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THE ORGANISATIONAL DIMENSION OF DIGITAL MATURITY IN PUBLIC AND PRIVATE INSTITUTIONS

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Purpose: The paper aims to answer the following questions: what is the level of organisational maturity in public and private institutions, and how does the size of these institutions affect the level of their organisational digital maturity?
Methodology: This goal will be achieved by presenting the results of a study conducted in 308 public and private institutions. The survey was carried out using the online survey technique (CAWI) at the end of 2024 and the beginning of the 2025 year.
Findings: The results showed that private institutions have a statistically significantly higher overall level of organisational digital maturity and its subdimensions than public institutions. In turn, the size of the institutions surveyed proved to be a factor that did not significantly differentiate the level of their organisational digital maturity. The only significant differences were found in the level of the subdimension of 'organisational culture'.
Research limitations: Only the organisational dimension of digital maturity was analysed. In the future study, other dimensions of digital maturity in public and private institutions should be considered, as well as factors that may influence them.
Practical implications: The results indicate that public institutions need to intensify their digitisation processes. Today, customers of public and private institutions expect high-quality services. The pressure to reduce costs also forces high operational efficiency. A high level of digital maturity within the institution is an important prerequisite for meeting these demands.
Originality: Only a few studies on the level of digital maturity in public and private institutions clearly indicate differences between them. The presented research attempts to assess and compare the organisational dimension of digital maturity in private and public institutions, pointing to the differences between them not only in the overall level of the organisational dimension but also in its subdimensions.
Keywords: digital maturity, organization, private institutions, public institutions.
Category of the paper: Research paper.

1. Introduction

The development of digital technologies is one of the most important factors driving changes within public and private institutions. Although digital technologies have become omnipresent, institutions often lack the ability to utilise opportunities they offer (Ziemba, Karmańska, 2021). The digital transformation of organisational processes in public and private institutions is a response to the challenges posed by the environment that arise, e.g., from the rapid development of information technology (Pieriegud, 2016). This phenomenon results in a number of opportunities and threats for public and private institutions.

On the one hand, digital technology accompanied by digitalisation and automatization of organisational processes enables public and private institutions to decrease costs, enhances transparency of operations and their control, increases access to information, and as a result improves efficiency and quality provided services. For these reasons, the digitalisation of institutions, especially public ones, has become an important element of the Polish state's digitalisation strategy and the creation of a modern information society (Minister of Digital Affairs, 2017). On the other hand, in practice many institutions still find this process one of the most challenging to introduce and manage due to their limited resources compared to large companies, as well as specific organisational obstacles such as hierarchical structure, authoritarian leadership, low flexibility of action, reluctance to change, etc., that are characteristic for public institutions.

The success of the institution in facing the challenges and threats brought about by changes in the contemporary economy is largely based on its digital maturity. Digital maturity is a multidimensional concept that covers different areas of the functioning of public and private institutions related to both their technological assets as well as its management and organizational processes, leadership, and organisational culture (Hauke, Perechuda, Cieśliński, 2022). The digital maturity of public and private institutions is also characterised by their ability to transform their performance by introducing IT technologies into organisational processes. As a result, new organisational and management tools are being developed. It also influences the requirements for employees, organisational culture, leadership, organisational cooperation network, and protection of personal data. In this context, the organisational dimension of the digital maturity of public and private institutions has gained great importance for their further development under new conditions of performance in the digital economy. Today, awareness of the opportunities and risks of digitisation, as well as knowledge of the organisational aspects of this process, is essential for the effective management of public and private institutions (Ziemba, Karmańska, 2021).

Rapid technological changes and the need for digital transformation mean that it is essential for researchers and practitioners to assess the digital maturity level of organisations and identify the factors that impact it. However, despite the growing popularity of this topic, there is still

little empirical research dedicated to organisational dimensions of digital maturity in the private and public institutions.

Therefore, the paper tries to answer the following questions: what is the level of the organisational maturity dimension in public and private institutions, and does the size of these institutions measured by the number of employees differentiate level of their organisational digital maturity? This goal will be achieved by presenting the results of a survey conducted in 308 public and private institutions.

2. Theoretical background and hypotheses development

The concept of institution is understood in a number of ways in various scientific disciplines. Pioneer of institutional economics, North (1990) defined an institution as the rules of 'the economic game in society', emphasising the influence of institutions on economic processes and development. In turn, in public management, institutions are usually associated with public administration entities that carry out specific public duties. In the classical management approach, the concept of an institution is usually equated with that of an organisation, i.e., a group of people with resources that work together to achieve certain objectives (e.g., Pszczołowski, 1978; Zieleniewski, 1976). It should be noted, that the term of public institution is more clearly defined than private institutions generally and means organised structures that are created for the management of public affairs (Giucă et al., 2022). However, changes in public management and the emergence of new public management and governance approaches (Gorzelany, 2025), along with the tendency to transfer the delivery of many public services to the private sector, have resulted in the blurring of boundaries between public and private institutions in many areas of their actions.

Consequently, today the term of both public and private institution can be understood as an organisation equipped with resources, not an enterprise that provides specialised services to society, contributing to optimising its functioning and development (e.g., hospitals, schools, libraries, community centres, social welfare centres, financial and insurance institutions) (Wilkin, 2009). Their activities and tasks are broad and diverse (e.g., education, science, health, environmental protection, social welfare, culture, sport). These institutions, based on specific norms and values depending on the economic and sociocultural context (often of a legal nature), regulate social behaviour in areas that are particularly important for the society and the well-being of its members (Neale, 1987). The fundamental difference between public and private institutions is how they are financed: public institutions are funded by the state, whereas private institutions are funded by private sources and have private owners.

