governments of the country is that when a person is designated as a coordinator for a certain project or task, they bear full responsibility for its success or failure. This creates disincentives for other involved employees who may show a merely formal attitude towards a common task, taking into account that ultimately it is the coordinator who will be held to account. This practice had similar consequences concerning the PM Office. Department representatives designated as coordinators for PM in their departments were fully responsible for it, while other units had minimal interest in this Reform. All interviewed PM office representatives mentioned that it was challenging to receive information from their colleagues, who were reluctant to take part in the Reform pointing to workload. This observation is consistent with Boehm and Turner's paper (2005), which considered the unclear distribution of roles and workload as a real challenge for adopting PM changes.

With increasing responsibilities, public employees faced a dilemma about whether to continue performing their main functions or take up a new role in the PM Office. Since it was practically impossible to combine both, employees chose the former and looked at the PM Reform in a formulaic way because they would be held legally accountable for their main prescribed duties. These are consistent with the findings of Ekstedt (2019), who warned about the difficulties of balancing between project-related and main functions. One participant admitted that although they did not functionally work with projects, they were made responsible for PM in their department, and acted as an unnecessary intermediary between the PM Office and their colleagues from other divisions dealing with projects. Many PM representatives were "specialists," which was an entry-level position in the Akimat. This created an imbalance of power since they did not have a direct influence on higher-level officers and could not give them instructions. Thus, the burden of responsibility for the reform has been placed on individual workers, who for various reasons have not been able to channel PM policies to their departments. It is argued that a scheme of interaction based on liaisons, instead of directly involving relevant units, proved to be ineffective.

Conclusion

1. This analysis showed that the reform introducing PM in Kazakhstan was not able to bring about real changes. It is too early to state that it has become an integral part of business processes in Akimat, and until now it resembles a ritual and an end in itself.
2. The study allowed us to reveal four key barriers to adopting PM in Akimat structures. These included: a poor understanding of PM, an overreliance on the PM software, a one-size-fits-all approach for introducing PM tools, and a practice of using coordinators and their limited interaction with departments' other units.
3. Based on the research data, a set of strategic and tactical recommendations has been developed:
   3.1. Conduct an in-depth analysis of institutional and organizational barriers to using PM in a government agency. This may include looking at formal rules and practices for implementing projects and other regulations, which could be a real obstacle in using modern PM techniques. This analysis would help to design a better PM policy. The case of Almaty's Akimat clearly showed that action learning did not work in this context.
   3.2. It would be more appropriate to carry out such a reform as a pilot project by focusing only on a few departments, rather than attempting to apply PM simultaneously and everywhere. The introduction of PM could be tested on limited programs and departments. First, this would prevent the dilution of resources and would approach the issue comprehensively. Secondly, a pilot initiative would enable us to assess its viability and improve the approach and design of

the PM policy before rolling it out on a larger scale. In this scenario, it is recommended to abandon the idea of designating a single person responsible for PM in a department for the reasons described earlier. However, retaining a small but competent team of supervisors is important. The main function of this team might be to provide methodological support and guidance, and to evaluate the progress of introducing PM.

3.3. Design a communication strategy. For this one may look, for instance, at Kurt Lewin's (1947) classical unfreeze, change, refreeze change management model, or other approaches. As the name implies, before implementing the PM Reform, a public organization should create awareness of the need for change among employees and strengthen their willingness and motivation to adopt new management techniques. This would address potential resistance to change. Furthermore, such groundwork is critical for creating a sense of ownership of the process, which is an essential prerequisite for making change sustainable.

3.4. Prioritize real-world changes and limit the focus on PM software. The importance of IT technologies is not disputed. However, in this case, implementing and updating the EasyProject PM platform practically occupied the whole of the time of interactions between the PM office and the Akimat units. This situation overshadowed real changes and improvements in the activity of the Akimat.

Limitations and future research

The problems and recommendations discussed in this paper are not exhaustive; there are many other factors affecting the adoption of PM practice which may be explored further. Another limitation of this study is its homogeneous sample, which attracted only those who were directly involved in the Reform. Involving the upper management of the Almaty government, representatives of supplier companies cooperating with it, and independent experts would allow us to look at this issue from a variety of angles and enhance the study's validity. The scope of this research covered only Almaty city, which may limit its generalizability. However, it was intentionally limited to a single intervention at a regional level to obtain in-depth insights. Future research may concentrate on studying links between PM practices and strategic planning, budget policy, and human resource management in government settings. It is argued that the research findings may be a valuable source of information and guidance for national and regional governments seeking to introduce new management practices and techniques. Reflecting on potential difficulties in this way helps to design stronger policies and deliver better performance.

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N. Batalov, D. Kangalakova

KAZACHSTANO VIETOS SAVIVALDOJE PRITAIKYTA PROJEKTŲ VALDYMO PRAKTIKA: KLIŪTYS IR SPRENDIMAI

Anotacija. *Projektų valdymo įdiegimas vis dažniau suvokiamas kaip atsakas į prastėjantį viešosios valdžios darbą ir neefektyvias programas. Šio straipsnio tikslas – nustatyti kliūtis, trukdančias įgyvendinti projektų valdymo priemones Kazachstano vietos valdžios institucijose, ir sukurti sprendimus, kaip tas kliūtis sumažinti. Straipsnyje kaip tyrimo metodai buvo pasitelktas giluminis interviu ir dokumentų analizė. Atlikus analizę projektų valdymo pritaikymas vietos valdžios institucijose buvo įvertintas prastai. Analizė atskleidė keturis pagrindinius trukdančius veiksnius. Pirmoji kliūtis buvo neveiksminga pokyčių strategija įgyvendinant reformas. Antra, paaiškėjo, kad realius vyriausybės ir vietos valdžios valdymo požiūrių pokyčius užgožia techniniai projektų valdymo priėmimo politikos aspektai. Trečia, projektų valdymo metodai nebuvo pritaikyti vyriausybės ir vietos valdžios specifikai. Paskutinė kliūtis buvo neapgalvotas pareigų paskirstymas tarp valstybės tarnautojų, dėl kurio kilo koordinavimo ir sąveikos problemų. Straipsnis padeda empiriškai pagilinti žinias apie valdymo reformas viešajame sektoriuje.*

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ASPECTS OF EVALUATING THE EFFECTIVENESS OF THE ACTIVITIES OF STATE BODIES IN THE DIRECTION OF PERSONNEL MANAGEMENT IN KAZAKHSTAN

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Abstract. *This article is devoted to the system of evaluating the effectiveness of the activities of state bodies of the Republic of Kazakhstan in terms of personnel management. This assessment makes it possible to identify positive and negative trends in the activities of state bodies, identify systemic problems and develop practical recommendations for improving the efficiency of the activities of state bodies in the direction of personnel management. In Kazakhstan, the main approaches to the effective activities of state bodies are defined at the legislative level. Moreover, a methodology has been developed which states that the evaluation of these results is achieved via an objective assessment of the impact of the activities of central state bodies and local executive bodies on the development of the economy and society, alongside an analysis of the achievement of indicators of the results of the activities of the state body.*

Based on the study of international experience and a comparative analysis of criteria and indicators for evaluating efficiency in Kazakhstan and foreign countries, this study substantiates conclusions and recommendations for improving the system for evaluating the effectiveness of government agencies in terms of the direction of personnel management.

Keywords: *methodology; evaluation; efficiency; public authority; personnel management.*

Reikšminiai žodžiai: *metodologija; vertinimas; efektyvumas; viešoji valdžia; personalo valdymas.*

Introduction

In recent years, many domestic and foreign researchers have confirmed a direct relationship between the efficiency and effectiveness of the activities of state bodies at the organizational development level, their organizational and corporate culture, and the behavior of civil servants. A well-built system of evaluating the effectiveness of the activities of state bodies plays an important role here, which should not be overloaded with a multitude of evaluation criteria and indicators leading to bureaucratic procedures.

State bodies are tasked with the transition from a bureaucratic model of relations between the state and society to a proactive service model (Decree of the President 2021). In this vein, the requirements for civil servants are increasing: they must be effective, adaptable, results-oriented and able to respond to the social needs of the population. The internal environment of the civil service plays an important role here, in which dignity, work and the time of civil servants are the main values which allow them to fully unleash their potent.

As part of the formation of a human-centered model of public administration, improving the quality of human resources and the professionalization of the state apparatus requires improving the corporate culture in public service (Decree of the President 2021).

A change in the quality of public services is directly influenced by organizational norms (culture). It is the behavior of employees serving the population that has a direct impact on the emotional perception of the service and on the assessment of its quality. Therefore, it is important for the state not only to monitor the implementation of regulations, but also to monitor the informal norms that have developed in the provision of services. The experience of departments whose quality of services is traditionally rated highly can later be disseminated in other departments and organizations (Kapoguzov and Lapina 2018).

It should be noted that the Canadian Management Accountability Framework (MAF) (Government of Canada, n.d.) was used in this study to develop an assessment of the effectiveness of the activities of state bodies in Kazakhstan.

This system is a key oversight tool used by the Treasury Canada Secretariat to ensure effective governance, the accountability of federal departments and agencies, and the allocation of resources to achieve results. To assess MAF, an analysis of reporting and the results of a survey of civil servants are used. This survey is conducted every three years on the condition of anonymity, using a combined method of collecting information.

In the seven management areas of the MAF methodology, there are four main and three specific. In this study, we will focus on the direction of personnel management assessment. Thus, in the MAF system, personnel evaluation is carried out according to nine criteria, each of which can be broken down to contain several performance indicators.

The evaluation criteria for personnel management include various indicators, for example (Soltani et al. 2005; Methodology 2013): 1. involvement of civil servants; 2. senior management/leadership; 3. equality in employment; 4. professionalization of employees; 5. employee performance and talent management; 6. workload and workforce planning; 7. recruitment; 8. use of official languages; and 9. organizational conditions.

A study conducted by the Deloitte consulting company has identified the most important global trends in the field of human resource management, showing the global importance of research and the transformation of corporate culture. The transformation of culture becomes possible due to changes of individuality which transform into a collective value: the proper organization of work, which ensures the well-being of employees; the development of a human resource management strategy based on a deep understanding of the motives and values of people; and encouraging employee involvement through personal contributions (Deloitte 2021).

In order to increase the involvement and efficiency of human resources, the Civil Service of Kazakhstan should also pay attention to the issues of creating a favorable working environment in government agencies, supporting professional development, and protecting the labor rights of civil servants.

The assessment of personnel management is aimed at achieving high labor efficiency, effective use of human resources and the growth of staff involvement. In Canada, the analysis of the reporting and the results of the MAF survey of civil servants, where respondents are offered both an online questionnaire and the opportunity to fill out the questionnaire on paper and send it by mail, are used to conduct the assessment. The MAF survey of civil servants makes it possible to study the level of employee involvement in all state bodies and to identify problematic moments of interaction between management and performers (Aliyeva 2017; Afrasiabi et al. 2022).

Today, the Canadian reporting management system, recognized as one of the most well-known models, is used in the countries of the European Union, Great Britain, New Zealand, India, etc.

According to G. Bukert and D. Khaligan, human resource management implies, first of all, an open communication channel at a senior level with subordinates, and a three-way interaction, where the main actor appears: the consumer of public services, i.e., society. Social dialogue is an indispensable attribute of the development of public service according to European researchers. Results-based management is currently the most important tool for personnel management (Bouckaert and Halligan 2008), which allows a system of employee motivation for effective performance to be built (Clark 2005). According to H. Salem (2003), performance evaluation should be considered within the framework of the overall performance management system and be presented as a process of quantifying the effectiveness of actions.

For Kazakhstan, it is also possible to take some tools from the Common Assessment Framework (CAF) for evaluation. The European Common Assessment System is a common quality management tool developed for the public sector based on the excellence model of the European Foundation for Quality Management (EFQM). CAF is a universal model that can be adapted to the specific requirements of the users of the model. In the CAF model, the survey of an organization's activities is carried out on the basis of the self-assessments of public institutions.

The CAF model includes 9 main criteria and 27 sub-criteria for evaluation: leadership; personnel; strategy and planning; cooperation and resources; processes; employee performance; results for consumers/citizens; results for society; and key performance results. In 2019, the CAF 2020 model was adopted, which was developed by the European Network of CAF Correspondents and the European Institute of Public Administration (EIPA). The new model retains the basic structure of CAF, but focuses on digitalization, sustainable development, innovation, interaction, cooperation (participation) and diversity. The CAF 2020 model aims to ensure that organizations achieve sustainable development by consistently meeting the needs of citizens/customers and the expectations of their stakeholders on a long-term basis (EUPAN 2020). For Kazakhstan, this approach is the highest priority and sets the vector for improving the operational assessment regarding the "interaction of a state body with individuals and legal entities." This also sets us the task of substantiating and allocating the "satisfaction of service recipients with the quality of public services" criterion to one of the main directions.

Since 2010, Kazakhstan has officially introduced a system of annual assessment of the effectiveness of the activities of state bodies. In our opinion, it is necessary to analyze and evaluate the effectiveness of each body, taking into account the peculiarities of its functioning in modern conditions (Junusbekova 2015; Decree of the President 2010). In general, the experience of various countries in the formation of evaluation criteria has shown that they are all united by the prevalence of sociological measurements. The strengths of the methods used in foreign practice for assessing the activities of state bodies are the free access of citizens to information, the provision of integrated services based on digital technologies by state bodies, and active dialogue of citizens with state bodies, which leads to confidence-building in the government.

The purpose of this study is to develop recommendations for evaluating the effectiveness of the activities of state bodies in the direction of personnel management based on a study of the current system.

Research methodology

The basis of the research methodology is the analysis of regulatory legal documents concerning aspects of the system of annual assessment of the activities of state bodies in the Republic of Kazakhstan. The method of expert assessments with a sociological survey among civil servants of central state and local executive bodies, as well as the methods of logical and comparative analysis, are also used. Due to the lack of approved standardized questionnaires on the problem under study, as well as the fact that the questionnaire acts as a measuring tool for assessing the system of annual assessment of the activities of state bodies, we carried out an independent standardization of the questionnaire as follows.

We compiled a questionnaire containing 24 questions, of which one question was related to the level of awareness and involvement in the assessment system. Some questions were designed to identify the positive and negative aspects of the current assessment system; some were demographic (gender, age, work experience, field of activity); and some were completed in an open form where respondents had to provide their own answer. There were also questions that had a closed form, where respondents had to choose an answer from those proposed.

The sample size was 300 respondents who take part in the implementation of the assessment system in government bodies.

To ensure the content validity of the questionnaire, a pilot test was conducted, where 10 respondents from government agencies involved in the system for evaluating the effectiveness of government agencies acted as experts. All experts have participated in the assessment system of state bodies for more than 5 years. As a result of the pretest of the questionnaire, the wording of all questions was corrected. Instead of open-ended options, closed options were given, with respondents instructed to select one option. In addition, the sequence of questions in the questionnaire was changed, and their number was also reduced to 20.

This research methodology is based on a comparative analysis of the survey results. The comparative analysis of objects and phenomena involves the implementation of research on the basis of the existing theory at several levels: collecting and processing all the information received, systematizing information, distributing data into different categories and structuring the collected material, interpreting and evaluating the data obtained, and forming conclusions.

An important place in the study was given to the study of the experience of foreign countries in the practice of evaluating the effectiveness of administrative civil servants and state bodies, which contributed to a more accurate justification of the results obtained.

Research results and their discussion

In order to determine the level of effectiveness of the current assessment of the activities of state bodies in the direction of personnel management, the authors conducted an expert survey among civil servants who encountered the evaluation system in their practical work and employees of personnel management services of state bodies at the central and local levels.

Around 300 people took part in the survey, where: 19.4% of respondents were aged 25–30 years; 21% – 31–36 years; 18.4% – 37–42 years; 11.3% – 43–48 years; 13.9% – 49–54 years; and 16.1% – 55 years and older. Further, 45.8% of respondents had more than 10 years of experience and 77.1% held executive positions. The employees of personnel services of local executive bodies constituted 86.8% of respondents, demonstrating that they took an active part in the survey.

In general, respondents gave a positive assessment of the existing indicators of the methodology for assessing the effectiveness of the activities of state bodies in the direction of personnel management (hereinafter referred to as the evaluation methodology) (Figure 1).

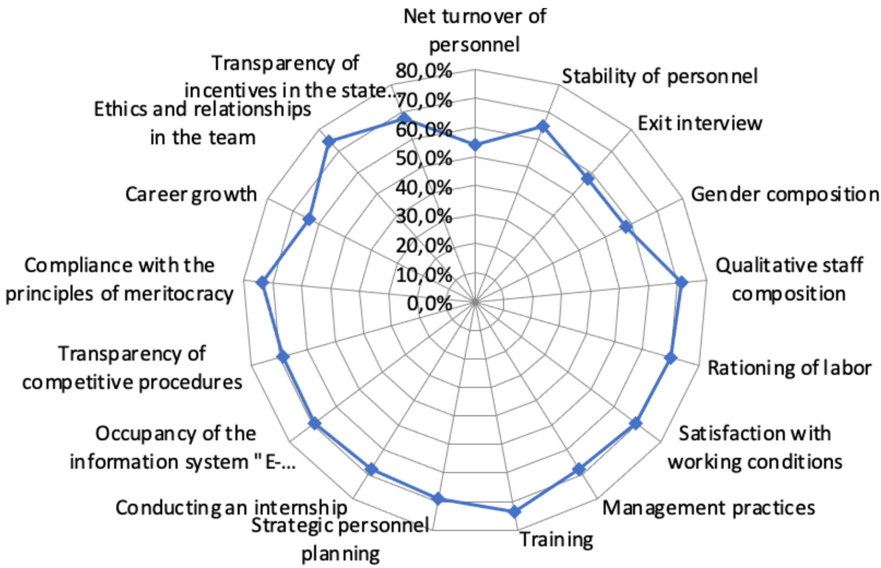

Figure 1. *Effectiveness of indicators of the evaluation methodology in the direction of personnel management*

Source: Compiled by the authors

As follows from Figure 1, respondents considered the following to be the most effective indicators: Training of civil servants (73.5%); Quality staff (71.6%); Ethics and relationships in the team (74.8%); and Compliance with the principles of meritocracy (73.5%).

