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Determinants of Public Institutions Competitiveness: Case Study of the Republic of Moldova

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Abstract: This study analyzes the determinant factors contributing to the competitiveness of public institutions. To reach the aim of the study, we have identified seven determinant factors: employee development, employee performance, organizational communication, work organization, digitalization of activities, reduction in bureaucracy, and strategic management. For each of the factors, we formulated 35 items that influence, to a higher or lower degree, the competitiveness of public institutions. To validate the results, we designed and applied a questionnaire to employees of public institutions. The study included 1042 individuals who provided valid responses. To process the data, the confirmatory factor analysis was performed using the STATA and SmartPLS software. The novelty of this study lies in the multidimensional analysis of the competitiveness of public institutions, carried out using multiple determinant factors. Our research findings could be used by decision-makers for enhancing institutional strategies designed to grow competitiveness.

Keywords: competitiveness; public institutions; human resource; confirmatory factor analysis

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1. Introduction

Competitiveness is a highly complex concept, and it has been studied from multiple perspectives; this is why researchers still have not reached a consensus on how the concept of competitiveness should be defined (Carayanis and Grigoroudis 2014). For instance, Latruffe (2010) argued that competitiveness, being such a broad concept, contributes to this lack of consensus on the definition or measurement of the concept. To describe the term, other researchers attributed it to being governmental (Fagerberg 1988; Krugman 1994). Initially applied to organizations, the concept of competitiveness was later applied nationally and internationally, and was regarded as a key element (Istudor et al. 2022). According to Skare et al. (2021), legal and economic frameworks influence any organization and country's competitiveness on an international scale.

Institutional competitiveness refers to institutions' capacity to maintain the population's long- and medium-term standard of living (Bernard and Boucher 2007), and of generating socioeconomic success (Campbell and Pedersen 2007). In this context, Marcussen and Kaspersen (2007) stated that institutional competitiveness refers to the intended and unintended results of people's attempts to optimize institutions by means of innovation to ensure their performance in a globalized world. This definition shows that human resources is the main determinant factor ensuring the competitiveness of public entities. Along the same lines, another study investigated the impact of employees' positive attitude towards work, as well as their intention of improving the competitiveness of public institutions (Jahanshahi and Bhattacharjee 2020). Also, other studies investigated the impact of leadership on the results of employees working in public organizations (Jacobsen et al. 2022). In the case of public institutions, corruption plays an essential role in ensuring competitiveness both nationally and internationally. In this sense, corruption is a significant

barrier to competitiveness (Ulman 2013), and also a determinant factor for public servants' performance and satisfaction (Venard et al. 2023).

National competitiveness is a key issue for company managers, as well as for national economies (Thompson 2004). Any country's competitiveness is highly dependent on the competitiveness of the public institutions responsible for managing and implementing national policies in different sectors. According to Stanovnik and Kovačič (2000), competitiveness at the national level could be defined as the capacity for long-term economic growth by means of economic structures that would adapt easily to world market fluctuations regarding demand. Viewed as a set of institutions and policies, competitiveness affects the level of production in a country, which, in turn, establishes the level of prosperity that an economy may gain (WEF 2012), as well as the capacity of a country to provide its citizens with a growing standard of living, based on sustainability and open access to workplaces for those wishing to work (Balkyte and Tvaronaviciene 2010). It could be implemented by means of proper structures, institutions, and policies and through the efficient allocation of available resources (Krugman 1994). Both the institution (Acemoglu and Robinson 2012) and the institutional quality (Buitrago and Barbosa Camargo 2021) play a key role in increasing national and international competitiveness. In this case, the role of public institutions is important for developing policies that ensure economic freedom.

National competitiveness has been the constant concern of the European Commission. The Europa 2020 Strategy included the target of growing the EU competitiveness through a sustainable, smart, and inclusive economy, ensuring a high level of employment, productivity, and social inclusion (WEF 2014). This led several researchers (Aiginger et al. 2013; Aiginger 2021) to include sustainable development into their studies of competitiveness, and study it from different angles, at both the organizational and national levels.

The inclusion of sustainable development in studying competitiveness led to the appearance of the concept of sustainable competitiveness, due to the fact that several researchers have been interested in identifying the determinant factors of sustainable competitiveness. Many authors believe that the main determinant factors of sustainable competitiveness comprise the economic, social, and natural environment (Popescu et al. 2017; Nadalipour et al. 2019), knowledge (Ogutu et al. 2023), digitalization of operations (Evans 2017; Clarke 2020; Kő et al. 2022), and innovation (Houtgraaf 2022; Rui Mu and Wang 2022).

Public sector entities operate in a complex and insecure environment, where innovation plays an important role (Serrano Cárdenas et al. 2019) in ensuring high competitiveness. Therefore, researchers and practitioners have become more interested in studying innovation in public entities (Walker 2014).

Although there is rich literature with a lot of studies on competitiveness, fewer studies have looked into its determinant factors, especially in the public sector. Therefore, we have identified the following gap in the literature in the field: the low number of studies analyzing the determinants of competitiveness in public institutions.

Taking this into account, the main aim of our study is to identify and assess the determinant factors influencing the competitiveness of public institutions. We propose the construction of a measurement model of the competitiveness of public institutions in the Republic of Moldova.

For identifying the determinant factors of competitiveness, we used a mixed approach: first, we identified the different factors that have an impact on the competitiveness of public institutions in the literature (Furculiţa 2021; Boguş and Băieşu 2022; Fetescu 2022); second, we revealed the issues that public institution in the Republic of Moldova are currently facing (Sześciło and Pavlov 2022; Negură et al. 2021). Therefore, we found the main determinant factors of competitiveness that are fundamental for our research. In our study, we identified seven determinant factors that may influence the competitiveness of public institutions: (1) employee development; (2) employee performance; (3) efficient communication; (4) work organization; (5) digitalization of activities; (6) reduction in

bureaucracy; (7) strategic management. Each determinant factor included in the study was described using several independent variables.

2. Literature Review and Hypotheses Development

Over the years, authors have put forward a wide range of perspectives and methods in their studies of competitiveness at the national and organizational levels. Nationally, competitiveness has been studied by considering the available natural resources and workforce (Chi-Keung Lau et al. 2009). In addition, there are fewer comprehensive studies on the determinant factors that have an impact on competitiveness in public sector institutions. In this context, we will be studying the above-mentioned determinant factors of competitiveness, and the study hypotheses will be formulated below.

2.1. Employee Development

Human resource development (HRD) has mechanisms for modelling individual and group values and beliefs, and for developing skills through learning to support the desired performance of the institutional system (Wang and Doty 2022). Human capital development through professional training is one of the most important means of implementing competitive strategies in organizations (Alagaraja et al. 2017). Therefore, organizational competitiveness can be reached through the continuous development of the professional competences of employees.

Strategically, employees and managers are the stakeholders of HRD, bearing in mind that if employees do not learn and managers do not provide support, then no changes occur in organizations (Poell 2022). Moreover, managers and employees with the proper experience and skills improve organizational competitiveness and its capacity to adapt to a changing environment (Kim and Kim 2020). Professional training is an essential element in developing the professional competences of employees, who also contribute to ensuring organizational competitiveness. This is why the content of professional training programs directly influences employee's subsequent activity at the workplace. In this context, Noe (2013) suggests that the content of training programs should match the competences that an employee requires to develop in order to better perform their work duties. Thus, when training is well-organized, it leads to better employee performance (Armstrong 2003). Smith and Smith (2023) researched informal learning and training within organizations from new perspectives, and Le et al. (2023) analyzed workplace learning as a support for increasing employability. Taking into account the above-mentioned arguments, we can formulate our first hypothesis:

Hypothesis 1 (H1). *Employee development may be defined as a factor of competitiveness in public sector institutions.*

2.2. Employee Performance

Job performance is a complex issue that depends on many dependent and independent variables. According to Bates and Holton (1995), performance is a multidimensional abstract concept, the measurement of which depends on a variety of factors. In addition, job performance is also influenced by an employee's level of education (Ng and Feldman 2009). Furthermore, job performance may also be influenced by an employee's system of values and the cultural environment they work in. According to Davidescu et al. (2020), there are several intrinsic values contributing to higher professional performance and better achievement of organizational goals. The growth of employee performance in Romanian organizations depends on several factors, such as workplace stability, authority, responsibility, and autonomy at the workplace; workplace comfort; career promotion prospects; benefit schemes; professional development; job attractiveness; payment (Bercu and Onofrei 2017). In addition, Tampu and Cochina (2015) believe that job performance is influenced by the efficient communication of employees and managers.