According to respondents, the indicators Net turnover (26.7%) and Exit interview (23.2%) were considered less effective.

In addition, 8% of respondents believed that the following indicators should be excluded from the assessment methodology due to the achievement of maximum points by the state body: Satisfaction with working conditions; Management practices in a state body; Strategic personnel planning; and Transparency of incentives in the state body.

In the form of a new indicator, respondents proposed Training of civil servants, which is also provided for in the assessment methodology. However, within the framework of this indicator, the number of employees trained in due time is estimated from among those subject to the allocated budget funds. At the same time, the effectiveness of training programs is not evaluated – that is, whether the acquired knowledge of the employee is applicable in their professional activity. In this regard, it is proposed to change the content of the indicator and conduct an assessment in this direction.

Along with this, respondents proposed new evaluation indicators: compliance with the rights of civil servants (provision of timely leave, flexible schedule); participation of civil servants in various public service projects; receipt of complaints from the staff of state bodies to the Agency for Civil Service Affairs; staff training; and compliance with meritocracy.

Considering that one of the main sources of information for the assessment is the reporting information provided by government agencies, respondents were asked about the clarity of the forms of reporting information specified in the assessment methodology. The analysis showed that the clarity of the reporting information forms was assessed by HR specialists as follows: very bad – 9.1%, bad – 6.2%; neither bad nor good – 22.7%; good – 26.6%; and very good – 35.4%. It is important to note that a low understanding of the forms of reporting information can lead to distortion of the data provided and, as a result, affect the reliability of the evaluation results. In this regard, we believe that it is necessary to fully automate the process of compiling reporting information in order to avoid these problems.

The survey showed that 10.2% of respondents did not take into account suggestions for improving indicators and evaluation procedures when making changes to the methodology of assessing respondents; 24.2% partially took them into account; 37.7% fully took them into account; and 27.4% did not make any changes. These results indicate that, in general, the proposals of state bodies are taken into account to a greater extent (61.9%) when making changes to the evaluation methodology.

According to the respondents' answers, the reporting information in state bodies is currently formed in the following ways: fully automated – 29.9%; partially automated – 49%; fully manual – 21.1%.

At the same time, on average the formation of reports requires the following length of time from respondents: less than one day – 29.2%; from one to three days – 50.6%; one week – 11.7%; more than one week – 8.4%.

In order to simplify the process of providing reporting information to respondents, an option is proposed in the form of a transition to the evaluating state body receiving reporting information not from the evaluated state bodies, but directly from information systems – 78.3% of respondents reacted positively to this proposal, and 21.7% reacted negatively.

According to the results of the survey, we can see that 40.6% of respondents expressed a desire to increase the frequency of the assessment, while 59.4% believed that it should be carried out on an annual basis. Thus, we can conclude that there is a possibility of using the Kazakhstan model of periodicity of assessment set out in the CAF methodology (EUPAN 2020).

During the survey, respondents noted that they faced a number of problems which eventually affected the results of the assessment of the state body (Figure 2).

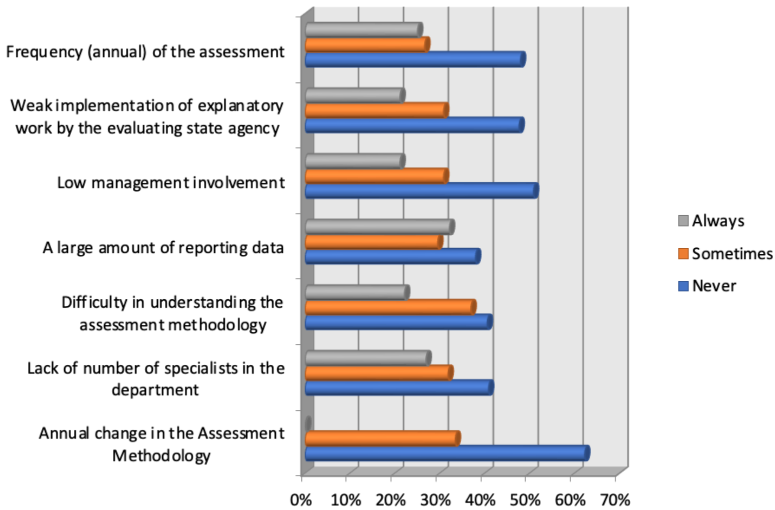

Figure 2. *Problems in the assessments of state bodies*
Source: Compiled by the authors

It follows from Figure 2 that, according to the civil servants surveyed, the most common problems in assessing the effectiveness of activities include: providing a large amount of reporting data (32.2%); lack of specialists in the department (27%); and the frequency (annual) of evaluation (25.1%).

The key to the success of any organization is not only the effectiveness of its staff, but also a high level of involvement of management in its activities. According to the survey, the degree of involvement of the management of the state body in the process of improving the efficiency of personnel management activities was assessed as follows (Figure 3):

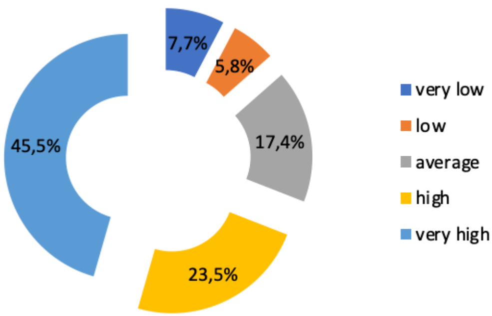

Figure 3. *The degree of management involvement in the evaluation process*
Source: Compiled by the authors

As the data in Figure 3 show, managers are not properly involved in the process of improving the efficiency of the personnel management process in all state bodies.

Along with this, the level of satisfaction of respondents with conducting explanatory activities and then consulting assistance to clarify the norms of the assessment methodology by the staff of the supervising state body was as follows: completely dissatisfied – 10.4%; dissatisfied – 8.1%; rather satisfied – 17.9%; satisfied – 24%; absolutely satisfied – 39.6%.

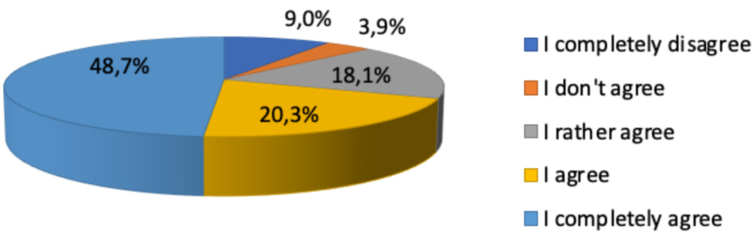

Figure 4. *Perception of evaluation as an effective tool*
Source: Compiled by the authors

It should be noted that 48.7% of respondents fully agree with the statement that assessing the activities of state bodies regarding personnel management is an effective tool for improving the activities of state bodies.

The analysis of the results of the survey on the perception of evaluation as an effective tool showed that 13% of the polled civil servants do not agree with the statement that evaluation is an effective tool.

Summing up the results of the study in the direction of personnel management, it can be concluded that there are problems in the current human resource management system that negatively affect the effectiveness of public service. This is especially the case in terms of determining the necessary target indicators, methods for evaluating the effectiveness of government agencies, as well as the lack of strategic planning in the field of human resource management in government agencies.

The results of the analysis showed systemic problems, including those concerning the concept of the evaluation system itself, the current methodology for evaluating the activities of state bodies, and the methods of operational evaluation of a state agency in terms of the direction of personnel management.

According to these criteria, it is necessary to subsequently adjust the methodology of operational assessment of the activities of state bodies. The results of the evaluation system allow us to conclude that the initial goal of building internal processes in government agencies has been practically achieved. The next stage of implementation of the system will be the transition from process evaluation to results evaluation. The emphasis on performance indicators should form the basis of a new evaluation model.

This approach is fully consistent with the requirements for the modernization of public administration and has an important socio-political effect. The ultimate goal of the assessment is not only to improve the mechanisms of public administration, but also to ensure the accountability of government agencies to society.

Conclusion

The analysis of the criteria of the methodology for evaluating the activities of state bodies in the direction of personnel management showed that, despite the existing shortcomings, the introduction of the methodology for evaluating the effectiveness of personnel management has significantly expanded the scope of the real picture of the state regarding the processes of personnel management of state bodies. This technique not only allowed us to see the internal processes, but also to concentrate the efforts of government agencies on solving priority tasks, such as the professionalization of personnel and increasing the openness of activities. The assessment of human resources management has contributed to the development of a culture of evaluation and accountability in the public administration system. To date, assessment is perceived by government agencies as an integral element of public administration.

However, despite positive results, there is ground for the further improvement of the organizational development of state bodies in terms of assessing human resources, labor organization, meritocracy and the organizational culture of state bodies:

1. There is a formal bureaucratic approach to human resource management in government agencies. Subjectivism prevails over personal qualities in the selection and promotion of personnel. In this regard, the issue of legislative support for ongoing reforms is acute, including the introduction of the obligation of state bodies to develop and approve a human resource management strategy.
2. The information obtained during this analysis made it possible to comprehensively consider the existing problem areas in the civil service system at the following stages: adaptation of newly accepted administrative civil servants; mentoring; professional development of civil servants; selection of civil servants; increasing the prestige and competitiveness of the civil service through the formation of the employer's value proposition; and the importance of strategic planning and implementation of management tools based on results.
3. The main problem in the assessment, according to respondents, is the provision of a large amount of reporting data and a shortage of specialists. At the same time, it is particularly noted that the approved report forms are difficult to understand, and it takes more than one week for employees to prepare reporting data. The authors believe that these problems can be solved by fully automating the evaluation procedures.
4. Considering the fact that expert opinions with recommendations for improving activities in the direction of personnel management are sent to state bodies annually in the middle of the reporting period, the state body does not actually have time to implement them. In this regard, it is proposed to increase the timing and grounds for the assessment.

5. Based on Canada's experience with the MAF system, we propose the introduction of an automated data collection system and that an operational assessment of the activities of government agencies in electronic format (e-Assessment) be conducted.

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KAZACHSTANO VALSTYBINIŲ ĮSTAIGŲ PERSONALO VALDYMO VEIKLOS KRYPČIŲ EFEKTYVUMO VERTINIMO ASPEKTAI

Anotacija. *Straipsnis skirtas Kazachstano Respublikos valstybinių institucijų veiklos efektyvumo vertinimo sistemai personalo valdymo požiūriu. Vertinimas leidžia nustatyti teigiamas ir neigiamas valstybės įstaigų veiklos tendencijas, išsiaiškinti sistemines problemas ir parengti praktines rekomendacijas valstybės įstaigų personalo valdymo veiklos efektyvumui gerinti. Kazachstane pagrindiniai požiūriai į efektyvią valstybės institucijų veiklą yra apibrėžti įstatymų leidybos lygmeniu, taip pat yra sukurta metodika, kurioje teigiama, kad rezultatų vertinimas sukuria prielaidas objektyviam centrinių valstybės institucijų ir vietos valdžios organizacijų veiklos įvertinimui. Tyrime, remiantis tarptautine patirtimi ir lyginamąja vertinamų kriterijų bei rodiklių analize, pagrindžiamos išvados ir rekomendacijos dėl to, kaip tobulinti Kazachstano valstybės įstaigų veiklos efektyvumo vertinimo sistemą.*

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THE ROLE OF INTERNAL AUDITS ON THE PERFORMANCE OF LOCAL GOVERNMENT ADMINISTRATION: EVIDENCE FROM INDONESIA

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Abstract. *This research aims to provide a comprehensive analysis of internal audit function (IAF) characteristics and the administrative performance of local governments (LGs) in Indonesia. We use official secondary data from the Indonesian regulatory bodies that generate unbalanced panel data, with 5,038 observations analyzed with panel data regression. Our analysis reveals that most LGs in Indonesia have achieved high-level administrative performance since 2015. Despite this, several LGs remain at the medium and low levels. LGs located in Java and Bali have the highest overall performance, followed by Borneo, Sumatra, Sulawesi, and East Indonesia. We also reveal that IAF capability, maturity, and expertise positively affect the administrative performance of LGs in Indonesia. Proper internal audit characteristics are essential in optimizing the supervision of local governance for better administration performance. We also suggest that the Financial and Development Supervisory Agency (BPKP), which is in charge of IAF development, implement continuous development programs properly. It is important that proper human* *resource allocation and the use of technology are supervised to realize good administrative performance and enhance public accountability.*

Keywords: *Indonesia; local government; administration performance; internal audit function.*

Reikšminiai žodžiai: *Indonezija; vietos valdžia; administracijos veikla; vidaus audito funkcija.*

Introduction

Indonesia has experienced massive changes in public governance since the 1998 reformation after the fall of President Suharto (Bennet 2010), in which a set of regulations has been issued and implemented. Following the example of many countries, Indonesia has implemented decentralization as part of a broader democratization process that delegates many administrative functions to local governments (hereinafter – LGs) (Holzhacker, Wittek, and Woltjer 2016). Therefore, the performance of LGs in carrying out their function in public administration becomes very important (Sutopo et al. 2017). However, like other countries in transition periods, performance accountability is still an issue attracting public attention in LGs (Lewandowski 2019; Pollitt 2018; Van Dooren, Bouckaert, and Halligan 2010). This creates unique institutional settings, underlying the need to provide comprehensive empirical studies in Indonesia.

Being the world's most populous island country, the implementation of LGs in Indonesia has experienced considerable gaps between regions (Shah, Qibthiyyah, and Dita 2012), including the public administration aspect. In practice, LGs in Indonesia are obliged to submit accountability reports to the Ministry of Internal Affairs concerning the implementation of public administration (Rahmatunnisa 2018). This report is assessed to evaluate LGs' administrative performance. The Ministry of Internal Affairs expects that all LGs achieve high administrative performance levels at least.[1] However, several LGs remain unable to achieve high, medium or even low administrative performance (Sutopo et al. 2017). Following this issue of performance accomplishment, further study becomes necessary to provide recommendations to the related regulatory bodies for better the accomplishment of LG administrative performance in Indonesia.

One of the crucial factors in the context of LG performance is internal audit. The Indonesian government has given significant attention to LG internal audits over the past decades. Several regulations have been issued for the sake of LG internal audit development.[2] LG administrative performance has actually been a focus of several studies in the past several years. However, the presence of studies in Indonesia that investigate the

1 *Minister of Internal Affairs Regulation Number 54 of 2015 concerning the Strategic Plan of the Ministry of Internal Affairs 2015–2019*

2 *BPKP Head Regulation Number PER-1633 / JF / 2011 concerning APIP Capability Development; BPKP Head Regulation Number 4 of 2016 concerning Guidelines for Appraisal and Maturity Improvement Strategy of the Government Internal Control System*

role of internal audit is rare. This study offers a significant contribution to the literature by extending the examination of the role of internal audits to more specific characteristics that consist of capability, maturity, expertise, and size, all of which remain limited and under-explored in the public sector literature. Previous studies also remain limited in several aspects. One of the most crucial limitations is the limited research scope and observation period, which is often conducted in only one or several LGs (Utama, Evana, and Gamayuni 2019; Pratama and Setyaningrum 2015; Martani and Wicaksono 2017; Martani and Pramudya 2017; Harumiati and Payamta 2014). Thus, our study aims to fill this gap by providing a comprehensive empirical analysis covering all LGs in Indonesia over the past decade that controls for various external factors such as LG politics, head, and financial factors. Besides its comprehensiveness, our study also contributes to providing recommendations for LG internal audit function (hereinafter – IAF) supervision to realize higher administration performance.

Literature Review

Agency Relationship in Indonesian LGs

Since its introduction by Jensen and Meckling (1976), agency theory has been broadly used in social studies, including in the LG context, thanks to its applicability (Lane 2005; Nyman, Nilsson, and Rapp 2005). In the context of Indonesia, agency theory suits the relationship that exists among the parties involved in local governance (Muhtar 2023). This theory is applicable due to Indonesia's status as a democratic country (Overman and Schillemans 2022; Shafritz et al. 2017; Probohudono, Hartanto, and Putra 2018), with a direct election mechanism and decentralization that allows independent local financial management and policymaking. Based on the perspective of agency theory, LG accountability becomes one of the subjects of the agency problem (Mzenzi and Gaspar 2015), including the administrative performance aspect (Winarna et al. 2021). The public, as principal, delegates authority to the LG head as the agent to serve and deliver the people well in public administration using public resources. Referring to Law Number 23 of 2014 regarding LGs, the executive led by the LG head possesses the authority to conduct the planning and implementation of programs. In practice, the activities of the LG executive are monitored by the IAF.

LG IAF administrative performance

The capability of the LG IAF has become one of the major characteristics given special attention by the BPKP. Van Looy, De Backer, and Poels (2011) stated that capability relates to the ability to deliver specified or desired performance consistently. A higher level of IAF capability enhances the compliance of the administration with existing laws and regulations (Sembiring, Bukit, and Akhmad 2018). LG IAF capability supports budgeting and financial reporting (Gamayuni 2018b) and improves management (Van Rensburg and Coetzee 2016). Baltaci and Yilmaz (2006) argued that internal control and audit also help supervise the effectiveness of service delivery. In addition, Suharyanto et al. (2018) observed that the capability of the internal LG auditor has a positive impact on LG performance in Indonesia. Aikins (2011) also demonstrated that an effective internal audit role positively impacts a government institution in the form of financial performance. Thus, LG IAF maturity is expected to support the achievement of LG administrative performance. Therefore, it is hypothesized that:

H1: IAF capability positively affects LG administrative performance.

Another internal audit characteristic that becomes a concern for LG IAF development is maturity. A higher level of maturity is essential for supervising LG activities, and is specifically related to the administrative process, goal achievement and desired outcomes (Sutaryo and Sinaga 2018). IAF maturity illustrates how far the IAF has been established (IIA, 2013). A higher level of maturity means that an IAF has been established better (Bechara and Kapoor 2012; D'Onza et al. 2015), and is equipped with more advanced components such as organizational structure, auditing standards, documentation procedure, and even technological assistance to make sure that supervision activities are carried out properly. Hence, performance monitoring by the internal audit can be performed more consistently, effectively and efficiently (Lenz, Sarens, and D'Silva 2014). Chen et al. (2017) found the positive implication of IAF maturity on financial reporting. Moreno-Enguix, Gras-Gil, and Henández-Fernández (2019) also found that an LG with an adequate internal control system has better performance in terms of accountability and transparency. Based on the explanation above, it is hypothesized that:

H2: IAF maturity positively affects LG administrative performance.

Expertise is one of the essential characteristics that must be possessed by an auditor as an individual to perform audit activities (Abbott et al. 2016). The existing regulation in Indonesia classifies two levels of IAF positions: skilled auditor and expert auditor. The expert internal auditor generally possesses a better understanding and more experience related to audit, investigation, testing, and oversight assessment. Hence, they undertake supervision activities (Cohen and Sayag 2010) in realizing the achievement of the desired performance level. In Indonesia, the expertise of public administration employees in the finance department has received broad criticism (McLeod and Harun 2014), with some suggesting that it impedes the financial management process. The duties of an expert internal auditor become more important for providing recommendations to solve existing issues. Therefore, it is expected that LG administrative performance will be higher with better auditors. Thus, we formulate the following hypothesis:

H3: IAF expertise positively affects LG administration performance.

The supervision of LG performance also needs support from sufficient human resources availability. In general, a larger amount of human resources enables an organization to cover various tasks, including IAF (Mihret, James, and Mula 2010). IAF size is an essential attribute in order to achieve IAF effectiveness in LG (Alzeban and Gwilliam 2014). The availability of LG internal audit human resources also gives internal audit units more flexibility in rolling and managing internal audit members so that IAF is optimally executed (Christ et al. 2015). Based on the explanation above, it is hypothesized that:

H4: IAF size positively affects LG administrative performance.

Research Method

Population, samples, and research data

The population in this study consists of LGs in Indonesia during 2010–2019. This study examines the entire population to produce comprehensive research coverage to obtain findings with a high level of generalization. Official secondary data is used, which was obtained from authorized government agencies such as the Ministry of Internal Affairs, the Supreme Audit Board (BPK), the Financial and Development Supervisory Agency (BPKP), the Indonesia Statistics Bureau (BPS), and the respective LGs' websites. This study generates unbalanced panel data with 5,038 observations from 508 district/city LGs in Indonesia during the 2010–2019 fiscal years.

Research variables

We examine LG administrative performance as a dependent variable, as measured by the LG administrative performance evaluation assessment score published by the Ministry of Internal Affairs. As for the independent variable, the LG IAF characteristics are represented by capability, maturity, expertise, and size. In addition, this study also employs several control variables to accommodate the outside factors, consisting of LG financial factors, political factors, head factors, and type. The summary of research variables is presented in Table 1.

Table 1. *Summary of research variables*

Variables	Notation	Measurement	Source/Reference
LG administration performance	$LG_{PERFORMANCE\,it}$	The score of Evaluation of LG Administration Performance (EKPPD)	Ministry of Internal Affairs, Sutopo et al. (2017), Utama, et al. (2017)
LG IAF capability	$LGIA_{CAPABILITY\,it}$	The score of LG IAF capability assessment using the IACM approach	Sari, Hastuti, and Tannar (2019); Yusof, Haron, and Ismail (2018)
LG IAF maturity	$LGIA_{MATURITY\,it}$	The score of LG IAF maturity assessment score	Sutaryo and Sinaga (2018); Yasin, Artinah, and Mujennah (2019)
LG IAF expertise	$LGIA_{EXPERT\,it}$	Proportion of expert auditors	Muhtar et al. (2020)
LG IAF size	$LGIA_{SIZE\,it}$	Total number of auditors in LG IAF	Sarens et al. (2011)
LG revenue	$LGFIN_{REV\,it}$	Natural logarithm of LG revenues	Winarna et al. (2021)
LG expenditure	$LGFIN_{EXP\,it}$	Natural logarithm of LG expenditures	Winarna et al. (2021)
LG asset	$LGFIN_{ASSET\,it}$	Natural logarithm of LG assets	Winarna et al. (2021)
LG legislative size	$LGPOL_{SIZE\,it}$	Total number of legislative members	(Lewis 2019)

Variables	Notation	Measurement	Source/Reference
LG legislative coalition	$LGPOL_{COAL\mathit{it}}$	Proportion of legislative members supporting the executive	Lewis and Hendrawan (2019); Lewis (2019)
LG legislative gender	$LGPOL_{GENDER\mathit{it}}$	Proportion of female legislative members	Lewis and Hendrawan (2019); Lewis (2019)
Age of LG head	$LGRH_{AGE\mathit{it}}$	Total age of LG head in years	Rakhman (2019)
Education background of LG head	$LGRH_{EDUBACK\mathit{it}}$	Score 1 for LG head with accounting degree, and 0 for otherwise	Probohudono, Hartanto, and Putra (2018)
Tenure of LG head	$LGRH_{TENURE\mathit{it}}$	The number of years from regional head election year until the current year	Rakhman (2019)
LG type	$LGTYPE_{\mathit{it}}$	Dummy: 1 = City LG; 0 = District LG	Winarna et al. (2021)

Data Analysis

We conduct an initial analysis by examining the descriptive statistics of our research variables. A deeper examination of the descriptive statistics is performed for LG administrative performance as the dependent variable. Following the use of panel data in this research, we perform panel data regression analysis for our hypotheses testing. The regression model is stated as follows:

$$LG_{PERFORMANCEit} = a + b_1 LGIA_{CABILITYit} + b_2 LGIA_{MATURITYit} + b3LGIA_{EXPERTit} + b_4 LGIA_{SIZEit} + b_5 LGFIN_{REVit} + b_6 LGFIN_{EXPit} + b_7 LGFIN_{ASSETit} + b_8 LGPOL_{SIZEit} + b_9 LGPOL_{COALit} + b_{10} LGPOL_{GENDERit} + b_{11} LGHR_{AGEit} + b_{12} LGHR_{EDUBACKit} + b_{13} LGHR_{TENUREit} + b_{14} LGTYPE_{it} + e$$

Results and Discussion

Descriptive Statistics

We begin the initial analysis using descriptive statistics analysis. The results are presented in Table 2.

Table 2. Descriptive statistics

Panel A: Continuous Variables					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
$LG_{PERFORMANCE\ \mathit{it}}$	5,038	2.634	0.609	0.052	3.969
$LGIA_{CABILITY\ \mathit{it}}$	5,038	1.356	0.843	0	3
$LGIA_{MATURITY\ \mathit{it}}$	5,038	2.051	0.727	0.153	3.991

Panel A: Continuous Variables					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
$LGIA_{EXPERT\ it}$	5,038	.631	0.215	0	1
$LGIA_{SIZE\ it}$	5,038	13.704	7.927	2	62
$LGFIN_{REV\ it}$	5,038	27.632	0.62	22.535	30.374
$LGFIN_{EXP\ it}$	5,037	27.575	0.592	22.5	31.606
$LGFIN_{ASSET\ it}$	5,038	28.27	0.719	24.483	31.387
$LGHR_{TENURE\ it}$	5,037	2.9	1.419	0	6
$LGCOMPLEX_{it}$	5,038	52.351	21.379	20	214
Panel B: Dummy Variables					
Variable	**Obs**	**Dummy 0**		**Dummy 1**	
		Frequency	**Percentage**	**Frequency**	**Percentage**
$LGHR_{EDULEVEL\ it}$	5,038	3,747	74.8%	1,291	26.2%
$LGHR_{EDUBACK\ it}$	5,038	3,826	24%	1,212	24.5%
$LGHR_{GENDERit}$	5,038	352	8.4%	4,686	7%
$LGGEO_{it}$	5,038	3,820	75.8%	1,218	24.2%
$LGTYPE_{it}$	5,038	4,108	81.5%	930	18.5%

LG performance as our dependent variable shows an average value of 2.634, which is categorized as high. The highest performance is at 3.969 (very high), while the lowest is at 0.52 (low). Further analysis of LG performance during the research observation period shows a positive trend, indicating that achievement improves throughout the years. In 2010–2013, the average performance was around 2.5–3.0, meaning that LGs in Indonesia, on average, can achieve high performance levels. Furthermore, starting from 2014, achievement reached above 3.0, meaning that LGs in Indonesia, on average, can achieve very high administrative performance levels. Performance in 2015–2019 stayed within the bounds of very high level, despite a slight decrease in 2017 and 2018. These results are presented in Figure 1.

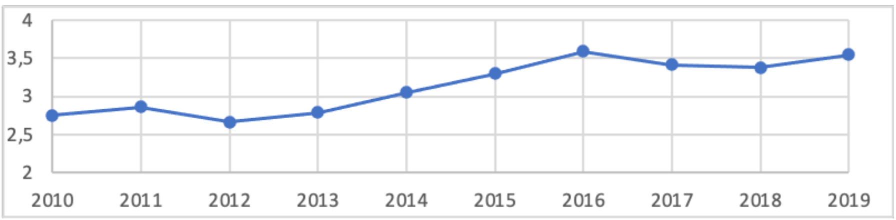

Figure 1. LG administrative performance in Indonesia, 2010–2019

Sources: Processed Data, Ministry of Internal Affairs of The Republic of Indonesia.

Further analysis of LG administrative performance based on geographic area shows that LG administrations located in Java and Bali have the highest performance. This is followed by Borneo, Sumatra, and Sulawesi, with East Indonesia in last place and still needing significant improvement. This finding confirms the existence of a significant gap between East and West Indonesia (Muhtar 2023).

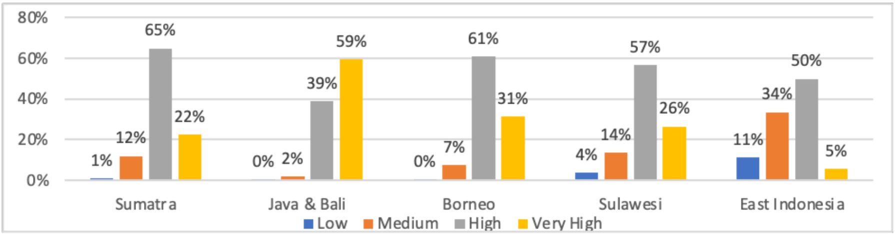

Figure 2. *LG administrative performance in Indonesia by geographic area*

Sources: Processed Data, Ministry of Internal Affairs of The Republic of Indonesia.

The overall characteristics of LG IAF during 2010–2019 imply that the internal auditing of LG in Indonesia is in the development stage. The capability shows an average value of 1.356, meaning that the IAF of LGs in Indonesia on average is at IACM level 1. As for maturity, the average is 2.051 – level 2. Meanwhile, the existence of expert auditors in LG IAFs is more common than that of skilled auditors, and the average size of LG IAF is 13 auditors.

Next, hypothesis testing is conducted with panel data regression. Firstly, we perform the regression model for the observation of all LGs, and then observations are subsampled into district and city LGs. The best estimation of our research model is the random effect following the Hausman test results. Overall, we find that LG IAF capability, maturity and expertise positively affects LG administrative performance, while the size of IAF exhibits an insignificant effect. These results are consistent in the district LG subsamples. Meanwhile, in the city LG analysis, only capability shows a positive effect – other IAF variables are insignificant. These results are presented in Table 3.

Table 3. *Panel Data Regression Analysis Result*

VARIABLES	(1)	(2)	(3)
	ALL LGs	District LGs	City LGs
$LGIA_{CAPABILITY\ it}$	0.180***	0.175***	0.184***
	(0.00910)	(0.0105)	(0.0171)
$LGIA_{MATURITY\ it}$	0.0503***	0.0564***	0.0298
	(0.0114)	(0.0132)	(0.0209)
$LGIA_{EXPERT\ it}$	0.116***	0.133***	0.0793
	(0.0365)	(0.0423)	(0.0645)

VARIABLES	(1)	(2)	(3)
	ALL LGs	District LGs	City LGs
$LGIA_{SIZE\ it}$	−2.00e−05	−0.000411	0.000460
	(0.00108)	(0.00127)	(0.00185)
$LGFIN_{REV\ it}$	0.123***	0.124***	0.0846
	(0.0212)	(0.0226)	(0.0721)
$LGFIN_{EXP\ it}$	0.120***	0.122***	0.134*
	(0.0249)	(0.0272)	(0.0722)
$LGFIN_{ASSET\ it}$	0.182***	0.207***	0.139***
	(0.0173)	(0.0198)	(0.0331)
$LGPOL_{SIZE\ it}$	0.00323**	0.00586***	−0.00947***
	(0.00132)	(0.00147)	(0.00279)
$LGPOL_{COAL\ it}$	0.0964***	0.0958**	0.0353
	(0.0370)	(0.0415)	(0.0791)
$LGPOL_{GENDER\ it}$	0.482***	0.437***	0.664***
	(0.105)	(0.121)	(0.192)
$LGHR_{AGE\ it}$	0.00394	0.000632	−0.000894
	(0.0275)	(0.0317)	(0.0518)
$LGHR_{EDUBACK\ it}$	0.00629	0.00401	0.0169
	(0.0156)	(0.0175)	(0.0327)
$LGHR_{TENURE\ it}$	0.0146***	0.0136***	0.0149**
	(0.00381)	(0.00436)	(0.00739)
$LGTYPE_{\ it}$	0.115***		
	(0.0348)		
Constant	−9.914***	−10.80***	−7.434***
	(0.503)	(0.576)	(0.999)
Observations	5,036	4,106	930
Number of LGs	508	415	93
R-square	0.3882	0.3981	0.3647
Wald Chi-Square	3032.63	2481.53	587.47
Prob.	0.000	0.000	0.000

**** significant at 0.01 level; ** significant at 0.05 level; * significant at 0.1 level.*

IAF capability has a positive effect on LG administrative performance. Our empirical evidence supports several previous studies that found positive implications of LG IAF capability for local governance (Aksoy and Kahyaoglu 2013; Sembiring et al. 2018; van Rensburg and Coetzee 2016; Baltaci and Yilmaz 2006). The BPKP's LG IAF capability development strategy, as regulated in BPKP Head Regulation Number PER-1633/JF/2011, needs to be optimized so that LGs will be able to deliver desired performance levels, consistent with Van Looy, De Backer, and Poels (2011). A higher level of IAF capability enhances administrative compliance with the existing law and regulation. With proper IAF capability, the implementation of LG affairs will also run well (Sembiring, Bukit, and Akhmad 2018) to finally realize higher administrative performance.

IAF maturity exhibits a positive effect on LG administrative performance. The BPKP's increasing concern for LG IAF maturity is relevant for performance achievement. A higher level of maturity is essential for supervising LG activities. An LG whose IAF is matured is equipped with the necessary organizational structure, auditing standards, documentation procedure, and information technology to comprehensively perform supervision activities (DeSimone, D'Onza, and Sarens 2019). Therefore, monitoring the administration's performance will be more consistent, effective and efficient (Lenz, Sarens, and D'Silva 2014). The maturity of LG IAF in less developed LGs must receive more attention from the BPKP to ensure good governance and further improve performance.

IAF expertise also positively affects LG administration performance. The individual auditor's expertise is crucial in carrying out audit duties (Abbott et al. 2016) – specifically in supervision (Cohen and Sayag 2010) to support IAF effectiveness (Gamayuni 2018a) and efficiency (Lee and Park 2016). More expert auditors in LG IAF enables better analytical ability in assessing the compliance of the implementation of LG programs with the regulation. With more expert auditors, the IAF can also cover more governance issues for providing recommendations to solve problems (Aikins 2012). Based on this finding, the BPKP must pay attention to the availability of expert auditors, especially for LGs whose IAFs have insufficient expert auditors.