Job performance is most often associated with productivity. According to Alkhodary (2023), employee productivity refers to the quantity and quality of work generated by an employee over a period of time, usually measured in terms of efficiency, effectiveness, and output. Thneibat and Sweis (2023) showed that performance assessment is a significant incremental innovation. Also, Micacchi et al. (2023) analyzed the link between performance appraisal and employees' work engagement in the public sector. Employee performance contributes to the better achievement of organizational performance, and therefore influences its competitiveness, which enables us to formulate the second hypothesis.

Hypothesis 2 (H2). *Employee performance may be defined as a factor of competitiveness in public sector institutions.*

2.3. Organizational Communication

Communication is vital for any organization and is a determinant factor that may influence public sector competitiveness. According to Altınöz (2008), efficient communication is the main instrument for putting proper administrative and organizational activities in place. Communication is a key element of organizational success as it contributes to a reduction in uncertainty, which ensures higher commitment (Matos Marques Simoes and Esposito 2014).

The indispensability of communication in the context of organizational change has been widely acknowledged, although the role of strategic internal communication in using employee competences in change management remans less clear (Yue et al. 2019). Efficient communication is mostly determined by transparent internal communication, a concept adapted from organizational transparency. According to Men (2014), transparent internal communication means putting all information in accordance with legal provisions, irrespective of their positive and negative nature, and making them available to employees in order to grow their ability to think critically, forcing organizations to take responsibility for their actions, policies, and practices. The studies of Li et al. (2021) showed that internal communication may help organizations focus on problems, lower uncertainty, and stimulate employee–organization relations.

Several researchers have looked into the link between internal communication and employee performance. The way in which an organization provides information to its employees and manages its internal communication channels may positively influence employee performance (Gomes et al. 2023). Polycarp (2022) presented evidence on the existence of a positive relation between employee performance and internal communication. Based on the findings of the literature in the field, we formulated the third hypothesis.

Hypothesis 3 (H3). *Organizational communication may be defined as a factor of competitiveness in public sector institutions*

2.4. Work Organization

Performing work refers to making an effort and applying one's knowledge and abilities to achieve a goal (Armstrong 2003). In the context of scientific and technological progress, work paradigms also change, including their content, which is reflected in the diversity of tasks required to be performed in the workplace. The technological implications, in terms of their work content, have been studied by Spitz-Oener (2006), who analyzed the degree to which job reorganization and restructuring leads to the improvement or degradation of competences. Technological advancement leads to a higher number of non-routine tasks (Tamm 2018) and, therefore, to a diversification of the competences that a person needs to do the job. The technological change taking place in society creates the need for employees to adapt to the types of tasks performed at the workplace (Bachmann et al. 2018), which also affects job duties, the requirements related to skills, as well as the employment of personnel (Peng et al. 2018). Acemoglu and Autor (2011) believe that the tasks of employees on the job should be further analyzed if we want to better describe the impact of IT on jobs.

Stinebrickner et al. (2019) studied the link between salaries and job duties at the workplace, and stressed that job duties requiring higher qualifications are better paid than those requiring lower qualifications. Also, Deming and Noray (2020) used detailed job descriptions to analyze the impact of the changes occurring in the area of professional competencies on career gains. Moreover, some authors analyzed the impact of employment diversification on employee performance, which is important for organizational performance (Chen et al. 2023; Sekhar and Patwardhan 2023). Moreover, the manner in which work is organized impacts the wellbeing of employees and has an impact on organizational performance. Therefore, these findings help us to formulate our fourth hypothesis.

Hypothesis 4 (H4). *Work organization may be defined as a factor of competitiveness in public sector institutions.*

2.5. Reduction in Bureaucracy

Bureaucracy reduction refers to internal deregulation, which eliminates organizational rules while decision-making is pushed to lower levels in an organization (Feeney and DeHart-Davis 2009). The higher the bureaucracy, the more corruption is present in the public sector. While Ionescu et al. (2012) showed the benefits of transparency in fighting public sector corruption, Gans-Morse et al. (2018) found that the monitoring, anti-corruption attitude, e-governance, and proper salaries of public servants may lower corruption in the public sector. Bureaucracy reduction may be linked to the simplification of administrative processes, oriented towards efficiency and efficacy (Modugno et al. 2022).

Discussing bureaucracy reduction and legal regulation, Buckley (2016) supports the need for a balance between regulation and public interest administrative duties that promote the economy's competitiveness, rather than suppressing business operations, which may contribute to society's overall development. Similarly, Kovač (2021) analyzed the limitations of bureaucratization in the context of its reduction through regulating administrative procedures. Also, Roșca and Moldoveanu (2010) believe that bureaucracy reduction in public sector activities could occur by means of organizational culture, including a transfer of private sector organizational culture elements to the public sector, and an update of managerial practices.

The efforts of governmental institutions to reinvent themselves stem from the fact that less bureaucratized environments generate creativity, productivity, and higher risk-taking among public sector employees (Feeney and DeHart-Davis 2009). Additionally, the rapid progress of technology—including the spread of digital governance, the use of artificial intelligence, and the ability to collect and analyze big data—force public sector entities to be more flexible, efficient, and receptive to the needs of employees (Newman et al. 2022), thus leading to bureaucracy reduction. Artificial intelligence provides better public service and internal management (van Noordt and Misuraca 2022), leading to bureaucracy reduction in the public sector. In line with what has been mentioned above, we formulated the fifth hypothesis.

Hypothesis 5 (H5). *Bureaucracy reduction may be defined as a factor of competitiveness in public sector institutions.*

2.6. Digitalization of Activities

The digitalization of activities has been a concern of decision-makers in different fields, including the public sector. New digitalization opportunities for delivering public services have been discussed by researchers and decision-makers (Matheus et al. 2018; European Commission 2016). Also, the digitalization of activities in the public sector has been extensively studied by several researchers (Di Giulio and Vecchi 2021; Androniceanu et al. 2022b; Edelman et al. 2023). In the last few decades, developed countries have used digital technology as a resource for providing public services and as a tool for public sector restructuring (Schou and Hjelholt 2019). The initiatives for digitalizing activities have been

a driving force in achieving better internal integration and management at different levels (Ansell and Miura 2020). Also, success in implementing the digitalization of operations in the public sector relies heavily on political commitment (Breznitz and Ornston 2013).

Digitalization also left a mark on the evolution of jobs in the public sector (Piroșcă et al. 2021). In another approach, public sector digitalization was found to be a key factor for stimulating access to financial markets (Ha 2022). Some studies show how public sector digitalization affects the interaction between citizens and governmental institutions (Jansen and Ølnes 2016). Other authors looked into the effects of public administration digitalization. For example, Androniceanu et al. (2022a), in a study of EU member states, found that digitalization contributed to a higher quality of public administration and to a lower rate of corruption. Therefore, it could be stated that digitalization also has a direct impact on increasing the competitiveness of public institutions, which enables us to formulate the next hypothesis.