IAF size has no significant effect on LG administrative performance. In general, the sufficient availability of human resources is essential for IAF effectiveness in the public sector (Asiedu and Deffor 2017; Alzeban and Gwilliam 2014) thanks to the higher possibility of proper workload distribution and rotation options in audit duties (Christ et al. 2015). Our findings emphasize that the number of auditors in an LG IAF must be ideal following the workloads in supervising the activities and resources of the LG. Insufficient auditors results in a less successful and ineffective IAF (Noor and Mansor 2019). In contrast, an excessive number of auditors possibly makes the activities of the IAF inefficient. Indeed, there is still a considerable gap in human resource availability in the IAF of LGs in Indonesia, especially within and immediately outside Java. This may be the reason why we have this result.

Conclusion

Our study investigates the role of LG IAF characteristics on LG administrative performance in Indonesia, with the following conclusions:

1. Overall, we find that the administrative performance of most Indonesian LGs has reached a high level since 2015, despite several LGs remaining unable to achieve this. Based on geographical area, LGs in Java and Bali have the highest accomplishment, followed by Borneo, Sumatra, Sulawesi, and East Indonesia.

2. Our study provides robust empirical evidence that LG IAF capability, maturity, and expertise positively affects LG administrative performance. Higher internal audit capability, maturity, and expertise matter for optimizing LG supervision in realizing better administrative performance.
3. Our findings provide practical implications for the BPKP, specifically regarding their function in LG IAF development. Continuous development programs need to be implemented optimally, especially in human resources and technology, to improve LG IAF supervision following the roadmap. Regarding the performance gap between regions, the government should also ensure that less developed areas receive proper resources to improve their supervision. Finally, all LGs can be expected to realize public accountability, one aspect of which is having good performance.
4. Future studies can use a mixed method with quantitative and qualitative analysis to strengthen these findings and provide clearer confirmation from practitioners (Ferdous and Islam 2021).

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VIETOS VALDŽIOS ADMINISTRAVIMO VEIKLOS VIDAUS AUDITO VAIDMUO: INDONEZIJOS PATIRTIS

Anotacija. *Šiuo tyrimu siekiama pateikti išsamią vidaus audito funkcijos charakteristikų ir vietos valdžios institucijų administravimo veiklos Indonezijoje analizę. Tyrime naudoti oficialūs antriniai duomenys iš Indonezijos valstybinių reguliavimo institucijų, kuriose generuojami nesubalansuoti duomenys su 5038 stebėjimais, analizuotais taikant duomenų regresijos metodą. Analizė atskleidė, kad Indonezijoje nuo 2015 m. daugumoje regionų buvo pasiekta aukšto lygio administravimo rezultatų, o kai kuriuose regionuose (vietos savivaldos lygmeniu, taikant veiklos auditą) Javoje ir Balyje tie rezultatai buvo aukštesni, palyginti su Borneo, Sumatros, Sulavesio ir Rytų Indonezijos regionais. Taip pat darbe atskleidžiama, kad vidaus audito funkcijų pajėgumai, branda ir kompetencija teigiamai veikia vietos valdžios institucijų administravimo veiklą Indonezijoje. Tinkamos vidaus audito charakteristikos yra būtinos optimizuojant vietos valdymo priežiūrą, siekiant geresnio administravimo. Taip pat siūloma už vidaus audito įgyvendinimo plėtrą at-*

sakingai Indonezijos Finansų ir plėtros priežiūros agentūrai (BPKP) tinkamai įgyvendinti nuolatinės plėtros programas. Tinkamas žmogiškųjų išteklių paskirstymas ir technologijų naudojimas yra būtini, kad administravimo priežiūra būtų kokybiškesnė ir užtikrintų viešąją atskaitomybę.

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ENVIRONMENTAL POLICIES AND PRACTICE IN GEORGIA: SOME INDICATIONS TO CONSIDER ON THE WAY TO SUSTAINABILITY

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Abstract. *The significance of environmental governance is increasing worldwide, and Georgia is no exception. This article uses wide-ranging sources to provide comprehensive qualitative and quantitative data to discuss the most important aspects of environmental policy directions in Georgia. The results of the study show that: (a) it is crucial to increase public awareness about the importance of climate change and environmental protection; (b) introducing environmental and climate-related goals and objectives and green budgeting principles in national priorities is as important as implementing them effectively into practice; and (c) the practice of regulatory impact assessment needs further development in Georgia, especially in the environment and climate-related areas. Finally, the paper concludes that the lack of historical data is the main limitation for the current research, and proposes that scientific and practical work continues in the future to further explore the relationships between the country's environmental policies and aspects of sustainable development on both an individual and public level.*

Keywords: *Climate change; Environmental governance; Environmental protection; Regulatory Impact Assessment; Green budgeting.*

Reikšminiai žodžiai: *klimato kaita; aplinkos valdymas; aplinkos apsauga; reguliavimo poveikio vertinimas; ekologiškas (žaliasis) biudžetas.*

Introduction

The importance of environmental and climate change policies has grown in recent decades following ecological challenges, biodiversity loss and increasing environmental pollution, which cause social, healthcare and economic losses worldwide. It is estimated that 51 countries around the world will lose 10–20% of their Gross Domestic Product

(GDP) by the end of this decade as a result of an ecosystem crisis (Taylor 2021). Between 1980 and 2020, economic losses equal to €487 billion were recorded in the 27 member states of the European Union (EU) due to climate-related events (EEA 2023). According to Eurostat, in the same 27 EU member states, heat, floods and hurricanes caused economic losses amounting to €145 billion during the last decade (Ellerbeck 2022). Environmental pollution is directly related to the deterioration of human health and wellbeing (WHO, n.d.), which has significant costs for society and the economy. Studies show that the Environmental Kuznets Curve (EKC) – according to which environmental damage increases at the initial stage of economic development, and damage decreases in economically rich countries – is not confirmed in practice (Wang and Lu 2019; Almeida et al. 2017), and having proper environmental policies and practices is equally important in all countries, irrespective of their level of economic development. Studies further reveal that the level of public education is related to the correct perception of environmental issues (Kassouri and Altıntaş 2020), and that institutional, cultural and environmental factors are perhaps more important than the wealth of nations in determining the choice in favour of sustainable development (Dietz, Rosa and York 2012).

Numerous global platforms and international treaties have been created to tackle the current ecological challenges that the world faces (such as the UN Sustainable Development Goals (SDGs), the Paris Agreement, Association Agreements with European Union, etc.). In accordance with the international agenda, the significance of environmental governance in Georgia is also increasing, and the country has set goals and is striving to achieve sustainability in all areas of development. This issue is particularly important for Georgia considering the current ecological challenges in the country. The damage caused by air pollution in Georgia exceeds $1 billion annually, which is approximately 6.2% of the country's GDP (World Bank 2020). In 2017, the total volume of greenhouse gas (GHG) emissions in Georgia was 17.8 megatons, which was 11% more than the 2011 level (National Statistics Office of Georgia, n.d.). It is also important to note that Georgia ranks 103rd in the world in the Environmental Performance Index, with a total of 39.1 points (Wolf et al. 2022). Moreover, the latest Ecological Footprint results show a biological deficit for Georgia at the level of –1.06 (Global Footprint Network 2022), putting the country in 105th place in the world in terms of ecological sustainability.

The objective of this paper is to study the legal and institutional frameworks working towards climate change resilience and green transition management in Georgia. Georgia has started to implement environmental and climate change policy principles at the legislative and policy levels. However, it is equally important to put these principles into practice and ensure effective and efficient implementation. On the way to sustainable development, it will be essential for the country to: support and increase public awareness of environmental issues; enhance the ex-ante and ex-post regulatory impact assessment system and integrate high-quality environmental analysis within public policymaking; and implement green budgetary principles into practice. To this end, all respective stakeholders, state and non-state actors, and interested parties should ensure that proper institutional frameworks are established and the environmental and climate change governance system is effectively implemented in practice.

Materials and methods

This research uses comprehensive secondary data sources and both quantitative and qualitative data analysis. The sources employed can be grouped into three categories.

(a) Reviewing existing literature, theoretical frameworks and best practice – international best practice was examined within this study, as part of which scientific articles, methodologies and guidelines as well as the assessments and indices of international organizations were used to enrich the analysis.

(b) Studying regulations, laws and examining strategy and policy documentation – wide-ranging types of laws, regulations and general legislative documentation (orders, resolutions, etc.) were scrutinised for this research. Various kinds of strategic and policy documents (international frameworks, official governmental documents) were explored and comprehensively studied.

(c) Quantitative data collection and analysis – general economic and environmental statistical data was collected from the National Statistics Office of Georgia (n.d.), and budgetary information was gathered through publicly available budgetary documentation from the Ministry of Finance of Georgia (MoF).

Within this study, it was decided to present the results for Georgia and build an analysis in four core directions: (i) legislative framework; (ii) the regulatory impact assessment (RIA) system; (iii) strategy and policy directions; and (iv) budgeting and financing. The rationale behind choosing this classification is that all four directions, both separately and together, provide the most important foundations for ensuring an effective system for environmental governance in the country. The first foundation is laid by a proper legislative framework, where laws and regulations ensure that fair rules are established for everyone in society and the commitments and responsibilities of state representative bodies in the process are outlined. RIA is then separately analysed in this article as it is believed to have a special role in modern evidence-based public policymaking, especially for Georgia which is a newcomer to the RIA system. Next, the international sustainability agenda as well as national strategy and policy documents are significant to consider for environmental policy analysis as they provide the main milestones, goals and objectives, visions and actions of the country for the medium- and long-term future. Lastly, all the actions and measures envisaged by environmental programs and projects necessarily need budgeting (efficient budgeting, to be precise) and financing. Therefore, introducing the core budgetary data in this study serves the purpose of stressing the importance of relevant fiscal policy in environmental governance in Georgia.

Results and discussion

Sustainable development in today's terms can be an indicator of wellbeing and welfare in societies, as it encompasses all the main directions of human development in three broad fields: economic, social and environmental. It is difficult to agree on a common definition of happiness or wellbeing that is acceptable to everyone; however, ongoing global challenges make it clear that this is not determined by economic factors alone

(OECD 2015). Today, countries agree that the balance of social, environmental and economic aspects is the main principle of sustainable development. Therefore, the ultimate goal of development should be the welfare economy, because this makes both the ecosystem and people part of the development process (Fioramonti 2016), and the effectiveness of state policy decisions should be evaluated in relation to public welfare (Helliwell et al. 2023).

Methodology on the application, measurement and evaluation of general wellbeing concepts (including diverse economic, social and environmental aspects) is constantly developing. Several international and national models and indices measuring the general level of human development and wellbeing in countries already integrate environmental components in their assessments. For example, an ecological component was recently added to the Human Development Index (UNDP 2022). Moreover, the "implementation of agreements related to environmental protection" appeared in the Global Competitiveness Index (GCI) for the first time in 2019 (Schwab 2019). Approaches are also changing at the national level, and environmental impacts are gaining more importance there. For example, selected environmental components (air quality and GHG emissions) are among the determinants of Australian national welfare indicators (AIHW 2021). In addition, according to the UK's National Wellbeing Dashboard (ONS UK, n.d.), public wellbeing is assessed in ten areas, including such aspects as personal wellbeing and the environment.

In parallel with global developments, the importance of climate and environmental issues in Georgia is also increasing, although there are still some challenges at the public and policy levels. Among the barriers and gaps identified for the effective implementation of climate change mitigation measures, the lack of public awareness and low level of interest on the part of research and academic institutions in environmental issues are mentioned in the country's report (MEPA 2019a). According to a recent public opinion survey in Georgia (WFD 2022), climate change is generally important for the Georgian population; however, this is more at the global and national level (75% and 69%, respectively) than personally (59%). Only 8% of survey respondents "chose the introduction of state regulations as the most important way to dramatically limit climate change"; although a total of 88% of respondents "supported the introduction of the climate change law and relevant regulations".

Some environmental policy and government indications for Georgia to consider on the way to sustainability are presented below in four selected directions: (i) the legislative framework; (ii) the RIA system; (iii) strategy and policy directions; and (iv) budgeting and financing.

Legislative framework

The Constitution of Georgia (Parliament of the Republic of Georgia 1995) establishes that the state takes care of environmental protection and the rational use of natural resources. This document has a separate chapter devoted to "the right of environmental protection", according to which: "Everyone has the right to live in a healthy environment. Everyone has the right to timely receive complete information about the state of the environment. Everyone has the right to take care of the environment". According to the Constitution, issues such as (a) the environmental monitoring system and (b) the legislation of land, minerals and natural resources belong only to the special governance of the highest state bodies of Georgia.

The Constitution defines the main roles and responsibilities of various branches (legislative, executive etc.) and levels of the government (central, autonomous republic and local governance). On the legislative side, Parliament is the highest representative body of the country, determines the main directions of the country's domestic and foreign policy (including environmental protection and climate change issues), and controls the activities of the Government of Georgia. The Ministry of Environmental Protection and Agriculture (MEPA) of Georgia is the executive government body responsible for the implementation of state policy in the areas of environmental protection and climate change, environmental assessment affairs, and promoting the introduction of sustainable development and green economy principles in the country. The powers of the MEPA are executed by the Ministry itself and numerous state agencies presented as different LEPLs (Legal Entity under Public Law) under the MEPA. Environment- and climate-related issues are executed not only at the central state level, but also at the levels of autonomous republics and local governments (municipalities). According to the Local Self-Government Code of Georgia (Parliament of Georgia 2014), among the responsibilities/powers of the municipalities are the following environment-related issues: (1) the management of natural resources of local importance, including water, forest and land resources; (2) the development and approval of municipal spatial planning plans, master plans and detailed development plans; (3) municipal waste management; (4) the provision of water supply and drainage and the development of the melioration system of local importance; and (5) participation in the development of the plan for the restoration and planting of the windbreak (field protection) strip. Using the examples of several Georgian municipalities, it is observed that on average 10–12% of annual budgetary expenditures are allocated to environmental and climate-related programs.

The Law on Environmental Protection (Parliament of Georgia 1996) is the main body of law in the field. This law defines the main principles of environmental protection and presents provisions regarding economic mechanisms in this field. Two other core laws were adopted in recent years regarding environmental protection, namely: the Environmental Assessment Code (Parliament of Georgia 2017b) and the Law on Environmental Responsibility (Parliament of Georgia 2021b). The former regulates issues related to strategic documents and public or private activities which may have a significant impact on the environment, human life and/or health after implementation. The scope of this Code includes the procedures of environmental impact assessment, strategic environmental assessment\, cross-border environmental impact assessment, public participation in the relevant decision-making process, and procedures of conducting expertise. The latter was adopted in order to legally regulate issues related to harming the environment in accordance with the "polluter pays principle". In addition to the abovementioned, there are other laws/normative acts regulating special environment-related issues, such as forest management, systems of protected areas, atmospheric air protection, waste management, the windbreak (field protection) strip, land and the sustainable management of agricultural land, energy and water supply, renewable energy sources and energy efficiency, energy efficiency in buildings, and others.

Regulatory impact assessment system

The Regulatory Impact Assessment (RIA) system is a component of better regulation and an important element of evidence-based policy-making. It has a special role in modern public management systems and within the sustainable development agenda, as the RIA system provides a framework for analysing different aspects of impact, including the spectrum of impact in three wide areas: economic, social and environmental (European Commission 2009). Thus, a well-functioning RIA system should ensure a framework in the country which is decisive for achieving the SDGs. RIA is new for Georgia, although it has been on the agenda of developed countries since the second half of the last century (Renda 2011). At present, 47% of the world's economies conduct RIAs (World Bank 2018), including all highly developed nations (OECD 2022).

The RIA system has been formalised in Georgia since 2019–2020, although some provisions regarding planning and designing the RIA system in the country have been mentioned in different strategy and policy documents for a number of years. Back in 2014, a note appeared in the Association Agreement between Georgia and the EU (2014) stating that "the Parties agree to cooperate in promoting regulatory quality and performance, including through exchange of information and best practices on their respective regulatory policies and regulatory impact assessments". In January 2020, Government Resolution No. 35 on the approval of the RIA methodology went into force. Hence, RIA became mandatory in Georgia for the respective draft laws initiated by the Government, and a separate unit (Economic Policy and Regulatory Impact Assessment Division) responsible for conducting RIAs was created in the Ministry of Economy and Sustainable Development (MOESD). The aforementioned Resolution indicates that an RIA is required if legislative amendments are made to the selected 20 laws. At first glance, it can be seen from the specifics of these listed laws that the country's approach to the implementation of RIAs is more focused on business and the economy, which was also mentioned in the "Georgia 2020" strategy document (Government of Georgia 2014) as well as in respective Government programs (Government of Georgia 2013–2021) and in the medium-term Basic Data and Directions (BDD) budgetary framework documents (MoF 2014–2022): "The Government of Georgia will improve the Regulatory Impact Assessment (RIA) system, the purpose of which is to assess the impact of both new legislative initiatives and existing legislative acts on the business environment". The most recent government program – "Building European State 2021–2024" (Government of Georgia 2021) – and the BDD document of the country for 2023–2026 (MoF 2022) note that: "The Regulatory Impact Assessment (RIA) tool will be expanded, which will allow us to analyse the impact of each policy decision on the economy in advance, in order to avoid possible negative consequences". As mentioned above, the Resolution gives a list of 20 diverse laws, which are mostly business and economy-focused regulatory acts. However, the list also includes the Georgian Law on Environmental Protection (Parliament of Georgia 1996). The Government's RIA methodology also indicates that the intervention selected as a result of an RIA should be feasible – it should be in line with the government's program and other strategic documents, including the SDGs.

As the data (published RIA reports) shows, RIAs in general (and specifically those regarding environment-related issues) were more actively implemented in practice before 2020. An RIA on the reform of social forest cutting was prepared in 2018 (Parliament of Georgia 2018). In addition, an RIA on the Law of Water Resources Management (ISET-PI 2017), an RIA of the Draft Law of Georgia on Biodiversity (ISET-PI 2018) and an RIA on the Draft Law on Windbreaks (ISET-PI 2019) were also prepared in previous years. The COVID-19 pandemic coincided with a period of RIA formalisation in Georgia, and this undoubtedly affected the practical implementation of RIAs in the country. The pandemic also affected the global impact assessment system (OECD 2020). It should be taken into account that the environmental effects of the pandemic were multifaceted and heterogeneous (EEA 2020), posing major challenges to sustainable development. It is thus important to rebuild impact assessment practice and continue ex-ante and ex-post analysis in public policymaking.

Strategy and Policy Directions

Georgia has joined various international platforms setting long-term SDGs in the directions of climate change and environmental protection. In 2015, Georgia undertook commitments under the United Nations' 2030 Agenda to implement all seventeen SDGs and respective targets (adjusted for Georgia). Moreover, Georgia is a member of both rounds of global climate change actions initiated by the United Nations Framework Convention on Climate Change (UNFCCC). In particular, Georgia ratified the Kyoto Protocol in 1999 and the Paris Agreement in 2017. Following the ratification of the Paris Agreement in 2017, Georgia developed several strategic policy documents, among which three are the most important and inter-related.

- The Climate Change Strategy 2030 (MEPA 2021a), which presents the country's goal of reducing GHG emissions in total and in seven development sectors, specifically: energy generation and transmission; transport; buildings; industry; agriculture; waste management; and forestry.
- Georgia's updated Nationally Determined Contribution (NDC) (MEPA 2021b), which further notes that Georgia makes (a) an unconditional commitment to reduce total GHG emissions by 35% by 2030 and (b) a conditional commitment to reduce GHG emissions by 50–57% for the same period.
- The Fourth National Environmental Action Program of Georgia for 2022–2026 (NEAP 4) (MEPA 2022), which presents environmental and climate change policy objectives in several directions, such as: environmental governance, water management, waste management, biodiversity and protected areas, forest management, climate change, environmental education/awareness raising, etc.

According to the Association Agreement between Georgia and the EU (2014), cooperation between the parties is important within both the environmental protection and climate change directions. The Association Agreement indicates that the parties reaffirm their commitment to achieving the objectives of the UNFCCC and the Kyoto Protocol. The Association Agreement focuses on the implementation of activities in the direction of environmental statistics and cooperation between the parties to integrate environmental protection issues not only in environmental policy, but also in other policy areas.

Environmental protection and climate change issues are reflected in state strategy and policy documents. The Government's 2021–2024 Program Toward Building a European State (Government of Georgia 2021) presents several reforms that the country plans to implement in order to improve the environmental situation. The same reform directions are also mentioned in the medium-term budgetary framework of the country, called BDD. BDD 2023–2026 (MoF 2022) indicates that the state aims to develop a Georgian taxonomy of sustainable financing, the purpose of which will be to clearly define which business activity, program or project can be considered to be resource-efficient, energy-efficient, green, sustainable and inclusive. It is also worth mentioning that Georgia's Sustainable Finance Taxonomy (President of the National Bank of Georgia 2022) was elaborated in 2022, providing a classification system for commercial banks to identify economic activities that deliver on key climate, green, social, or sustainability objectives.

Several sector-specific strategy and policy documents for Georgia address mainstream issues that are important for environmental protection and climate change. One of them is the SME Development Strategy of Georgia 2021–2025 (MOESD 2021), which outlines the need for a "green growth strategy" in the country. This, together with the "green growth concept", should be designed to determine the possible directions of the green economy. Another document is the 2021–2027 Strategy of Agriculture and Rural Development of Georgia (MEPA 2019b), which presents country policy goals in several directions, among which are the sustainable use of natural resources, the preservation of ecosystems and climate change adaptation.

BDD 2023–2026 further indicates that state and municipal policies concerning the preservation and improvement of the ecological conditions in specific areas should be consistent with each other, taking into account economic feasibility and environmental efficiency. It is also worth mentioning that, in addition to the commitments made at the central level, local self-governments in Georgia also participate in international platforms for the achievement of environmental goals. For example, in total, 27 municipalities in Georgia have become signatories of the Covenant of Mayors since 2010 (Energy Efficiency Centre of Georgia 2023), and one third of them have submitted required action plans so far.

Budgeting and financing

Several significant legislative changes have been made in Georgia in recent years regarding the state budgetary financing of climate and environmental protection.

- Amendments were made to the Law of Georgia on Environmental Protection (Parliament of Georgia 2017a), and it was determined that it is not permitted to reduce state budgetary allocations for environmental measures under the respective classification code, compared to the previous year.
- In the same amendment project (Parliament of Georgia 2017a), a temporary rule for financing environmental measures was introduced. This rule indicates that before commitments under the Association Agreement are fulfilled, the annual state budgetary allocations in the program codes related to environmental measures should be increased by at least 5% compared to the previous year.
- Amendments were made to the Budget Code of Georgia (Parliament of Georgia 2021a), and the Environmental Program implemented by MEPA within state budgetary assignments became the subject of special financing rule from the state budget: "Within the allocations of MEPA, the Environmental Program for the planned budget year is financed at least by the amount of funds received in the state budget in the last budget year in the cases stipulated by the Law of Georgia on Environmental Responsibility".

It is necessary to mention that the Green Budget Guideline (Parliament of Georgia and CENN 2021) was prepared in 2021 for Georgia. This document presents the main principles of green budgeting as defined by the OECD framework, analyses Georgian state budgetary documents from an environmental perspective, and issues recommendations for various public agencies.

In parallel to these legislative changes, it is important to observe the changes that state budgetary assignments have undergone in the directions of the environment and climate change in recent years. Compared to 2018, state budgetary assignments have almost doubled, reaching GEL 116 million in 2021 in the field of environmental protection in Georgia (MoF 2018–2021). The tendency for the current year is also positive in this regard. The largest share (60% in total) of state environmental funding in 2023 is taken up by two sub-programs: 1. the protection of biodiversity and landscapes; and 2. waste collection, recycling and disposal (MoF 2022). The financing of environmental protection accounted for, on average, 0.65% of total budgetary assignments and 0.17% of nominal GDP in 2018–2020. In the same period, these indicators were equal to 1.7% and 0.7%, respectively, for OECD countries (OECD, n.d.).

Conclusions

1. The ecological challenges that the world faces today are important not only from the environmental protection and social points of view, but also from a directly economic perspective. Therefore, it is necessary to integrate ecological components into each country's development agenda. The damage that the world, including Georgia, receives as a result of ecological degradation is significant and increasing. Georgia's scores are low in terms of two international assessments (the Environmental Performance Index and the Ecological Footprint) which measure the environmental sustainability of countries. This highlights the significance of integrating environmental and climate change-

related issues into the sustainable development agenda, reflecting them in national priorities and effectively implementing them in practice.
2. Taking into consideration the social and economic situation of the population in Georgia, it is important to take into account the fact that environmental issues may not be as significant a priority for the Georgian population as social and economic matters. Hence, it is crucial to ensure that the awareness of the general public is increased regarding the importance of climate change and environmental protection issues in connection with the country's sustainable development, as well as regarding individual welfare and wellbeing.
3. The advancement of the practice of impact assessment when it comes to regulations and government interventions is of the utmost importance. Georgia is a newcomer to the widely known RIA system, but it should be remembered that the timing of RIA formalisation in Georgia (2020) coincided with the COVID-19 pandemic, and this undoubtedly affected the effective implementation of the reform in practice. The RIA system is an important element of evidence-based policy decisions, so widening the scope of RIAs in general – and particularly with regard to environmental and climate change-related regulations – is necessary.
4. It is important to ensure the effective and efficient budgeting of environmental and climate-related programs. Applying green budgeting principles into practice means not only having a proper amount of financing for environmental directions, but also ensuring that that all budgetary programs (especially capital/investment programs which have significant environmental impacts) are viewed from an environmental perspective.
5. Environmental and climate policy issues are novel for Georgia in public life and policy discussions, and relevant historical data is not yet available to discuss these matters in more detail. This can be considered the main limitation of the current study. Future works will be required to continue in this direction to demonstrate the scientific value and practical implications of environmental policies in Georgia in relation to personal wellbeing and in line with the global sustainable development agenda.

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N. Gaprindashvili

APLINKOS POLITIKA IR PRAKTIKA SAKARTVELE: KELETAS POŽYMIŲ, Į KURIUOS REIKIA ATSIŽVELGTI SIEKIANT TVARUMO

Anotacija. *Aplinkos valdymas tampa vis reikšmingesnis visame pasaulyje ir Sakartvele. Straipsnyje, aptariant svarbius aplinkos politikos pokyčių Sakartvele aspektus, naudojami plataus spektro šaltiniai, išsamūs kokybiniai ir kiekybiniai duomenys. Tyrimo rezultatai rodo, kad (a) itin svarbu didinti visuomenės informuotumą apie klimato kaitos ir aplinkos apsaugos svarbą; b) su aplinka ir klimatu susijusių tikslų ir uždavinių, taip pat* *ekologiško (žaliojo) biudžeto sudarymo principų įtraukimas į nacionalinius prioritetus yra toks pat svarbus kaip ir veiksmingas jų įgyvendinimas praktikoje; c) Sakartvele reikia toliau plėtoti reguliavimo poveikio vertinimo praktiką, ypač su aplinka ir klimatu susijusiose srityse. Galiausiai darbe daroma išvada, kad istorinių duomenų trūkumas yra pagrindinis dabartinių tyrimų apribojimas, ir siūloma tęsti mokslinius ir praktinius darbus ateityje – toliau tirti ryšius tarp šalies aplinkosaugos politikos ir darnaus vystymosi aspektų individo ir visuomenės lygmeniu.*

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PUBLIC COMMUNICATION THROUGH SOCIAL MEDIA DURING THE COVID-19 PANDEMIC IN SLEMAN REGENCY, YOGYAKARTA

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Abstract. *The role of the government in implementing public communication was important when handling COVID-19, both as a method of prevention and as a form of persuasion to adopt COVID-19 vaccination. This was undertaken by the Sleman Regency Government through public relations, with the appointment of a spokesperson for the COVID-19 Task Force and the active formulation of strategies in government communication regarding the handling and prevention of the COVID-19 pandemic through social media. This shows the importance of public communication by digital-based governments during a pandemic. This study aims to determine the social media-based communication model of the Sleman Regency Government when handling COVID-19. This research uses a descriptive qualitative approach with a case study method. Data collection was carried out through in-depth interviews and FGDs with public relations staff of the Sleman Regency Government, Regional Apparatus Organizations (OPD), and the people of Sleman. The analysis technique uses the Miles and Huberman model, consisting of three streams of activities that occur simultaneously: data reduction, data presentation, and drawing conclusions/verification using source triangulation techniques. The results of the study show that government communication activities carried out by the Sleman Regent have a great influence and are trusted to convey information related to the COVID-19 pandemic. This can be seen on social media (on Facebook and X, formerly Twitter, @KabarSleman, and on Instagram @HumasSleman), where warnings related to COVID-19 were routinely conveyed to the fullest extent by the Regent of Sleman Regency. In addition, public relations still involves conventional media such as newspapers, outdoor media and digital outdoor media such as LED screens. The novelty of this research is in the notion that the government must have one voice in public communication, even though it uses various channels. Information provided to the public is designed to follow central government appeals, and must have the same news value so as not to cause public confusion.*

Keywords: *Government Communication; Social Media; Sleman Regency; COVID-19.*

Reikšminiai žodžiai: *vyriausybės komunikavimas; socialinės medijos; Slemano regentystė; COVID-19.*

Introduction

The COVID-19 pandemic at the end of 2019 was a non-natural disaster that became an international crisis. Yogyakarta Special Region had the highest number of COVID-19 cases in Indonesia, but was able to vaccinate its population of 1,318,086 within 11 months of the outbreak of the pandemic (Surianta 2021). This strong desire for vaccination illustrates the level of education of the public on information related to vaccination and the role of the public relations strategy of the Sleman Regency Government in communicating policy to the public regarding the handling and prevention of the COVID-19 pandemic. Public communication is an activity that involves developing a communication strategy to provide information, form awareness, and influence people's behavior (Dijkzeul and Moke 2005). In public communication, it is necessary to compose messages by creating a common meaning and adapting to the community's needs. Public communication should be consistent, formal, and oriented toward certain goals (Subandriyo 2020). Public communication is a communication process carried out by the government or public institutions that serves to provide information and policies that have been formulated. Public communication can be useful as a governmental tool in conveying effective messages as an effort to overcome disinformation related to COVID-19 (Nabila and Santoso 2021).

The government regulated the management of public communication as stated in Presidential Instruction (Inpres) Number 9 of 2015 concerning the Management of Public Communications. This Instruction was compiled by the Ministry of Communication and Information with the aim of supporting the success of the working cabinet, absorbing public aspirations and accelerating the delivery of information on government policies and programs. To convey public communication so that it is accepted by the public, careful and precise planning is needed. Thus, the right communication strategy is required so that the message can be conveyed and can function as a space for open dialogue between the public and the Government.

During the COVID-19 pandemic, public communication was performed through various media platforms, as indicated by No. 1 part C of Circular Letter document Number Hk.02.01/Menkes/199/2020 concerning Communication for Handling Coronavirus Disease 2019 (COVID-19) "Making Communication Products and Conveying/Disseminating Information in accordance with Public Communication Protocols (Letter Documents). Circular of the Minister of Health". The basis of this regulation is the idea that it does not allow communication in the form of socialization or direct face-to-face contact, so e-Government regulations are a solution for the government in providing information related to COVID-19 to the public quickly and efficiently. Based on regulations on Central Government policies submitted to Regional Governments, each Regional Government must have a digital media product to communicate between the Government and the community. This drove the Sleman Regency Government to implement digital-based public communication through social media.

The Sleman Regency Government actively uses digital media to convey information and communicate with the public. Digital-based public communication is a form of public relations involving carrying out e-government regulations that makes it easier to provide services to the community. According to Ohmae (Wasisto 2003), in the future the world will become borderless; there will be no physical boundaries between a country and a government administration. As McLuhan asserted, communication as a form of social interaction no longer has to be conducted face to face (physically), but can be conducted through audio (sound) and visual (image) means via the internet using a webcam (Windiasih 2019).

Therefore, this research focuses on examining the social media-based public communication model used by the Sleman Regency Government in tackling the COVID-19 pandemic. This study describes the form of public communication carried out by the Sleman Regency Government as part of the COVID-19 pandemic task force and its success in informing the public through digital-based communication by participating and paying attention to the actors, messages and media used. The results of the research can be used as a reference for social media-based government public communication models during the COVID-19 pandemic, which could be adopted by other districts. This research also adds empirical insights about social humanities, especially public communication and public relations communication.

Literature Review

The study of public communication through social media during the COVID-19 pandemic in Sleman Regency, Yogyakarta, develops previous research on public communication by government public relations strategies. This research involves the use of social media in disseminating information on government programs, and shows that social media is one of the most effective means of disseminating information. Each form of social media has specific uses that affect its advantages and disadvantages, and which need to be adjusted to in order to enable proper information dissemination (Novianti et al. 2020). Uthama, Saefulrahman, and Akbar's (2022) research shows that information media has not been fully able to achieve its goal of disseminating all information on government work programs, especially in the health sector, to the wider community because it does not necessarily cover all aspects of the community.

Regarding the state of the COVID-19 pandemic as a non-natural disaster, preventive communication is important. Nurjanah, Ishak and Sakir (2021) conducted a study that describes disaster communication in five disaster-prone provinces in Indonesia through conventional media (direct communication, HTs, mosque horn speakers) and new media (websites, WhatsApp groups, social media, and applications). Government public relations play a role in communication in pre-, during-, and post-disaster events by prioritizing communication, information, coordination and cooperation (KIKK), together with the OPD and the community (community leaders, religious leaders, and disaster care communities). In other words, both conventional and new media are inseparable in public communication.

The results of Rahmanto's (2022) research show that social media has a positive and significant effect on public perceptions of good governance and its three aspects. The findings of this study support previous research which indicates that the use of social media can increase government transparency and citizen participation. This is also supported by Roosinda (2021), who demonstrated that the government of Surabaya city uses Instagram as a forum for delivering information to the people of Surabaya, especially during the COVID-19 crisis. The Instagram content of the Surabaya city government, delivered through the @sapawargasby account, which is managed by the Surabaya Department of Communication and Information, is vital in this regard. The Surabaya Government is responsive in the application of prevention measures and health protocols to inhibit COVID-19, but it also displays other policies that are very beneficial to the people of Surabaya on Instagram (Roosinda 2021).