Hypothesis 6 (H6). *Digitalization of activities may be defined as a factor of competitiveness in public sector institutions.*

2.7. Strategic Management

According to Bryson and Bert (2020), strategic management helps public institutions to achieve their important goals and create public value. Similarly, strategic management is also involved in ensuring the consolidation of the long-term resistance and efficacy of public sector institutions in terms of their main policies, as well as management capacity (Poister et al. 2010). Also, Joyce (2015) argues that the public sector includes features that should be tackled with care for their successful implementation when changes are imposed in planning and strategic management. The need for strategic management in the public sector has recently become more critical and more legitimate (Poister et al. 2010). Higher financial and social pressure has led public institutions to rethink the way they operate and design actions, in line with their clearly-defined goals and priorities (Favoreu et al. 2015).

As argued by Mazouz and Rousseau (2016), political leaders should opt for a process-driven approach to strategy-making at a time of result-oriented management, and should particularly focus on the complexity of strategic processes to serve the general interest. Planning is an essential element of strategic management; consequently, George et al. (2019) assessed the way in which strategic planning improves organizational performance. James et al. (2022) designed a model showing that institutional pressure seriously impacts strategic change. These findings enable us to formulate our last hypothesis.

Hypothesis 7 (H7). *Strategic management may be defined as a factor of competitiveness in public sector institutions.*

3. Research Methodology

3.1. Sample

We applied a quantitative research method in our research as it has been shown to be very efficient in systematically collecting data (Denzin and Lincoln 1994). The survey respondents were civil servants in public administration institutions at the central and local level. The sample initially comprised 1800 participants, considering the rate of non-responses. In total, we obtained 1042 valid responses, with a 58% rate of participation. The survey was made between January and March of 2022 and comprised central and local public administration institutions from the whole country. The sampling frame from which the respondents were selected was civil servants from central and local public administration institutions. The sample size was calculated considering the total number of civil servants working in public institutions at the beginning of 2022. As there were 16,046 civil servants in all local and central public institutions at the beginning of 2022, we aimed to survey at least 10% of them, considering the rate of non-responses. Finally, the

rate of non-responses was higher, most of them belonging to civil servants working in local public administration.

The selection of civil servants as respondents was determined by the fact that they are the ones who develop public policies with the objective of improving the quality of public services and the standard of living of the population. However, the latter reflect the competitiveness of public institutions according to the definition of Bernard and Boucher (2007).

Taking into consideration the fact that the survey covers central public administration institutions from different fields of activity, as well as local public administration institutions from different regions of the Republic of Moldova, we consider that the research is representative and the conclusions obtained can be extrapolated to all public administration institutions.

3.2. Data

The data were collected online. For this purpose, the email addresses of the employees were extracted from the official websites of public institutions. Then, the employees were sent the invitation to take part in the survey with the access link to the survey itself. The invitation included explanations of why the opinions of respondents were important for the study. The online survey helped us to ensure data confidentiality and the rapid distribution of information, being less costly or time consuming.

The applied questionnaire comprised 35 items (independent variables), covering 7 determinant factors (dependent variables) with implications on the sustainable competitiveness of public institutions. Subsequently, we formulated six items for the first determinant factor, *Employee development*; four items for the second determinant factor, *Employee performance*; four items for the third determinant factor, *Organizational communication*; four items for the fourth determinant factor, *Work organization*; four items for the fifth determinant factor, *Digitalization of activities*; five items for the sixth determinant factor, *Reduction in bureaucracy*; seven items for the seventh determinant factor, *Strategic management* (Table 1).

Table 1. Items included in the research on sustainable competitiveness of public institutions.

Code	Constructs with Corresponding Items	Cronbach's Alpha
	Employee development (6 items)	**0.848**
ED 1	Skill development by job requirement	
ED 2	Carrying out research on societal development trends	
ED 3	Developing required interdisciplinary skills for performing job tasks and work responsibilities better	
ED 4	Supporting professional training programs for less qualified employees	
ED 5	Investment in personnel development	
ED 6	Developing competence standards by professional training area and level of qualification	
	Employee performance (4 items)	**0.792**
EP 1	Remunerating outstanding results	
EP 2	Assessing periodically the competence of public administration employees	
EP 3	Implementing quality standards in institutions	
EP 4	Applying a system of key performance indicators	

Table 1. *Cont.*

Code	Constructs with Corresponding Items	Cronbach's Alpha
	Organizational communication (4 items)	**0.763**
OC 1	Creation and dissemination of information materials for employees	
OC 2	Developing communication skills	
OC 3	Organizing foreign language courses	
OC 4	Exchange of experience using foreign experts	
	Work organization (5 items)	**0.809**
WO 1	Synchronizing theoretical and practical knowledge at the workplace	
WO 2	Setting correct criteria for objective selection of personnel	
WO 3	Provision of clear tasks by the institution's management	
WO 4	Implementing innovative methods at the workplace	
WO 5	Optimizing the number of employees considering the workload	
	Digitalization of activities (4 items)	**0.828**
DA 1	Investing in digital technology	
DA 2	Investment in employee development regarding the use of technology	
DA 3	Providing up-to-date and performant technology	
DA 4	Developing a communication platform for public authorities, citizens and business community	
	Reduction in bureaucracy (5 items)	**0.848**
RB 1	Simplifying the procedure for approval and coordination of documents issued by the public institution	
RB 2	Reducing the number of meetings in the institution	
RB 3	Reducing the number of reports and informative notes requested by hierarchically superior institutions	
RB 4	Weekly limitation of the number of sessions within the institution	
RB 5	Reducing administrative barriers to the implementation of development projects	
	Strategic management (7 items)	**0.869**
SM 1	Starting partnerships for developing competences needed in some professions	
SM 2	Improving managerial abilities of decision-makers	
SM 3	Developing a national system of monitoring and assessing pro-active policies based on analyses and international best practices	
SM 4	Developing mechanisms of institutional and/or personal accountability for poor institutional management	
SM 5	Transposing European practices and standards into institution's activities	
SM 6	Consolidating institutional capacities of public authorities to identify and solve citizens' problems	
SM 7	Eliminating institutional monopolies	
	All constructs (35 items)	**0.963**

Source: Processed by authors.

The items were formulated considering the context in which public administration institutions of the Republic of Moldova operate, as well as the problems they are currently facing. For each determining factor, certain problems were identified that allowed us to formulate actions that could contribute to increasing the competitiveness of public institutions. Each item was given a score from "1" to "5" using the Likert scale.

3.3. Method for Validating the Theoretical Model

After reviewing the literature in the field, we developed a model showing the influence of the determinant factors on the competitiveness of public institutions (Figure 1).

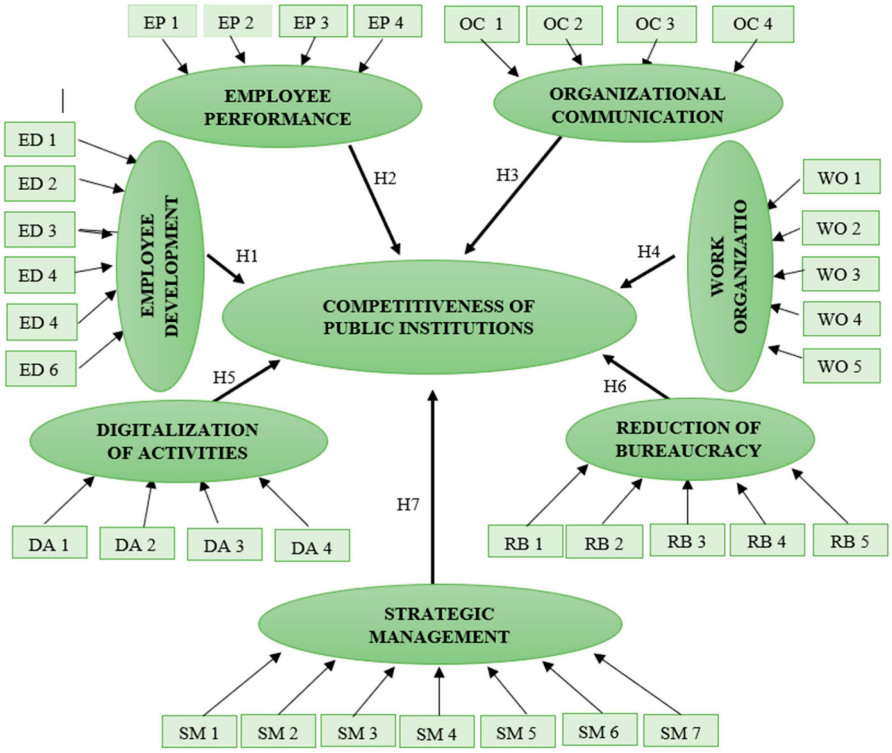

Figure 1. Model of influence of determinant factors on the competitiveness of public institutions. Source: Developed by authors.