In addition, Firdaus, Tursina and Roziqin (2021) analyzed changes in the bureaucracy of the Indonesian Government during the COVID-19 pandemic. They discovered the challenges that must be faced in encouraging the transformation of the digital bureaucracy, where each stakeholder agreed that this transformation must be accelerated. The government is rapidly being forced to move toward a digital future and take advantage of significant opportunities to advance the knowledge and innovation ecosystem with technology, collaboration and co-creation. Previous research on public communication by government public relations departments has not discussed the content of public communication models in the COVID-19 pandemic with a digital approach, especially one that includes social media. The current research aims to fill this gap.

Methods

This research was conducted to uncover the role of the Sleman Regency Government in using social media in its efforts to communicate with the public regarding handling the COVID-19 pandemic. To establish this, the research method used in this study is a descriptive method with a qualitative approach. The researcher chose to use the descriptive method because this method can provide an explanation or picture of the actual situation of the research object. The descriptive research method is used to describe or analyze a research result but not to make broader conclusions (Sugiyono, 2013). A qualitative approach, according to Sugiyono, is based on the philosophy of postpositivism used in the natural conditions of the research object, where the researcher is a key instrument. The sampling of data sources was carried out in a purposive manner by taking samples and assigning special characteristics according to the research objectives (Sugiyono, 2013).

The researcher conducted this research by collecting data through interviews as well as via documentation. The research conducted by the author required data obtained from various sources. Each source or informant is an important part of the data collection technique, especially if the research is conducted using interviews. Data were obtained through in-depth interviews with the public relations department of the Sleman Regency Government via Shavitri Nurmala Dewi, the spokesperson for the COVID-19 Task Force of Sleman, and secondary data was attained via documents on social media (the Instagram, X, and Youtube pages of the Sleman Regency Government). The selection of respondents in this study was considered most appropriate because Shavitri Nurmala Dewi is a representative of the public relations department of the Government, as well as carrying out her role as a spokesperson for the handling of the COVID-19 pandemic.

Regarding data triangulation, interviews were also conducted with the Sleman community to obtain valid information and data suitability. Secondary data were collected from the internet and related documents. A data validity test was conducted through source triangulation. The Miles and Huberman model was utilized to analyze the data (Miles, Huberman and Saldana 2014). This method was chosen to obtain in-depth and precise conclusions from research results related to the use of digital media by the Sleman Regency Government through social media in an effort to communicate to the public regarding the handling of vaccination during the COVID-19 pandemic.

Results

Media are introductory or intermediary tools that function to convey messages or information from a source to the recipient of the message. Meanwhile, information is the collection of data or facts that have been processed in such a way as to produce something that can be understood and provide benefit to the recipient (Rahmani 2016). From this explanation, information media is composed of easy-to-use internet-based platforms that allow users to create and share information. In this case, the information media used by government agencies is social media. Therefore, government agencies utilize information media (social media) to maintain and enhance the reputation of institutions and to explore public aspirations. This study discusses the role of public communication in handling COVID-19 using social media to support message delivery.

Public Communication of COVID-19 Handling by the Sleman Regency Government

At the beginning of the COVID-19 pandemic, the Sleman Regency Government, as the regional government, could not take major preventive actions through public relations because the Indonesian Government system took its policy from the direction of the central government. Thus, the public relations department of the Sleman Regency Government carried out public communication when COVID-19 was present in the community. The message conveyed was up-to-date information regarding the development of cases and steps to reduce the spread of COVID-19, called *Citamasjajar (Cuci Tangan Pakai Masker Jaga Jarak)*.

Based on an in-depth interview with Dr. Shavitri Nurmala Dewi, who was responsible for the public relations of the Sleman Regency Government as well as serving as the spokesperson for the Acceleration of Handling COVID-19, the limited and outdated information in the above policy caused conflicts at the beginning between the central government and local governments. This is because the central government wanted everything centrally arranged, but the information conveyed took a long time, so local governments also took their own approach when dealing with their communities.

This was also stated in the results of research by Dunan, who said that the problem that occurs in disseminating information regarding central government policies to the regions is a lack of communication and coordination between government public relations departments at the central and regional levels (Dunan 2020):

> We, as the government's public relations officers, act as mediators between the government and the community. So, the messages we convey are the results of research, technical knowledge from meetings with agencies related to handling COVID-19, and the message of the importance of vaccination and *Citamasjajar*. *Citamasjajar* is an acronym for washing hands, wearing masks, and keeping a distance, a slogan created by the Health Department of Sleman Regency. (Shavitri Nurmala Dewi, Public Relations of the Sleman Regency Government. Interview results on March 14, 2022)

Good handling of the communication relating to this disaster has implications for the prevention of the spread of COVID-19. Based on news from IDXchannel.com and Republikajogja.co.id, COVID-19 cases in Sleman Regency began to decrease (Erlin 2022). On February 27, 2022, 769 cases were recorded. This figure then dropped drastically to 322 cases on February 28, 2022, and 555 cases on March 1, 2022. On February 28, 2022, Sleman confirmed that the COVID-19 number of cases in the regency was no longer the highest in Yogyakarta (Suryana 2022).

> We have to keep in touch with the community. That way, our goal is to provide information as community guidance and look forward to it being useful for the community to remind each other. (Shavitri Nurmala Dewi, Public Relations of the Sleman Regency Government. Interview results on March 14, 2022)

According to the public relations department of the Sleman Regency Government, public communication for non-natural disasters, such as the COVID-19 pandemic, contains messages that must be delivered quickly, accurately, and on a massive scale:

> Conveying information on COVID-19 and Merapi eruption is different, despite both being natural disasters, because people can physically see the condition of Merapi and they will easily believe it. However, we cannot see what COVID-19 looks like; therefore, the delivery of messages must be clear, accurate, massive and fast to prevent people from receiving wrong information from untrusted sources. (Shavitri Nurmala Dewi, Public Relations of the Sleman Regency Government. Interview results on March 14, 2022)

Proper public communication will provide useful information in reducing public panic due to unclear issues and rumors. The effort to achieve this was carried out by the public relations department of the Sleman Regency Government by providing accurate information with up-to-date and credible data:

> Mrs. Evi has been a public relations officer for a long time, and we, as the community, believe in the information she conveyed because accurate data always

> accompanies it. (Anton, Sleman Community. Interview results on April 2, 2022)

Public communication to reduce disaster risks in emergency and non-emergency situations has a variety of message strategies. These strategies can be adapted to local, regional, national and international conditions. Therefore, disaster communication is a dynamic and interactive process involving exchanges between various groups, as performed by the Sleman Regency Government. In handling the non-natural disaster of the COVID-19 pandemic, public relations departments also collaborated with relevant regional apparatus organizations (OPDs):

> The cooperation relationship in handling COVID-19 adjusts the distribution of concerns, including the education, communication and information, social, operational, and economic sectors. Regional apparatus organizations (OPDs) related to education include BPBD, the Education Department, Bapeda, Prof. Warno (an Expert), the Health Department, and the Culture Department. OPDs related to communication consist of BPBD, the Health Department, public relations departments of Sleman Regency, and Kominfo. Furthermore, social OPDs cover the Social Department, Health Workers, the Health Department, Public Health, BIN, and the P3AP Service. Then, OPDs related to operations involve the district head, BPBD, BKAD, POLRES, DANDIM, and BIN. Finally, economic OPDs include the Cooperatives, Industry and Trade Department, Economic Affairs, Banking, Bank Directors, and the Tourism Department. (Shavitri Nurmala Dewi, Public Relations of the Sleman Regency Government. Interview results on March 14, 2022)

The public relations department of the Sleman Regency Government explained that it was important to establish cooperative relationships with other agencies to improve the quality of information delivery and minimize misunderstandings. In addition to collaborating with the local government, the public relations department of the Sleman Regency Government also communicates with the aim of forming a community within the community. This is important considering that the government will not be able to operate alone without the involvement of the community. As stated by the Deputy Mayor of Yogyakarta, Heroe Poerwadi:

> By inviting the community to participate in handling COVID-19, the COVID-19 disaster will be more easily overcome and the community can adapt to the existing conditions as well as find their own way to rise from their condition. (Heroe, Pemkot DIY).

The form of communication carried out by the public relations department of the Sleman Regency Government in establishing direct public communication with the community was through a Whatsapp group. This group on Whatsapp consists of representatives from each Government Service related to handling COVID-19, the media, and representatives from each Kapanewon.

The Use of Social Media by the Sleman Regency Government in Handling COVID-19

The regulations of Central Government policies submitted to Regional Governments became the initial basis for implementing the use of digital media. This mainly included Circular Letter document Number Hk.02.01/Menkes/199/2020 concerning Communication for Handling Coronavirus Disease 2019 (COVID-19) – namely No.1 part C, which concerns "Making Communication Products and Conveying / Disseminating Information in accordance with Public Communication Protocols (Letter Documents) Circular of the Minister of Health". Besides this, the media is useful for gathering information and conveying messages, appeals, warnings, or invitations quickly to change behavior to comply with health protocols:

> The growing media, despite its negative effects, helps us spread information and listen to reports from the public directly. Thus, the government can provide information to the public quickly. (Shavitri Nurmala Dewi, Public Relations of the Sleman Regency Government. Interview results on March 14, 2022)

The digital media used by the Sleman Regency Government covers the website www.slemankab.go.id, the Kabar Sleman Facebook page, the @HumasSleman Instagram profile, the @KabarSleman X account, and the Sleman TV Youtube channel:

> In general, the message information we convey is relatively the same. However, it is back again to the community on what media and how often it is used. Therefore, we always try to provide as much information as possible from various existing digital media platforms. (Shavitri Nurmala Dewi, Public Relations of the Sleman Regency Government. Interview results on March 14, 2022)

The Sleman Regency Government has implemented digital communication techniques by compiling press releases every day for publication on websites, Instagram, and X by adding attractive designs so that information can be received properly and completely.

According to Shavitri Nurmala Dewi, the preparation of digital content on Instagram and X includes the core message of press releases delivered to conventional media. This is adapted to the nature of the social media audience, which prefers short and to-the-point information. In the Instagram content below, the main message is an official circular from the Regent of Sleman Regency outlining the core policy established.

The use of Instagram is sufficient to support the process of disseminating information for preventive steps and has several features, such as: uploading photos and videos, commenting, showing support (giving likes to a post), DM (direct messaging), exploring (providing other popular posts), and stories (allowing users to upload photos or videos separately from their feeds). One form of public communication implemented by the Regent of the Sleman Regency Government on digital media is provided in Figure 1.

Figure 1. *Instagram Content on the @HumasSleman page*

In addition to Instagram, the public relations department of the Sleman Regency Government employed X (formerly Twitter) to write posts. The information provided tended to be more interesting and clearer, with the help of infographics explaining the latest information on COVID-19 developments:

> With a supportive design, the information compiled in infographics makes it easier for us as the community to receive clearer information, images of visual aids become more points to help us process information effectively. Miyosa (Community of Sleman Regency. Interview results on March 20, 2022)

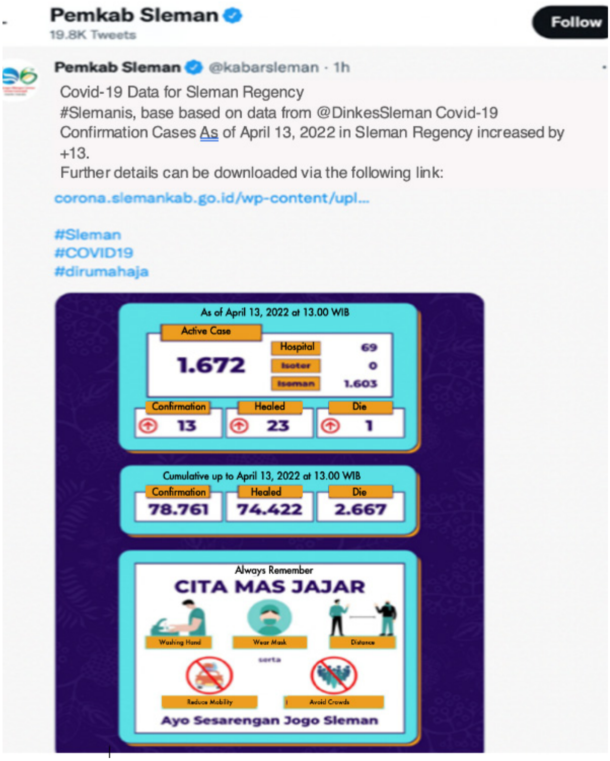

Figure 2. *X Content on the @PemkabSleman account*

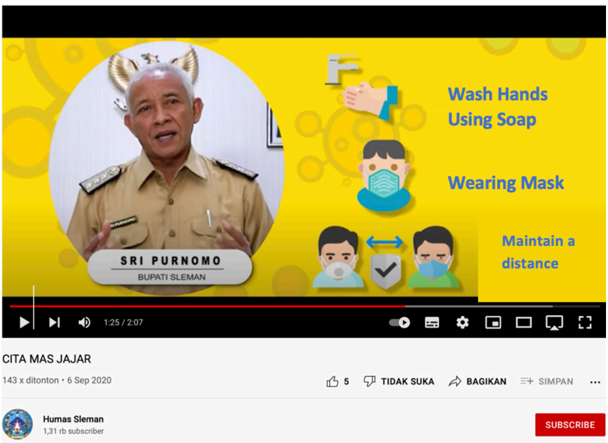

Figure 3. *Youtube Content on the @HumasSleman Channel*

Furthermore, the Regent of Sleman Regency Government also carried out public communication with a digital media approach through the Sleman Public Relations Youtube channel. For example, in a video campaigning for the "Cita Mas Jajar" Movement, Cita is interpreted as washing hands, Mas means wearing a mask, and Jajar stands for social distancing. This visual socialization of Cita Mas Jajar was carried out in the early days of the COVID-19 pandemic in Sleman, but public attention was relatively low (Pratiwi and Arisanto 2021), with only around 143 viewers watching the video.

The system of communication within the organization depends on each section or level of technical communication. The flow and the communication media used from the leadership level to the subordinates will differ from subordinate to superior level. The same applies to the flow of media communication within one level, such as between employees of one department (depending on the employee relations and communication media model). Therefore, the use of media with style and design was adapted to the target audience of the Sleman Regency. The public relations department of the Sleman Regency Government also utilized conventional media to support public communication in handling COVID-19. This included billboards, posters, banners, and pamphlets, the content of which was coordinated with the Health Department to prevent misinformation. The Sleman Regency Government maintained two-way communication, facilitated communication with the public, and kept communication channels open. The use of various existing media facilitated the smooth public communication carried out by the public relations department of the Sleman Regency Government with its community.

Discussion

Public communication is defined as the activity of understanding, designing, implementing, and evaluating successful communication campaigns within a framework to serve the public interest. It is used to inform or persuade, build relationships, and encourage open dialogue toward long-term solutions within the organization or community (Pearson et al. 2003).

Public Communication of a Non-Natural Disaster: The COVID-19 Pandemic

Based on the data above, it is clear that the public relations department and the Regent of the Sleman Regency Government carried out public communication when COVID-19 was present in the community. The message conveyed included up-to-date information regarding the development of cases and steps to reduce the spread of COVID-19, called *Citamajajar*. The messages conveyed by the public relations department of the Sleman Regency Government involved a unique form of public communication because they provided persuasive, easy to remember messages (Nisa 2015). Hence, in the application of this information strategy, every message communicated by the public relations department of the Sleman Regency Government could be accepted, and every instruction could be carried out by the community. This was seen in the high enthusiasm of the community for vaccination and the rapid decline in cases in the regency.

According to Dennis Dijkzeul and Markus Moke (2005), public communication is defined as activities and strategies aimed at a certain target audience. The purpose of public communication is to provide information to the target audience, increase awareness and influence the attitudes or behavior of the target audience. The public relations department of the Sleman Regency Government knew what steps must be taken in communicating COVID-19 to the public, so delivering quickly based on accurate data was key, as stated by Dikjzeul and Moke. This is also supported by Coppola and Maloney's description of the importance of information about disasters for the community. Once the community is appropriately informed about a hazard, they will be ready to take appropriate action to reduce their vulnerability to hazard risks (Coppola and Maloney 2009).

The role of government public relations departments in communicating disasters to the public is one of the most important aspects of reducing uncertainty (Deane 2015), as one of the key characteristics of disasters is that they are always accompanied by uncertainty. Public communication regarding natural and non-natural disasters represents a comprehensive effort to prevent and reduce disaster risks by managing messages or information, distributing messages, and receiving messages from the pre-, during-, and post-disaster stages (Lestari et al. 2021).

Particularly in public communication involving cooperation between Regional Apparatus Organizations (OPD), this provides a further incentive for integration between Sleman Government OPDs. As a leading institution in handling the COVID-19 pandemic, the Regional Government can carry out internal consolidation and build synergies with external institutions. Internal consolidation was carried out to ensure that village and sub-district officials and all related OPDs work optimally in dealing with COVID-19. The local government must ensure the availability of health facilities, medicines, health workers and the community to implement strict policies.

This was achieved by the public relations department of the Sleman Regency Government in synergy with related institutions such as Central Government agencies, community/religious leaders, entrepreneurs and others. Regional heads are expected to be effective leaders in dealing with the COVID-19 pandemic.