In turn, the determinant factors are the aggregate results of several items, presented as actions (Figure 1 and Table 1).

To study the relationships between the observed measures (indicators) and the latent variables (factors), we conducted confirmatory factor analysis (CFA). This method belongs to the class of structural equation models (SEM) and handles measurement models. A key feature of CFA is its hypothesis-driven nature.

The measurement model expresses the way a set of indicators (items) match together to create latent variables that represent inherently unobservable constructs. CFA relies on the maximum likelihood (ML) estimation method (Brown 2015).

The results of CFA can provide compelling evidence of the convergent and discriminant validity of theoretical constructs. The quality of the CFA model is determined either by the size of the resulting parameter estimates (e.g., size of factor loadings and factor inter-correlations) or by how well each factor is represented by the observed measures (e.g., number of indicators per factor, size of indicator communalities, factor determinacy).

4. Results

4.1. Reliability Analysis

The first step in investigating the relationship between the constructs that define the factors of the competitiveness of public institutions comprises the assessment of the reliability of the constructs. The internal consistency of the constructs was tested using Cronbach's alpha, which measures the degree to which the items quantifying the same concept are in consistency (Hair et al. 2020). We can conclude that the internal consistency is validated because all the alpha values are above 0.8, showing good reliability for a good scale (Table 1).

4.2. Distribution of Respondents' Answers

For all seven items corresponding to the *Employee Development* (ED) construct, the results show that the highest percentage of answers correspond to the *Necessary* category (Figure 2). Therefore, the respondents consider the implementation of these actions as merely necessary. The proportions of answers corresponding to the *Extremely Necessary* or *Highly Necessary* categories are less important. Consequently, these measures are considered necessary, not being so important as to be immediately implemented. Among the seven measures, the one referring to investing in employee development (ED5) is considered to be the most necessary to be implemented (59.3% of the respondents consider that it is *Highly Necessary* or *Extremely Necessary* for this measure to be implemented).

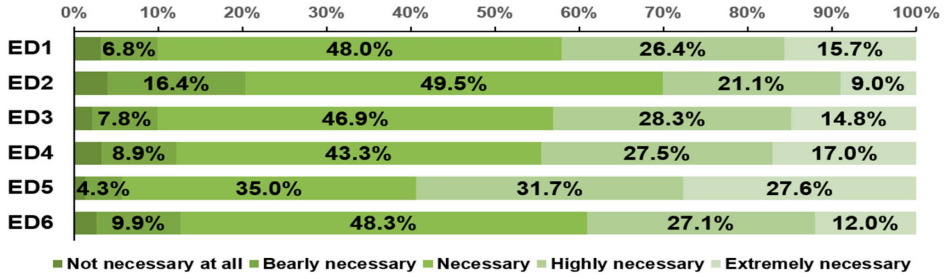

Figure 2. Distribution of the respondents' answers for Employee Development items. Source: Processed by authors.

Among the four actions measuring the Employee performance, the remuneration of outstanding results (EP1) is seen as *Highly Necessary* or *Extremely Necessary* by 70.1% of the respondents (Figure 3). The other actions concerning the assessment of the competence of public administration employees (EP2), the implementation of quality standards in institutions (EP3), and the use of a system of key performance indicators (EP4) are evaluated by most of the respondents (over 46%) as *Necessary*.

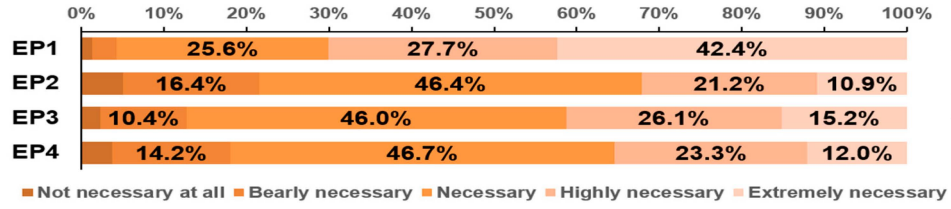

Figure 3. Distribution of the respondents' answers for Employee Performance items. Source: Processed by authors.

The respondents believe that all four measures of the organizational communication (OC) are important (Figure 4). Most of the respondents (48.4%) consider the creation and dissemination of information materials for employees (OC1) as being only necessary, 22.8% as *Highly Necessary*, and only 9.1% as *Extremely Necessary*. However, the exchange of experience with foreign experts (OC4) is seen as being more important as 58.6% of the respondents agree that it is *Highly Necessary* or *Extremely Necessary*.

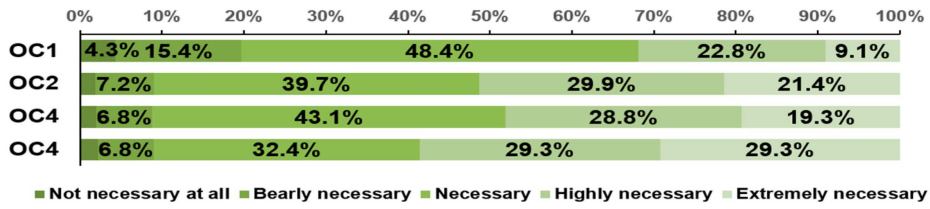

Figure 4. Distribution of the respondents' answers for Organizational Communication items. Source: Processed by authors.

The share of responses for the *Highly Necessary* or *Extremely Necessary* categories shows that the most important activities defining the work organization concept are the following: synchronizing theoretical and practical knowledge at the workplace (WO1—40.9%); provision of clear tasks by the institutions management (WO3, 35.6%); optimizing the number of employees considering the workload (WO5, 31.8%). Surprisingly, the activities related to setting the correct criteria for the objective selection of personnel (WO2) and implementing innovative methods at the workplace (WO4) had the highest share of cumulated responses for the two categories *Not necessary at all* and *Barely Necessary*: 41.2% and 43.5%, respectively (Figure 5).

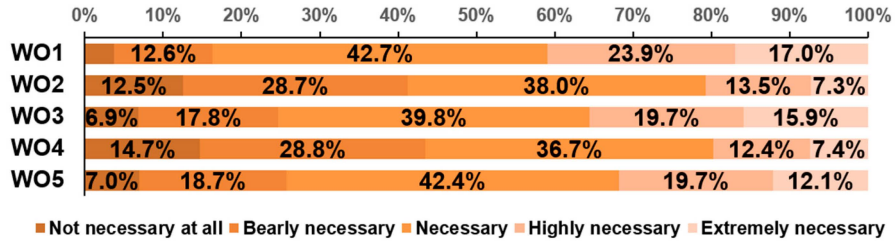

Figure 5. Distribution of the respondents' answers for Work organization items. Source: Processed by authors.

More than half of the respondents (over 60%) consider that investing in both information technologies (DA1) and employees' development in using such technologies (DA2), and providing up to date and performant technology (DA3) are *Extremely Necessary* and *Highly Necessary* (Figure 6). However, almost half of the respondents (48.3%) consider that developing a communication platform for public authorities, citizens, and business community (DA4) is just *Necessary*. Although implementing highly advanced informational technologies and training the employees to use such technologies are viewed as important, the development of a communication platform is not seen as such. Without acknowledging the benefits of such technology, the respondents do not consider that such a platform is extremely necessary.

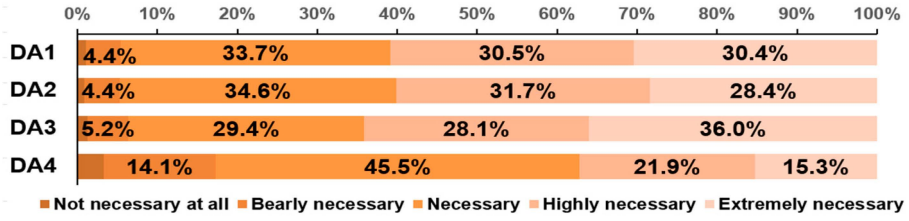

Figure 6. Distribution of the respondents' answers for *Digitalization of activities* items. Source: Processed by authors.

In the respondents' view, all five activities measuring bureaucracy reduction are viewed as necessary (Figure 7). More than half of the respondents (55.1% and 57.2%) agree that a reduction in the number of reports and memos requested by hierarchically superior institutions (RB3) and less weekly meetings within the institution (RB4) are *Highly Necessary* or *Extremely Necessary*, respectively.

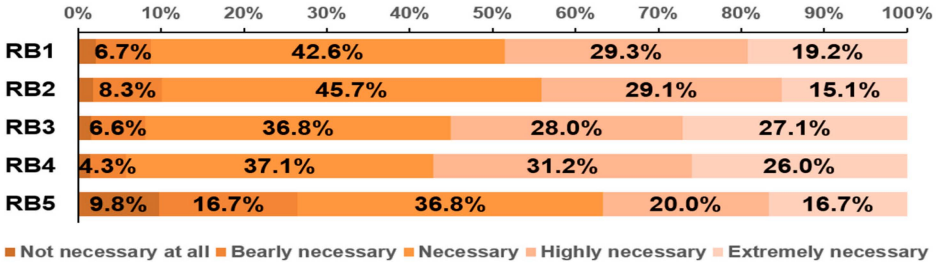

Figure 7. Distribution of the respondents' answers for *Reduction in bureaucracy* items. Source: Processed by authors.

The respondents' views show that the most important activity for measuring the strategic management concept is the improvement of the managerial abilities of decision-makers (SM2), with 52.8% viewing it as *Extremely Necessary* or *Highly Necessary* (Figure 8). On the other hand, the elimination of institutional monopolies (SM7) is less important as more than one-quarter of the respondents (26.9%) think that this action is either *Not necessary at all* or *Barely Necessary*.

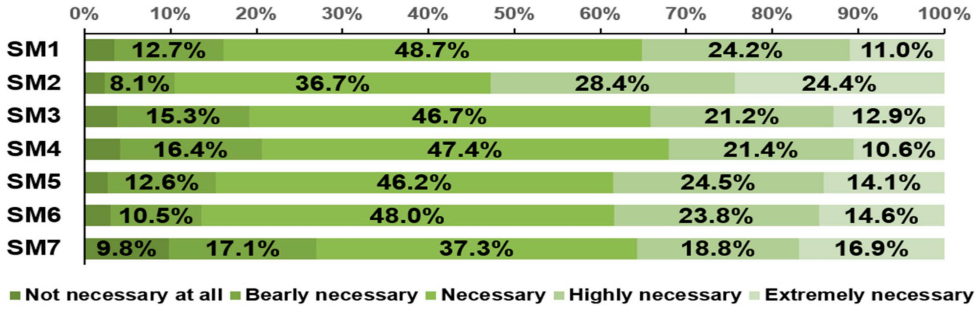

Figure 8. Distribution of the respondents' answers for *Strategic management* items. Source: Processed by authors.

4.3. The First-Order Measurement Model

The estimated reflective model is specified using the confirmatory factor analysis (CFA) using the STATA software. We obtained seven latent factors, each related to a set of observed variables. We presume that the latent factors are correlated with one another, represented by the curved path in the diagram (Figure 9). This is a pure measurement model, with no structural component.

The CFA model is designed to confirm an a priori hypothesized factor structure. Moreover, we performed this analysis to assess the unidimensionality of the measurement items. The results of the confirmatory factor analysis indicate that each item is loading on its respective underlying concept and all loadings are significant (Table 2).

The estimation of individual indicator reliability allows the suitability and capability of indicators (items) reproduced for a particular construct in measuring the main concept to be underlined. An item that has a loading above 0.5 is held to have satisfied the threshold for indicator reliability (Hair et al. 2010). The relationships between the constructs and their indicators are reflected by the factor loadings that estimate the indicator reliability (Hair et al. 2017).

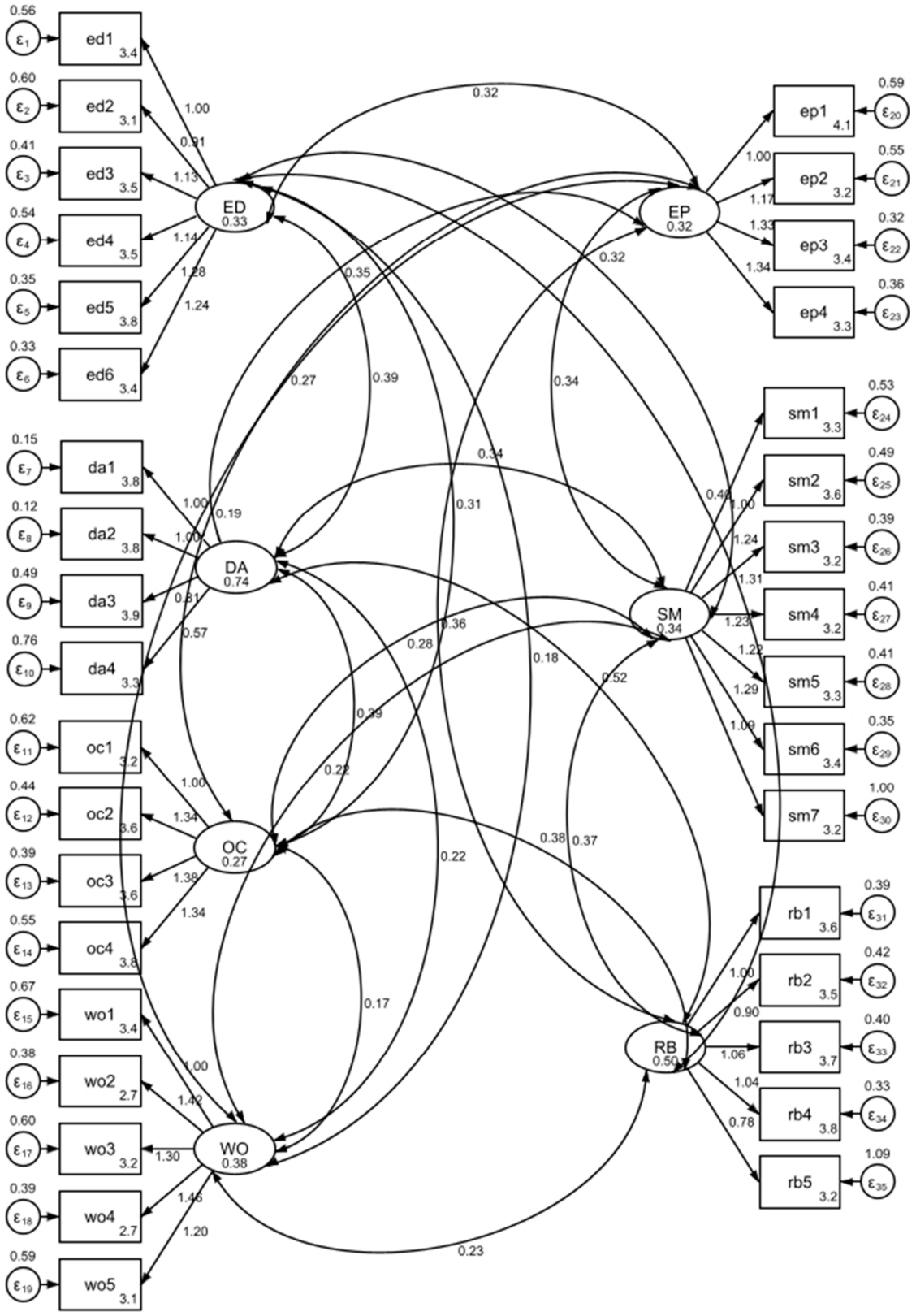

Figure 9. CFA model of competitiveness of public sector institutions factors. Source: Processed by authors.