Community/religious/political leaders should be role models for society, as described by Ki Hajar Dewantara: “Ing Ngarso Sug Tulodo, Ing Madya Mangun Karso, Tut Wury Handayani.” This means that leaders must: lead by example from the front; build ideas from within; and support and motivate from behind. These figures are expected to build optimism and togetherness, and support conduciveness in the community.

Entrepreneurs are strategic partners of the government in dealing with the COVID-19 pandemic. With the resources they have, entrepreneurs can help the government provide health facilities, medicines and other necessary supplies. Entrepreneurs are expected to increase compassion and avoid bad business practices, such as hoarding goods needed by the community. Students, as future leaders of the nation, can provide constructive thoughts in dealing with COVID-19 and become problem solvers. Real action can also be taken by helping the government increase people's awareness of the implementation of programs, spreading optimism through massive social media campaigns. The role of the community in handling COVID-19 is very important in implementing strict procedures and maintaining health. Communities can also increase solidarity by helping others in need (Ayundari 2021).

The Social Media-Based Public Communication Model of the Sleman Regency Government

Local government information and communication technology (ICT) media, embodied in government websites or electronic government (e-government), can be used as digital communication media in regional development to realize democratization, transparency, participation, evaluation, control and public interaction. Most government public relations practitioners believe that social media benefits their organizations (Wright, Kumagi and Bonney 2001), including in handling the COVID-19 pandemic.

Social media is useful for gathering information and conveying messages, appeals, warnings, or invitations quickly to change behavior to comply with health protocols. The public relations department of the Sleman Regency Government has realized that the need for fast public interaction in handling COVID-19 requires fast communication tools. Therefore, that the use of digital media becomes a center point in communicating regarding COVID-19. Research by Salahuddin et al. (2020, as cited in Alnizar and Manshur 2022) on how the Indonesian government uses X to campaign for programs and policies to control the COVID-19 pandemic also found that social media has a significant and important role. Through social media, communication and coordination focused on the theme of overcoming COVID-19 involved requests and directives from the central government to: unite against the virus, know and understand it, comply with central government policies, pay attention to the interests of the state, and care for Indonesia (Alnizar and Manshur 2022).

The role of digital media is to disseminate information with transparency and accountability to the public regarding planning, implementation and development outcomes. According to Davis (2003), the benefits of e-government digital media include: (1) the efficiency and effectiveness of administrative affairs and costs; (2) improving the ability to respond to various requests, proposals, and questions as well as criticisms about public services to be more practical, fast and effective; (3) providing access to services and communication networks for consolidation and dissemination to all departments and non-departments at all levels more quickly, effectively and efficiently; (4) establishing interactions, aspirations, accommodation and socialization and providing information; and (5) participation, interaction and consolidation (unifying) media for the community to channel feedback freely, without fear. Moreover, Maksum (Windiasih, 2019) explained that the function of digital media through e-government is to strengthen and support the existence and function of public relations for the central or regional government. Public relations departments within organizations serve as a method to build public trust.

Subsequently, Rice (2009) asserted that digital media: provides benefits in the production sector of the economy; improves public sector administration, especially transparency in the procurement process for public service contracts; reduces corrupt practices; and increases the potential for education. Therefore, the use of digital media by the public relations department of the Sleman Regency Government – including the website www.slemankab.go.id, the Kabar Sleman Facebook page, the @HumasSleman Instagram profile, the @KabarSleman account on X, and the Sleman TV Youtube channel – is very appropriate because it supports a varying form of messages that can be conveyed. This is in line with the opinion of McQuail and Corne (Dijkzeul and Moke 2005) that the role of technology can inform and describe all political activities through a communication network to reach a wider audience in a more attractive form. Through a multimedia system that integrates text, images and sound, the display of an event is easier to understand by the media audience. Therefore, the use of digital media by the public relations department of the Sleman Regency Government is effective, as proven by the decrease in the number of COVID-19 cases in the Sleman Regency.

However, the use of conventional media cannot be neglected, because digital media literacy is still not evenly distributed within these communities. This is because there are consequences that follow the use of digital media, namely: the existence of cybercrimes; technological limitations; people who are not literate on the content that needs to be shared; technical constraints in the form of inadequate network infrastructure; and inequality in the community's ability to access modern media facilities (Windiasih, 2019). Therefore, the steps taken by the public relations department of the Sleman Regency Government, which still involve collaborating with conventional media, are also the right steps when communicating with the public for the effective prevention of the spread of COVID-19.

Conclusion

Public communication plays a significant role in reducing the dangers of a non-natural disaster such as the COVID-19 pandemic. Based on Circular Letter Document Number Hk.02.01/Menkes/199/2020 concerning Communication for Handling Coronavirus Disease 2019 (COVID-19) – namely No.1-part C, entitled "Making Communication Products" – the importance of digital media for public communication as a solution for the government in providing information related to COVID-19 to the public quickly and efficiently is clear. Based on the regulations of Central Government policies submitted to Regional Governments, each Regional Government must have a digital media product to communicate with each other and between the Government and the community. This is what caused the Sleman Regency Government to implement digital-based public communication to urge the prevention of the transmission of COVID-19, and to urge for COVID-19 vaccination. This study highlighted the significant role of public communication delivered by the Sleman Regency Government in conveying preventive and up-to-date information related to case developments and appeals to reduce the spread of COVID-19, using the "Citasmajajar" slogan.

There are differences in public communication specific to the COVID-19 pandemic: messages must be conveyed quickly, accurately and on a massive scale; hence, the public relations department of the Sleman Regency Government used digital media. Digital media is useful for obtaining information, as government public relations departments can quickly convey information, appeals, warnings, or calls for behavioral change to comply with health protocols. The digital media used by the public relations department of the Sleman Regency Government included the website www.slemankab.go.id, the Sleman News Facebook page, the @HumasSleman Instagram account, the @KabarSleman X profile, and the Sleman TV Youtube Channel. Moreover, the public relations department of the Sleman Regency Government was also aware that digital media could not be separated from conventional media. Hence, to support public communication related to the effective handling of COVID-19, the public relations department of the Sleman Regency Government continued to use conventional media such as billboards, posters, banners, and pamphlets, and published the book *Sleman Tangguh* as a way to educate the public and promote the Sleman Regency.

The development of digital media will facilitate governments' abilities to communicate with their communities, but researchers foresee that the public relations department of the Sleman Regency Government must still pay attention to the responses of users. As seen from the minimal number of YouTube views, access to communication on digital media is still not evenly distributed. Therefore, the researcher provides two recommendations: (1) the importance of developing communication with digital media through e-Government to improve good, fast and responsive public communication, active participation from the public, and transparency of both budgets and programs must be emphasized; and (2) the existence of information technology gaps must be anticipated, requiring an increase in the competence of human resources in local government and the public, as well as the expansion of access to information network facilities to support effective and targeted public communication.

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A. Nurjanah

VIEŠAS KOMUNIKAVIMAS PASITELKIANT SOCIALINES MEDIJAS INDONEZIJOS SLEMANO REGENTYSTĖJE YOGYAKARTOJE COVID-19 PANDEMIJOS METU

Anotacija. *Valdžios vaidmuo įgyvendinant viešąjį komunikavimą kovos su pandemija metu buvo ir yra svarbus prevencijos tikslais, taip pat tai aktualu siekiant įtikinti gyventojus skiepytis nuo COVID-19. Indonezijos Slemano regentystės vyriausybė tam pasitelkė viešuosius ryšius: buvo paskirtas COVID-19 darbo grupės atstovas spaudai, kuris pasitelkė socialinę žiniasklaidą ir aktyviai prisidėjo formuojant regioninės vyriausybės komunikacijos strategijas dėl COVID-19 pandemijos valdymo ir prevencijos.*

Šiuo tyrimu siekta pateikti ir įvertinti Slemano regentystės valdžios komunikavimo modelį, susijusį su COVID-19 pandemijos valdymu ir pagrįstą socialine žiniasklaida. Atliekant tyrimą taikytas aprašomasis kokybinis metodas ir atvejo analizės metodas. Duo-

menys rinkti atliekant nuodugnus interviu su Slemano regentystės viešųjų ryšių atstovais, regioninėmis organizacijomis (OPD) ir gyventojais. Taip pat buvo pasitelktas Miles ir Huberman modelis. Tyrimo rezultatai rodo, kad Slemano regentystės valdžios vykdoma komunikacijos veikla yra reikšminga ir patikima norint perteikti informaciją, susijusią su COVID-19 pandemija. Tai buvo galima pamatyti socialinėje žiniasklaidoje, pvz., „Facebook“, „X @KabarSleman“ ir „Instagram @HumasSleman“ paskyrose, per kurias buvo nuolat perduodami valdžios įspėjimai, susiję su COVID-19. Be to, viešųjų ryšių skyrius vis dar naudoja ir įprastas laikmenas, pvz., laikraščius, lauko laikmenas ir skaitmenines lauko laikmenas (pvz., LED). Šiuo tyrimu atskleista ir įrodyta, kad valdžia turi komunikuoti „vienu balsu“, nors ir naudojasi įvairiais kanalais. Visuomenei teikiama informacija turi būti centralizuota, kad nesukeltų painiavos.

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THE DEVELOPMENT OF A DISASTER RISK REDUCTION POLICY IN AZERBAIJAN

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Abstract. *Due to the accelerating likelihood of environmental catastrophes which have negative impacts on levels of investment and economic development, particularly along coastal regions and in agricultural sectors, the cost of living is expected to significantly rise throughout the coming decades. In order to make appropriate decisions and implement sensible policy, it is necessary to evaluate the expenses associated with potential natural disasters. The evaluation process will employ national development programs and models for estimating financial losses associated with disasters that have previously been established within the Sendai Framework 2030. Environmental disasters have disproportionate effects on wellbeing and economic opportunities for the people of Azerbaijan. Therefore, it is necessary to implement preemptive protocols to mitigate the negative effects of future disasters. A multidimensional approach is needed when managing potential consequences, especially during the post-conflict reconstruction and rehabilitation period in the country. Therefore, in this paper, Azerbaijan's risk profile, procedures for creating a national disaster risk reduction program, and the realization of adaptive actions are discussed.*

Keywords: *policy; management; sustainability; disaster risk reduction.*

Reikšminiai žodžiai: *politika; valdymas; tvarumas; nelaimių rizikos mažinimas.*

Introduction

This research paper aims to articulate managing protocols and guidelines for policies that concern the long-term reduction of disaster risk while formulating responses that efficiently and effectively address the need for rehabilitation and reconstruction-oriented activities as well as sustainable development. Private companies, development partners, government agencies and NGOs will find the national program formulated herein useful in guiding disaster risk regulation and policies or integrating its approaches into existing disaster risk strategies. Azerbaijan's national program for reducing the risk of disasters is expected to play a significant role in effectively implementing actions aimed at achieving the priorities and objectives of the Sustainable Development Goals 2030 (UN General Assembly 2015) and Disaster Risk Reduction 2030, outlined within the Sendai Framework (UNDRR 2015).

Sustainable development objectives direct sustainability planning towards achieving priorities that mitigate the risk of natural disasters and their potential effects on humanity. Managing susceptibility to risk and fortifying resilience against disasters can be facilitated by the pursuit of development goals that take long-term sustainability into account (Santos and Leitmann 2016). The effectiveness of the mitigation of disaster risk will be determined by advancements in the accomplishment of the sustainable development goals and the relevance of those priorities to the long-term harmonization of human civilization with the natural environment (Schweizer and Ortwin 2019).

The risk management of disasters and hazards is usually undertaken independently of the activities of developers, who fail to sufficiently take the threat of natural hazards into consideration. Even when the full magnitude of hazards and their potential consequences are taken seriously, appropriate assessments of possible solutions are frequently seen as exceedingly time-consuming and expensive (Feldmann-Jensen et al. 2019). As such, the frequency, location, characteristics and likely severity of disasters and the probable effects on people and their property should be thoroughly understood by program planners. It is important to recognize the hazards that demonstrate risk in locations where people are living and working while identifying the core features of those hazards in order to formulate realistic approaches to long-term planning (Fakhruddin et al. 2017).

Furthermore, endeavors aimed at achieving sustainable development goals are threatened by losses that may result from catastrophes. The most drastic effects of natural disasters are poor living conditions, the destruction of infrastructure, as well as other damaging outcomes for present economic actions. At the same time, the costs that arise due to catastrophes are interrelated with other environmental, social, political, financial and health emergencies. Current investment that targets access to education, sanitation, drinking water, public transport services and safe housing, reductions in global hunger and poverty, the delivery of medical services, and the protection of ecosystems can relapse under the pressure of negative effects resulting from natural disasters (Asian Development Bank 2019).

It can be concluded that in order to develop resilience within a disaster risk reduction (DRR) strategy, it is necessary to analyze the natural disasters that are common in Azerbaijan. Methods of financing the expenses associated with natural disasters as well as the projected success of Azerbaijan's potential recovery plans are discussed in depth in this paper. The primary catastrophic environmental events affecting Azerbaijan, the most likely damage associated with each specific disaster, as well as the core institutions that take responsibility for the management of natural disasters are also identified. An analysis is performed on the effectiveness and efficiency of the nation's disaster management strategies based on experiences from previous disaster responses. Lastly, consideration is given to the possibility of Azerbaijan adopting new ways of evaluating disaster aftermaths.

A Disaster Risk Profile of Azerbaijan

It is important to mention that although the threat of catastrophic events in Azerbaijan is significant, not every region is vulnerable to an equally extreme level of risk. Nonetheless, when disasters occur, they usually result in losses to property, livestock, agriculture and infrastructure as well as significant consequences for the environment and human lives (Huseynov 2019). The costs of such events often affect people from less privileged socio-economic groups more seriously. Growing populations and increasing numbers of people becoming concentrated in high-density urban centers have significantly affected vulnerability levels, particularly in certain areas that have a high risk of being exposed to catastrophic events. A relevant example of this is the high risk of seismic activity in the Caucasus Mountains, which is faced by growing local populations in Azerbaijan's capital city of Baku, as well as in the vicinity of other regions (State Statistical Committee 2020).

Table 1. *Types of Natural Hazards in Azerbaijan*

Type	Description	Examples
Hydro-meteorological	Natural atmospheric and climatological processes	Mudflows, flooding, winds, droughts, wild fires, storms, rain, desertification, snow avalanches and extreme temperatures
Geological	The Earth's natural processes	Landslides, volcanic activities, earthquakes and rockslides
Biological	Bioactive or toxic substance exposure	Infectious diseases, natural gas and crude oil pipeline infrastructure accidents, industrial accidents as well as other associated infestation events

Source: Compiled by the author from the literature outlined.

Furthermore, the central Kura-Araz lowland was subject to multiple floods throughout 2010. This flooding, along with numerous other natural disasters, clearly indicated that environmental risks need to be given significantly more focus in the formulation of public policy as well as in agendas operating at both the regional and central levels (Ministry of Economy 2009). The consequences of future natural disaster events will most likely be increasingly devastating for future generations. The degree to which the macroeconomic performance of the economy of Azerbaijan feels the future impact of these events will depend largely on which particular sectors are most affected (Ministry of Economy 2019).

Both the lives of the inhabitants of Azerbaijan and the country's ongoing economic development are threatened by a range of other potential catastrophes in addition to those mentioned above. Azerbaijani development organizations, public authorities and communities are capable of minimizing disaster risks so long as the necessary time and energy is invested towards anticipating and understanding possible disastrous events in the foreseeable future. Regional development programs could be negatively impacted or delayed if the government fails to take action in addressing impending risks (Huseynov 2019). Measuring and evaluating the success of Azerbaijan's national program of natural DRR will be facilitated by the capability of collecting and using relevant data effectively. As such, the decision-making process should be guided by information that is deliberately gathered for the purposes of predicting potential catastrophes and assessing their likelihood and severity (Planitz 2015).

In order to successfully calculate the risks of hazards on the basis of collected data, it is necessary to allocate sufficient resources, time and energy to perform quality research and effectively analyze the results. Projects and activities relating to the analysis of risk are mostly fed into by information that is collected from previous hazards and natural disasters. When collecting data and analyzing current systems, it is important to emphasize simplicity and practicality while using gathering mechanisms that are primarily grounded in material, technical and planning capabilities (Albrito 2018). Furthermore, consideration must be given to ensuring that the necessary monetary resources and sufficient time are provided in order to adequately assess collected data. The Azerbaijani government is voicing increasing levels of alarm associated with the financial consequences of damage that natural disasters are causing, and this is being reflected in attitudes towards public policy. Until now, state budgets and contributions have covered any expenses resulting from catastrophic events (UNISDR 2016).

Post-conflict reconstruction, rehabilitation and disaster management also needs to be established within Azerbaijan's national program for disaster risk reduction. This program would contain post-conflict environmental assessments, recovery, and technical assistance for natural resources that have been damaged, degraded or destroyed.