Table 2. The non-standardized factor loadings and significance tests, with associated confidence intervals.

	Coeff.	Std. Err.	z	P > z	[95% Conf.	Interval]
ED 1	1 (constrained)					
ED 2	0.914	0.056	16.22	0.000	0.803	1.024
ED 3	1.134	0.058	19.59	0.000	1.020	1.247
ED 4	1.135	0.062	18.45	0.000	1.015	1.256
ED 5	1.276	0.062	20.55	0.000	1.154	1.397
ED 6	1.235	0.061	20.28	0.000	1.116	1.354
DA 1	1 (constrained)					
DA 2	1.000	0.021	48.55	0.000	0.959	1.040
DA 3	0.806	0.029	27.58	0.000	0.748	0.863
DA 4	0.572	0.034	16.73	0.000	0.505	0.639
OC 1	1 (constrained)					
OC 2	1.341	0.075	17.92	0.000	1.195	1.488
OC 3	1.375	0.075	18.41	0.000	1.229	1.522
OC 4	1.340	0.077	17.36	0.000	1.189	1.491
WO 1	1 (constrained)					
WO 2	1.421	0.079	18.02	0.000	1.266	1.575
WO 3	1.301	0.072	18.05	0.000	1.160	1.442
WO 4	1.459	0.081	17.97	0.000	1.300	1.619
WO 5	1.200	0.067	17.82	0.000	1.068	1.333
EP 1	1 (constrained)					
EP 2	1.167	0.067	17.32	0.000	1.035	1.299
EP 3	1.332	0.069	19.43	0.000	1.198	1.466
EP 4	1.342	0.070	19.09	0.000	1.204	1.480
SM 1	1 (constrained)					
SM 2	1.244	0.063	19.78	0.000	1.121	1.367
SM 3	1.309	0.063	20.84	0.000	1.186	1.432
SM 4	1.234	0.061	20.17	0.000	1.114	1.354
SM 5	1.222	0.060	20.20	0.000	1.103	1.340
SM 6	1.291	0.061	21.14	0.000	1.171	1.410
SM 7	1.088	0.070	15.59	0.000	0.951	1.225
RB 1	1 (constrained)					
RB 2	0.900	0.038	23.39	0.000	0.825	0.976
RB 3	1.065	0.042	25.50	0.000	0.983	1.147
RB 4	1.044	0.040	26.28	0.000	0.966	1.121
RB 5	0.783	0.053	14.88	0.000	0.680	0.886

Source: Processed by authors.

In Table 2, all of the factor loadings show high values on their respective constructs and are statistically significant (all p's < 0.001), thus signifying sufficient levels of reliability. These results show that all of the indicator variables are significantly related to their respective factors.

The twenty-one covariances between the seven factors of the competitiveness of public sector institutions are presented in Table 3. All covariances are positive and significant.

Table 3 shows that the covariance between the *Digitalization of activities* (DA) and *Reduction in bureaucracy* (RB) is significant and has the highest value (cov = 0.520, $p < 0.001$). Also, the covariance between *Employee development* (ED) and *Reduction in bureaucracy* (RB) is relatively high (cov = 0.403, $p < 0.001$). The smallest covariances are observed between the following constructs: *Organizational communication* (OC) and *Work organization* (WO) (cov = 0.174, $p < 0.001$); *Employee development* (ED) and *Work organization* (WO) (cov = 0.185, $p < 0.001$); *Work organization* (WO) and *Employee performance* (EP) (cov = 0.194, $p < 0.001$),

Table 3. The covariances of the latent factors and significance tests, with associated confidence intervals.

	Coeff.	Std. Err.	z	P > z	[95% Conf. Interval]	
cov(ED,DA)	0.391	0.026	14.86	0.000	0.339	0.443
cov(ED,OC)	0.306	0.023	13.10	0.000	0.261	0.352
cov(ED,WO)	0.185	0.019	9.88	0.000	0.148	0.222
cov(ED,EP)	0.319	0.024	13.15	0.000	0.272	0.367
cov(ED,SM)	0.318	0.023	13.60	0.000	0.272	0.364
cov(ED,RB)	0.403	0.027	14.91	0.000	0.350	0.455
cov(DA,OC)	0.392	0.027	14.62	0.000	0.339	0.444
cov(DA,WO)	0.219	0.023	9.42	0.000	0.174	0.265
cov(DA,EP)	0.345	0.026	13.12	0.000	0.294	0.397
cov(DA,SM)	0.344	0.025	13.97	0.000	0.295	0.392
cov(DA,RB)	0.520	0.030	17.26	0.000	0.461	0.579
cov(OC,WO)	0.174	0.018	9.65	0.000	0.138	0.209
cov(OC,EP)	0.272	0.022	12.25	0.000	0.228	0.315
cov(OC,SM)	0.283	0.022	12.80	0.000	0.239	0.326
cov(OC,RB)	0.376	0.026	14.32	0.000	0.325	0.428
cov(WO,EP)	0.194	0.019	10.00	0.000	0.156	0.232
cov(WO,SM)	0.221	0.020	10.87	0.000	0.182	0.261
cov(WO,RB)	0.229	0.022	10.33	0.000	0.186	0.273
cov(EP,SM)	0.336	0.025	13.49	0.000	0.287	0.385
cov(EP,RB)	0.360	0.026	13.75	0.000	0.308	0.411
cov(SM,RB)	0.368	0.025	14.59	0.000	0.318	0.417
LR test of model vs. saturated: chi2(539) = 5655.23 Prob > chi2 = 0.0000						

Source: Processed by authors.

The factor model resulting from the CFA can be evaluated in terms of how well the solution reproduces the observed variances and covariances among the input indicators (i.e., goodness-of-fit evaluation).

The chi-square goodness of fit test compares the specified model (the fitted model) with the saturated model that assumes that all variables are correlated. The chi-square test is significant, suggesting a poor fit of the model to the data. This test is often overpowered, even in circumstances when there is only a minor misspecification. Therefore, it has been recommended that multiple fit statistics should be reported. Four fit indices are used to assess the degree to which the data fit the model.

The Comparative Fit Index (CFI) compares the current model with the baseline model. The baseline model assumes that no variables are correlated (except for observed exogenous variables when endogenous variables are present). A good fit is indicated by CFI > 0.95 (sometimes 0.90). The Tucker-Lewis Index (TLI) also compares the current model with the baseline model. The Standardized Root Mean Square Residual (SRMR) is a measure of the average difference between the observed and model-implied correlations; this will be close to 0 when the model fits well. Hu and Bentler (1999) suggest that a good fit is determined by SRMR values close to0.08 or below. The Root Mean Squared Error of Approximation (RMSEA) and its 90% confidence interval are calculated.

In summary, when evaluating the fit statistics, we see that the CFI (0.803) and TLI (0.782) values are low (both < 0.90). Although the SRMR (0.097) might fall within the "acceptable range" (i.e., <0.10), the CFI and TLI indicate a poor fitting model (Table 4).

The poor fit of the data by the CFA measurement model may be explained by several reasons: problems in the selection of observed measures; unspecified factor loadings; additional sources of covariation among observed measures that cannot be accounted for by the latent variables. However, we do not have sufficient details on the sources of the ill fit in CFA measurement models or on how such model can be diagnosed and re-specified.

Table 4. The fit indices for the CFA model with the acceptable values for the measurement model.

	RMSEA	CFI	TLI	SRMR
Measurement model	0.095 90% CI: [0.093; 0.098]	0.803	0.782	0.097
Close fit	RMSEA < 0.05	CFI > 0.95	TLI > 0.95	SRMR < 0.05
Acceptable fit	0.05 < RMSEA < 0.08	CFI ≥ 0.90	TLI ≥ 0.90	0.05 < SRMR < 0.10

Source: Processed by authors.

4.4. The Second-Order Measurement Model

To validate the proposed theoretical model (Figure 1), we constructed a second-order measurement model (Figure 10), where the *Competitiveness* of the sector of public institutions is reflected through the seven determinant factors of competitiveness. The construct defining *Competitiveness* is measured by all 35 items of the questionnaire.

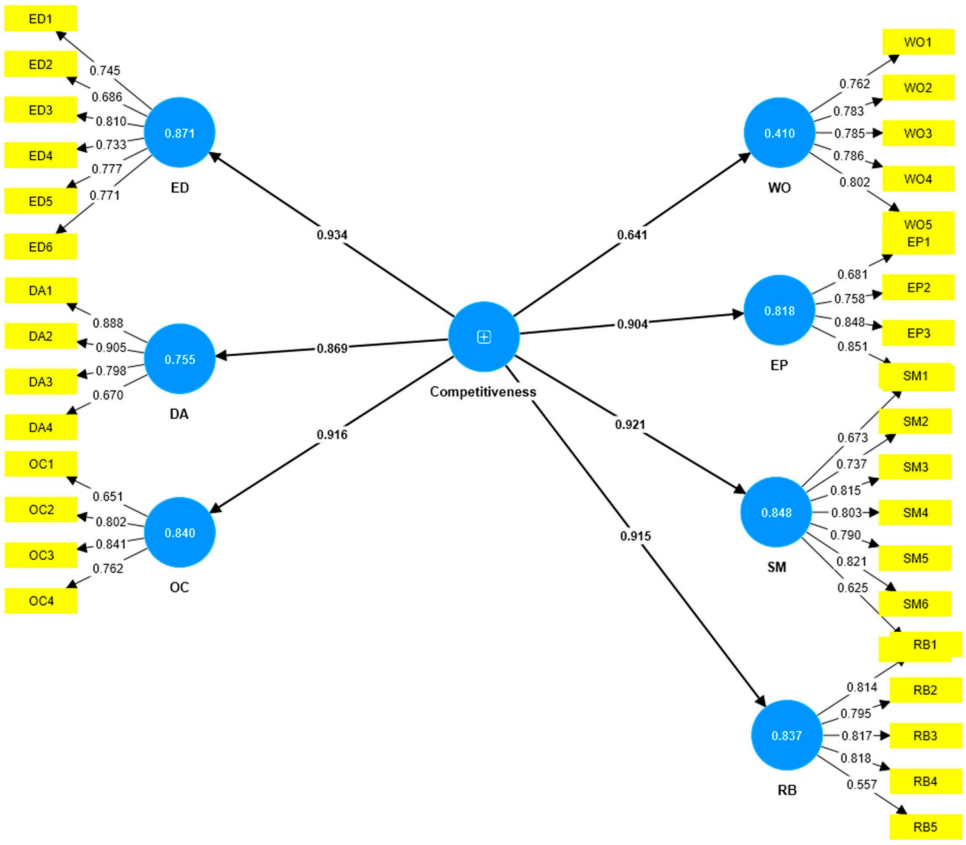

Figure 10. CFA model of public sector institutions competitiveness. Source: Processed by authors.

The second-order model was implemented via PLS-SEM confirmatory factor analysis, performed using the SmartPLS software (v. 4.0.8.2) (Ringle et al. 2022).

The estimation of the internal consistency reliability allows the similarity in their scores for the items measuring a construct to be assessed (Hair et al. 2017). Large correlations between the items indicate that a construct has a high level of internal consistency reliability. To check for internal consistency reliability, the composite reliability value and Cronbach's alpha value should be assessed.

The results in Table 5 indicate that all of the constructs of the study have high levels of internal consistency reliability, as the Cronbach's alpha values of all the constructs are well above the threshold value of 0.6 and the composite reliability values are above 0.7.

Table 5. Convergent validity indicators for the second-order measurement model.

Latent Variable	Composite Reliability		AVE	Cronbach's Alpha
	rho_a	rho_c		
Competitiveness	0.967	0.968	0.502	0.963
DA	0.836	0.890	0.673	0.828
ED	0.855	0.888	0.570	0.848
EP	0.799	0.866	0.620	0.792
OC	0.778	0.850	0.589	0.763
RB	0.840	0.875	0.588	0.848
SM	0.880	0.902	0.571	0.869
WO	0.865	0.888	0.614	0.809

Source: Processed by authors.

The construct validity is assessed by proving the convergent and discriminant validity.

Convergent validity is established when items in a particular measure converge to represent the underlying construct. Therefore, convergent validity assessment refers to the extent to which a measure correlates positively with alternative measures of the same construct (Hair et al. 2017). The convergent validity assessment is based on average variance extracted (AVE) values. The AVE represents the mean value of the squared loadings of the indicators associated with the construct. Thus, the AVE (the average amount of variance that a construct explains in its indicator variables relative to the overall variance of its indicators) is equivalent to the communality of a construct. Statistically, convergent validity is confirmed when the AVE is higher than 0.50. The results show that all of the AVE values of the constructs of the present study are above 0.50, indicating convergent reliability. Moreover, the values of the Rho_A reliability coefficients are all above 0.7.

Discriminant validity measures the distinctiveness of a construct. Discriminant validity is demonstrated when the shared variance within a construct (AVE) exceeds the shared variance between the constructs. It shows that constructs have their own distinct identity and are not too substantially correlated with the other constructs in the study.

The testing of the discriminant validity using the Fornell–Larcker criterion for the latent variables of the reflective model assumes that the square root of the AVE of each latent variable should be greater than its correlations with any other latent variable. The Heterotrait-Monotrait (HTMT) technique is considered a better approach to determine discriminant validity between constructs. The HTMT ratio of correlations method examines the correlations of indicators across constructs to the correlations of indicators within a construct (Henseler et al. 2015). If the value of the HTMT ratio is below 0.9 or 0.85, discriminant validity has been established between two reflective constructs.

The HTMT Ratio values are below the cut-off value for some of the constructs (Table 6). Therefore, the measurement model supports the discriminant validity only between the following constructs: the *Working Organization* construct and all other constructs; *Employee development* and *Digitalization of activities*; *Strategic management* and *Digitalization of activities*. These results partially confirm the authenticity of the reflective model. Consequently, this measurement model does not fully support the discriminant validity between the constructs.

In summary, we can conclude that the theoretical model is validated, and the research hypotheses are supported by the results of the confirmatory factor analysis. These results could be used for future research using path models for the analysis of the relationship between competitiveness and its determinant factors.

Table 6. Discriminant validity indicators for the second-order measurement model (HTMT ratios).

	Competitiveness	DA	ED	EP	OC	RB	SM
DA	0.954						
ED	1.008	0.886					
EP	1.026	0.907	0.983				
OC	1.046	0.994	1.046	0.986			
RB	1.022	0.938	0.996	0.980	1.033		
SM	1.008	0.856	0.945	1.021	0.966	0.930	
WO	0.765	0.588	0.585	0.646	0.634	0.661	0.698

Source: Processed by authors.

5. Discussion

The study aimed to identify and analyze the determinants of competitiveness of public institutions in the Republic of Moldova. For this purpose, we analyzed seven determinant factors, which, in our view, influence the competitiveness of public institutions to a higher or lower degree.