Making Plans for a National Disaster Risk Reduction Program

The primary role of the National Disaster Risk Reduction Program (NDRRP) of Azerbaijan would be to put forth measures that could be formulated and implemented by the Azerbaijani government. Its motivation is the long-term encouragement and facilitation of the creation, development, management and protection of effective disaster risk reduction (DRR) at the national level (UNDRR 2015). The DRR program can also be defined as a comprehensive national document that outlines: all policy developments related to DRR; the implementation of these developments; and the ways in which such advances should take place in a coordinated manner within a national framework. Therefore, one of the main aims of the NDRRP is to provide a plan whereby all national stakeholders are in positions to actively work together over time to foster research, innovations, new technologies and creativity so as to prosper from the results and pass on those benefits to future generations. It is important to emphasize that the methodology of creating such a national platform is key to building and maintaining a successful NDRRP. The methodological protocols are designed to provide a standard and integrated approach to DRR programs, strategies, institutional reforms and modernization strategies (Amaratunga et al. 2019). This methodology provides a list of steps, practical tools and key components that are necessary for formulating an effective national DRR strategy.

Evaluation

The evaluation of the program will be undertaken by the United Nations Office for Disaster Risk Reduction (UNDRR), which represents the first major activity that will be carried out during the process of development of Azerbaijan's DRR program. The intention of the evaluation is to prepare the groundwork for the DRR development process, and this involves meeting with the institutions responsible for the formulation of the program at the national level, including the National Coordination Council for Sustainable Development of the Republic of Azerbaijan (Azertag 2016). It also involves meeting with other key stakeholders such as the Ministry of Emergency Situations, the Ministry of Ecology and Natural Resources, the Ministry of Energy, the Ministry of Finance as well as other relevant government departments such as the State Statistics Committee, universities, research institutions, SMEs, innovators, creators, legal practitioners, and NGOs. Engaging with stakeholders will provide the opportunity to explain the scope, methodology and requirements of a successful formulation process for the DRR program. The evaluation should assist in securing political commitments at the highest possible level, in addition to aiding the recruitment and training of a national team of experts who will be responsible for drafting the details of the national program (Ullmann 2017).

A national team will be required to undertake an initial fact-finding exercise, carry out a DRR audit and develop a strategic document and action plan. The team should be comprised of staff members from the National Coordination Council in addition to other related experts recruited from further ministries as well as organizations from the private sector. The creation of a national team will ensure that Azerbaijan takes ownership of the results of the strategy formulation process. The government of Azerbaijan will also need to ensure that the process is implemented by experts who have a comprehensive knowledge and deep understanding of the country's present and historical economic circumstances, as well as its social and political infrastructure (Alakbarov 2019). In accordance with normal procedures, an international consultant will be required to work with and assist this national team with their progress in Azerbaijan.

One of the main purposes of the national team will be to carry out national research that reviews existing policy documents in order to create a comprehensive evaluation of Azerbaijan's national development objectives, strategies and policies. Further to this, the team's efforts will serve to identify the best method of aligning the NDRRP with the country's sustainable development priorities (Ministry of Economy 2019). This will eventually culminate in the extensive collection of valuable data. The purpose of this data collection will be to obtain a clear picture of the current DRR situation in Azerbaijan, its weaknesses, strengths, and potential, as well as the basis on which to realistically define and measure the key variables that need to be considered during the creation of the country's NDRRP.

Consultations will also play a very important role in enabling stakeholders in the fulfilment of targets that validate the abovementioned data collection when formulating the NDRRP. After these processes are complete, the government of Azerbaijan will be in a position to start drafting the strategy based on the evaluations, suggestions and recommendations of the national team. After the key strategic DRR objectives and priorities of the country have been identified, the National Team will be able to formulate the strategy and action plan. Once all the consultations and recommendations have been considered, the draft strategic planning document will need to gain the approval of the government of Azerbaijan in order to begin development and implementation of the NDRRP. Therefore, by approving the strategy, the government of Azerbaijan will be able to play an active role in designing the framework of the implementation structure, as well as the monitoring tools, evaluation mechanisms, and strategies for the effective mobilization of resources (Huseynov 2019).

Preparation

The following preliminary preparations are currently considered to be the best course of action for a country when developing a NDRRP. The unique style and chronology of each country's method can vary significantly; however, the strategy of Azerbaijan must be based on international benchmarking and standardized practices (Sapountzaki 2019). Additionally, many sector-based policies and periodic national programs exist that can contribute to the general security and development of the country. Science or education policies could seek to strengthen the creation of the NDRRP by universities, research institutions and the National Academy as a means of bringing about the scientific and educational response required for the needs of Azerbaijani society (Ullmann 2017). The same approach could also be applied to agricultural programs in order to promote the development and proliferation of disease-resistant, drought-resistant, ecologically clean and environmentally safe food security in Azerbaijan (Kinley 2017). Some of the policies mentioned above and many other preexisting programs from various sectors of the Azerbaijani economy and government could use the NDRRP to consolidate numerous strategy preparations under a single umbrella. Therefore, the proposed National DRR Team or the currently existing National Coordination Council (NCC) for Sustainable Development of the Republic of Azerbaijan could initiate the development of the program in order to create or integrate DRR strategies in Azerbaijani state programs.

By strengthening the role of the NCC with greater decision-making and executive powers, the development of the DRR program will gain further traction and momentum. Once the NCC is given the necessary responsibility, it would start the auditing process and work on drafting the strategy for the Azerbaijani government. In order for the Azerbaijani national DRR team to achieve its objectives, the UNDRR will also play a vital role in engaging the preparation and drafting procedure. These engagements could include profile and program assessments of the UNDRR and, together with national experts, this will bring suitable international expertise into Azerbaijan. It is important to mention that such international assistance is crucial for any country's preparation of a national program, and is important for gathering both key local aspects of DRR in the economic and social sectors as well as the risks of the broader geographical region (UN General Assembly 2015). This style of approach would benefit Azerbaijan in its own development of a risk-free strategy and would enhance the country's assessment of its economic and social capacity in the process of national DRR strategy development. As a result, Azerbaijan's national team of experts will complete the primary phase of the preparation period and will publish their first roadmap design and strategy options for the national DRR program along with recommendations and guidance.

Another key phase of the preparation is to implement the DRR program formulation process. This will include a high number of meetings between responsible state institutions and important stakeholders regarding the implementation of the various drafting phases in Azerbaijan. This will allow the national DRR team of Azerbaijan to use the Sendai Framework's proposed methodology and DRR assessment tools as means of preparing the final practical work plan. The goals, scope and the specific objectives will be determined by the national DRR team of Azerbaijan and will represent high-level government commitment to the preparation of the roadmap. If the active participation of all the associated state institutions and key stakeholders maintains consultation and engagement with the preparation process, then it will bring about significant advantages for Azerbaijan in the following ways.

1. Such a DRR Assessment will provide a clear understanding and valuable knowledge about Azerbaijan's current economic and social infrastructure.
2. The active involvement of all key stakeholders will enable the long-term effectiveness and success of the NDRRP.
3. By creating the proposed national DRR team, Azerbaijan will gain important expert skills and thereby strengthen its human and institutional capacity at the both national and international levels.

Collection of Data

In order to develop a national DRR strategy for Azerbaijan, it will be crucial to have a very clear understanding of the data relating to the country's current DRR capacity. In this context, the collection of relevant data is a very important but also very difficult process in terms of time and the consumption of financial resources. It is for this reason that the collection and analysis of the data in Azerbaijan will definitely serve the goal of comprehending the main strengths and weaknesses of the country (Schweizer and Ortwin 2019). Once these strengths and weaknesses are sufficiently understood, formulating the national DRR strategy will be easily aligned with Azerbaijan's most pressing economic and social developmental priorities. Within this framework, the team that collects all the related data and information will be engaged in a series of meetings involving

Azerbaijan's governmental institutions and administrative structures relating to DRR using the outcomes of the implemented national programs and strategies related to social and economic development. The core tool that needs to be developed for data collection is a questionnaire that contains a number of questions that are specifically related to social and economic sectors. The design of the questionnaire will be simple, but it will be of great importance to produce information on existing DRR regulations, government approaches and their objectives. The role of the State Statistical Committee of the Republic of Azerbaijan will be very important in terms of assisting the national DRR team in the collection of high-quality data that will result in the gathering of accurate and transparent research results. Once the national DRR team collects and finalizes the data, Azerbaijan will be in a much better position to include the data in the Sendai Framework Monitor with the purpose of contributing to the measurement of global development targets (Fakhruddin et al. 2017).

Drafting

The NDRRP will form the foundation of the official action plan for reducing natural hazard-related and man-made disaster risks. Furthermore, it will steer the strategic direction for Azerbaijan, gaining greater levels of resilience to all forms of disasters while maintaining sustainable development. In this sense, once the collection of data is formulated within Azerbaijan's public administration structure, the next move will be the NDDRP drafting process, which will focus on formulating key strategic sectors and targets. As already mentioned, the NCC for Sustainable Development of the Republic of Azerbaijan has been suggested from within the Azerbaijani Government to play the role of conducting the DRR audit and drafting the program documents with the action plan. Here, the NCC's major responsibility and role will be drafting the program in accordance with all key stakeholders. This will include working with national experts and international consultants. During drafting, effective communication and coordination skills will be of crucial importance in guiding, reviewing and monitoring the process without any errors. Another responsibility of the NCC will be to provide all of the resources necessary as well as an acceptable platform for drafting the national program. The ability to access all of the required resources will foster a supportive platform for both the national DRR team along with any participating officials from the government. Once the work plan has been put forward, the NCC and the national DRR team will be able to begin creating a strategy for the activities necessary for developing the NDRRP.

Table 2. *Work plan to draft the NDRRP of Azerbaijan*

Activity	
1.	Approving the development of the NDRRP
2.	Assigning a sustainable development coordination council at the national level
3.	Creating a national DRR team
4.	Inviting international expert consultants

5.	Collecting data and conducting risk research
6.	Implementing audits grounded in the findings
7.	Preparing the initial NDRRP draft
8.	Staging an initial meeting between the national DRR team and the NCC for the validation of the first NDRRP draft
9.	Preparing the final NDRRP draft
10.	Adopting the NDRRP
11.	Officially launching the NDRRP

Source: *Authors.*

Anticipated Results of the NDRRP

The implemented NDRRP would set the foundation for effective long-term management and mitigation of risks associated with potential disasters within Azerbaijani territory. The program's framework is designed to deliver a broad range of techniques for achieving concrete objectives in the field of disaster risk management. The results of these strategies will combine to produce higher levels of resilience while decreasing the negative effects that disasters have upon society. The anticipated NDRRP would succeed by combining effective tactics with active assistance to Azerbaijan's disaster readiness and disaster response protocols. Furthermore, the chaos and negative growth associated with post-disaster periods would be alleviated via the implementation of the swift restoration of sustainable development activities, as well as the long-term incorporation of strategies for reducing the risk of disasters into development programs at the state and national levels.

The development and implementation of the NDRRP have been designed to promote policies and outcomes that lead to sustainable harmony between environmental wellbeing and human activities. The effective analysis of realistic targets and projected consequences is expected to result from a NDRRP. Within this context, the anticipated outcomes can be split into four categories of results that plainly provide a clear comprehension of the possible outcomes of the implementation of the program. It is also important to mention that the tables below are the personal arguments of the author in describing the necessary actions.

Table 3. *Assessment*

The opportunity to assess Azerbaijan's disaster risks would be the initial anticipated outcome of the NDRRP. Potential risks and hazards posing a threat to Azerbaijan would be conclusively determined via the following assessment.	
1.	Development and use of flood models for major rivers to decrease flooding risks.
2.	Advancement of appropriately scaled flood risk maps.
3.	Identification of river basins and locations that are highly susceptible to floods.
4.	Development of maps showing dam breakthrough flood zones.

5.	Development and distribution of appropriately scaled maps of zones susceptible to erosion, strong winds and droughts to facilitate effective DRR decision-making.
6.	Distribution of seismic risk zone data and statistics to all relevant stakeholders.
7.	Development of appropriately scaled risk zone maps of areas susceptible to avalanches, mudslides and landslides.
8.	Development and use of a disaster risk atlas as a standard decision-making guideline.
9.	Development and periodic update of a database on industrial and transport accidents.

Source: *Author.*

Table 4. *Management and Development*

The management and further development of disaster risk mechanisms would be the second anticipated outcome of the NDRRP. Through the mechanisms described below, risk reduction strategies would be defined and integrated within state and national development programs as well as other Azerbaijani projects.	
1.	Integration of development and recovery programs with DRR measures.
2.	Identification of potential effects of disaster risk on development projects in Azerbaijan.
3.	Integration of disaster risk management issues with the process of advancing national protocol and decision-making relating to planning of land use.
4.	Use of safer methods of construction to decrease the risk of disasters.
5.	Introduction of effective financial tools to decrease the potential consequences of disasters.
6.	Development and regular updates to plans for reducing the risk of disasters that are executed at all levels of government.
7.	Establishment of scientific grounds for the effective management of disaster risk.

Source: *Author.*

Table 5. *Response and Readiness*

Disaster readiness and the fortifying of response capabilities would be the third anticipated outcome of the NDRRP. This would decrease the damages, casualties and aftermath of Azerbaijani natural disasters.	
1.	Introduction of a unified national disaster response and readiness plan.
2.	Strengthening of disaster readiness and response capability.
3.	Guarantee of international assistance to disaster preparedness and response capacity.
4.	Provision of swift reaction and coordination of disaster management ability at the regional and national levels.
5.	Establishment of rescue service early warning systems.

Source: *Author.*

Table 6. *Public Awareness*

The development of awareness approaches and skills for reducing the risk of disasters by promoting education and training would be the fourth anticipated outcome of the NDRRP.	
1.	Prevention and eradication of numerous hazards will serve as the basis of a national program of public awareness for creating a culture of safety.
2.	Improvement of DRR awareness amongst schoolchildren.

3.	Management and improvement of the disaster risk awareness of university graduates.
4.	Improvement and mitigation of the disaster risk awareness of civil servants.
5.	Improvement of university lecturers' understanding of managing the risk of disaster in terms of technology, skills and knowledge.

Source: *Author.*

Conclusion

It is very likely that natural disasters will continue to have a significant impact on Azerbaijan. Accordingly, there is a compelling necessity to implement timely procedures and protocols that effectively reduce the negative effects of such events on the natural environment and the resources that are critically relied upon. Approaching the issue in a multidimensional manner will help to mitigate the anticipated consequences of potential catastrophes. By including disaster preparation and response tactics in national strategies and rapidly integrating risk reduction into sustainable development programs, the NDRRP that is being proposed by Azerbaijan gives a range of approaches towards mitigating the risks of potential disasters and combining these methods to reduce the likelihood and manage the severity of catastrophic events at the local and national levels. The disaster risk management strategies within this NDRRP emphasize the concept of long-term sustainable progress for future generations in the country.

Strategic methods for reducing the risk of disaster have been developed in the Sendai Framework 2030. These strategies can be employed for the purpose of making evaluations and have contributed to Azerbaijan's NDRRP. The country's risk profile, its DRR planning strategies, and potential procedures for implementation have been discussed in this paper. Should the methodology proposed within this paper be taken into serious consideration and implemented, it would represent Azerbaijan's first national program for specifically reducing the risk of disasters. A unified system of DRR, improvements in disaster readiness and national response capacities, as well as increases in the efficiency of reactions to potential threats would be established by the program. If implemented, the NDRRP would develop into a significant part of the process of reviewing and evaluating Azerbaijan's national security. In anticipation of this outcome, the present paper has endeavored to define the actions necessary for producing effective DRR strategies while considering the challenges and risks that Azerbaijan will likely face in the future. The ultimate objective of Azerbaijan's NDRRP would be the creation of an efficient, unified, flexible structure that ensures reduced risk and that minimizes the severity of both man-made and natural disasters through the collective endeavors and coordinated actions of the agencies that the state legislation and institutions of Azerbaijan define and recommend. DRR strategies as well as institutions of the Azerbaijani government will be unified under the program, and this will drive the creation of safer standards of living and employment conditions in addition to promoting the country's social and economic development and resilience in accordance with long-term environmental sustainability.

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Y. Huseynov

AZERBAIDŽANO RESPUBLIKOS NELAIMIŲ RIZIKOS MAŽINIMO POLITIKOS KŪRIMAS

Anotacija. *Dėl didėjančios aplinkos katastrofų, kurios neigiamai paveiks investicijas ir ekonominį vystymąsi, ypač pakrančių regionuose ir žemės ūkio sektoriuose, rizikos tikimybės viliamasi, kad ateinančiais dešimtmečiais pragyvenimo išlaidos labai padidės. Norint priimti tinkamus sprendimus ir įgyvendinti subalansuotą politiką būtina įvertinti išlaidas, susijusias su galimomis stichinėmis nelaimėmis. Vertinant bus naudojamos nacionalinės plėtros programos ir modeliai, skirti įvertinti finansinius nuostolius, susijusius su nelaimėmis, kurie anksčiau buvo nustatyti pagal „Sendai Framework 2030". Ekologinės nelaimės neproporcingai veikia Azerbaidžano Respublikos žmonių gerovę ir ekonomines galimybes. Todėl būtina įgyvendinti prevencinius protokolus ir priemones, kad būtų sumažintas neigiamas būsimų nelaimių poveikis. Valdant galimas pasekmes, ypač šalies atkūrimo ir reabilitacijos laikotarpiu po konfliktų ir stichinių nelaimų, reikalingas daugiamatis požiūris. Todėl šiame darbe aptariamas Azerbaidžano Respublikos rizikos profilis, nacionalinės*

nelaimių rizikos mažinimo programos sudarymo procedūros ir adaptacinių veiksmų įgyvendinimas.

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