Our results are in line with previous studies that have underlined the impact of various factors on the competitiveness of public institutions.

The first factor refers to *employee development*. Undoubtedly, HRD has a direct impact on the competitiveness of organizations, especially in the public sector. The results suggest that employees should regularly attend professional development events to ensure the competitiveness of public institutions. Other studies have also shown the direct impact of HRD on the competitiveness of organizations in other sectors (Dimovski et al. 2022). Also, our results indicate that the employee development process should particularly focus on the development of professional competences. In turn, these should be directly correlated with the job requirements. In this way, we will be able to ensure a higher competitiveness of public institutions. On the other hand, knowledge acquired through a professional development process could contribute to the competitiveness of organizations (Ogutu et al. 2023).

Employee performance is the second determinant factor influencing the competitiveness of organizations. Our results show that civil servants should be given differential pay for exceptional achievements to ensure a high level of performance in public institutions. In addition to the extrinsic factors, including payment, employee performance is influenced by a multitude of different intrinsic factors (Davidescu et al. 2020).

The competitiveness of public institutions could also be ensured through efficient organizational communication. The study results show that one of the key elements of organizational communication is ensuring that the employees are informed in due time in relation to the tasks that need to be completed, i.e., ensuring transparent institutional communication. The provision of information to employees in due time through internal channels contributes to a higher performance by employees (Gomes et al. 2023). Polycarp (2022) showed a link between internal communication and employee performance. Also, efficient communication may be achieved through developing the communication skills of employees, including communication in a foreign language. Efficient institutional communication contributes to better work organization, especially of remote work (Fuchs and Reichel 2023). Therefore, communication could influence various organizational variables that have an impact on competitiveness.

The study results demonstrated that better work organization, as a determinant of the competitiveness of public institutions, could be implemented by synchronizing theoretical and practical tasks at the workplace, as well as through supervisors defining the correct work tasks. This involves a better design of work tasks in institutions. In contrast to our study, several authors assessed the relationship between job design and cross-training and employee performance (Hernaus et al. 2021), while others studied assessed the degree to which the relationship between a supervisor and employee changes the way in which workplace autonomy influences work outcomes (Lauring and Kubovcikova

2022). Similarly, putting in place innovative methods at the workplace contributes to better work organization. Earlier studies showed the impact of creativity at the workplace on the provision of high quality public services (Houtgraaf 2022; Houtgraaf et al. 2023).

In addition, the digitalization of work contributes to higher competitiveness of public institutions. Our results showed that more investments are needed in technology and employee development to implement digitalization. Civil servants in the Republic of Moldova are aware of the importance of the digitalization of activities for increasing the competitiveness of public institutions, and also understand the benefits of digitalization for their relations with the citizens. In this sense, the development of a platform for ensuring the communication of public authorities, citizens, and businesses is highly needed in today's realities. Likewise, the digitalization of activities has a direct impact on public sector reform (Lindquist 2022), also preventing and lowering the level of corruption in this sector (Androniceanu et al. 2022a; Cappelli et al. 2023), and therefore contributing to higher competitiveness of public institutions.

The digitalization of activities directly contributes to a reduction in bureaucracy in the public sector. Our study found that a reduction in the number of reports and meetings is needed to reduce bureaucracy in the public institutions of the Republic of Moldova, so that civil servants can focus more on completing their daily tasks. Also, there should be less administrative barriers to implementing development projects. Addressing the same problem, Peeters and Widlak (2023) analyzed the degree to which new forms of information exchange may lead to bureaucrats failing to understand the reasoning behind its own administrative decision-making.

Strategic management is the last determinant factor in our research that has an impact on the competitiveness of public institutions. The results show that the managerial abilities of civil servants holding leadership positions should be developed to ensure efficient strategic management. Implementing the European practices and rules into the activities of an institution is another key element for its strategic management.

The determinant factors analyzed in our research validate the existence of a direct or indirect relationship among them, with either a higher or lower impact on the competitiveness of public institutions in the Republic of Moldova.

6. Conclusions

Public institutions are the driving force of, and play an essential role in ensuring, any country's competitiveness. As previously mentioned, any country's competitiveness depends on the competitiveness of its public institutions in being able to adopt strategies and public policies that lead to better welfare of citizens. And, as already underlined above, several determinant factors should be taken into consideration.

The results have shown that public institutions' competitiveness could be reflected through the seven factors studied in this study: employee development, digitalization of activities, strategic management, work organization, bureaucracy reduction, employee performance, and organizational communication.

Considering that the human factor is essential in ensuring the competitiveness of public institutions—in contrast with other areas, where equipment and technology influence organizations' competitiveness—our study provided evidence that the professional development of civil servants is a priority. Almost 90% of the respondents view the development of professional competences in line with the job requirements as being important or very important for ensuring the competitiveness of public institutions.

Also, over 95% of the respondents see result-based remuneration as being very important as it forces civil servants to achieve higher results, which, in turn, influences the level of competition in public institutions. Over 90% of the respondents believe that learning a foreign language is important as it enables them to interact better with their counterparts from other countries and gain new experiences which could be later applied at the workplace.

Out of all the variables describing work organization, the implementation of innovative methods at the workplace is viewed as important and very important by over 85% of the respondents.

Almost 95% of the respondents see investments in information technology and the training of civil servants in acquiring digital competences as important and very important. These two actions should be synchronized, so that the digitalization of activities has a higher impact on the competitiveness of public institutions.

Most of the civil servants included in the study (almost 90%) discovered an excess of bureaucratic activities; as a result, all of the actions presented by our model are important and very important for increasing the competitiveness of public institutions.

In terms of strategic management as a determinant factor for the competitiveness of public institutions, the most important and necessary for this period are the implementation of the European practices and rules into the institution's activity and the consolidation of institutional capacities for solving citizens' problems.

Theoretically, the paper contributes to the scientific literature through valuable research that thoroughly investigates the determinants that have implications for the growth of the competitiveness of public institutions. While in previous works, the factors influencing the competitiveness of public institutions have been analyzed separately, in our research, we investigate seven determinants simultaneously, highlighting the contribution of each of them to increasing the competitiveness of public institutions. The model developed on the basis of the seven determinants also allows us to determine their relative contribution to the competitiveness of public institutions.

From a theoretical perspective, the results support the approach of building up a multidimensional measurement, which is more consistent for measuring the competitiveness of public institutions, rather than analyzing the competitiveness through some of its characteristics.

In practice, by taking each determinant factor included in our research into consideration, decision-makers in public institutions will be able to shape the actions and strategies with an effect on increasing the competitiveness of their public institutions.

The variables describing each determinant factor influencing the competitiveness of public institutions may be adapted or reformulated in line with the development context and strategic orientation of each country. In addition, the variables could be adapted according to sector or functionality, i.e.: national, regional, or local.

To validate the theoretical model of the study, Confirmatory Maximum Likelihood Factor Analysis was applied as it is an essential analytical tool for construct validation. As our study comprised most of the existing central administration institutions, our model may be seen as representative and could be applied from time to time to observe how the impact of the determinant factors on the competitiveness of public institutions changes over time.

From the social viewpoint, our results highlight the actions that must be taken to increase the competitiveness of public institutions. Higher competitiveness will result in an improvement in the quality of public services and the standard of living of the population. Also, higher competitiveness of public institutions, reflected in an improved standard of living of the population, will increase the trust in public institutions.

The limitations of our study lie in the fact that, to date, no study conducted in the Republic of Moldova has assessed the competitiveness of public institutions and compared the results to identify any definite trend. This competitiveness construct of public institutions is the first to test it and needs to be subjected to further research.

Another limitation of the study resides in the design of the research model. In a future study, the model should be refined by including more items in the construct and through retesting for validation.

Moreover, in a future study, we will be applying this model regionally and locally to find out the degree to which the determinant factors influence the regional or local competitiveness of public institutions.

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