In the context of the dynamic development of the digital economy, it has become increasingly important for institutions to adapt to the new conditions by digitising various areas of their performance. An institution's digital maturity is determined by the extent to which it has digitised its activities. The literature contains many different conceptualisations of the relatively new concept of digital maturity. Generally, it can be viewed as adaptation of an organisation to the digital environment (Adamczewski, 2019). Digital maturity is also defined as the organisational ability to respond adequately to changes by using digital capabilities (Sándor, Gubán, 2021). In the opinion of Berghaus and Back (2016), digital maturity is the set of organisational skills and resources that enable the effective implementation of digital transformation processes. In turn, Teichert (2019, p. 1635) indicates that digital maturity 'reflects the status of a company's digital transformation'.

In recent years, numerous models of its assessment, covering various dimensions of digital maturity, have been proposed by experts on this topic (e.g., Schallmo, Williams, Boardman, 2017; McKinsey Digital, 2016; Deloitte, 2018; Petzolt et al., 2022). The majority are theoretical and qualitative in nature and they have not been tested in empirical studies. Considering the contribution in the digital transformation process, they frequently cover dimensions such as: IT infrastructure and governance, strategy and vision, employee skills and competencies, organisation, leadership, culture, products and services, etc. (Teichert, 2019; Nerima, Ralyté, 2021). However, particular attention should be paid to the model proposed by Petzolt et al. (2022), since it is one of the few models that has been validated in an empirical study. This model encompasses several dimensions of digital maturity, but unlike other models, in addition to the dimensions related to IT infrastructure, it also emphasises the importance of the organisational dimension. This dimension includes five subdimensions, i.e., leadership, data privacy, organisational culture, internal collaboration/networks, and employees that determine the organisational digital maturity.

Numerous factors which can differentiate the level of digital maturity are mentioned in the literature, e.g. kind of activity, resources, technologies used and management, etc. (Skrzypek, 2022; Hauke, Perechuda, Cieśliński, 2022). They refer to public and private institutions. However, in the public sector, other specific factors related to this sector can also impact the digital maturity of public institutions. These factors include, e.g., e-government strategy and policy, IT governance, specific legal regulations concerning public institutions, their hierarchical and complex structures, as well as the relatively low flexibility of public organisations and the lack or limited competitive pressure (Kafel, Wodecka-Hyjek, Kusa, 2021). They may hinder the digitisation process in the public institutions. Therefore, the following research hypothesis was formulated:

H1: The level of the organisational dimension of digital maturity is higher in private institutions than in public ones.

An important factor determining the ability of an institution to digitise is often its resources, particularly financial, technological, and human resources. Previous studies indicated that IT solutions are more likely to be applied in larger organisations, and they tend to have more positive outcomes than the latter (Tansley, Newell, 2007). Small and medium-sized institutions typically have fewer financial and human resources, which can lead to a lower level of digital maturity of the organisational dimension compared to larger institutions (Rudnicka, Chrupala-Pniak, Pollak, 2017). This leads to the following research hypothesis:

H2: The size of the institution (measured by the number of employees) differentiates the level of the organisational dimension of the digital maturity.

3. Method

An empirical study of public and private institutions was conducted using the online survey technique (CAWI). It was carried out at the end of 2024 and the beginning of 2025. The survey was part of a research project entitled 'Digital Maturity of Market Entities in Poland'. A purposive sampling method was used. The key criterion was the type of entity and its activities. Then, after a preliminary interview with their top management, the typical entities were chosen.

The final research sample consisted of 308 institutions, 242 (78.6%) of which were public and 66 (21.4%) of which were private. In terms of type of activity, the sample structure can be described as follows: 3.6% were publishing, audiovisual, and broadcasting institutions; 3.2% were financial and insurance institutions; 3.6% were administrative and support services institutions; 67.2% were public administration, defence, and compulsory social security institutions; 1.6% provided healthcare services; 3.6% directed social work and social welfare activities; 11.7% were arts, entertainment, sports, and recreation institutions; 2.6% were educational institutions; and 2.9% conducted other professional, scientific, and technical activities.

The structure of the sample by the number of employees was as follows. 1.3% of the institutions examined had up to 9 employees, 32.5% employed between 10 and 49 people, 33.4% employed between 50 and 249 people, and 32.8% employed more than 249 employees.

The study was attended by representatives of the management of the institutions surveyed. A total of 176 women (57.1%) and 129 men (41.9%) participated in the survey. Three participants identified their gender as the other. The average age of the respondents was 43.61 years (median 44 years). Most of the participants had a university-level education (89.6%), while 10.4% had secondary education.

The organisational dimension of digital maturity was measured with the scale developed by Petzolt et al. (2022). This scale encompassed its five subdimensions, that is, 'leadership' (4 items), 'data privacy' (2 items), 'organisational culture' (6 items), 'internal collaboration/networks' (3 items), 'employees' (6 items). In total, it included 21 items. The overall level of organisational digital maturity was measured as the average of the five subdimensions.

All scale items of the scale were categorized, and the respondents indicated the number on the seven-point Likert scale ranging from 1 (I strongly disagree) to 7 (I strongly agree). The Cronbach alpha coefficients of the subscales were: 0.86 for 'leadership', 0.74 for 'data privacy', 0.88 for 'organisational culture', 0.72 for 'internal collaboration', and 0.88 for 'employees' subdimension. These findings indicate a high internal consistency of the subscales, which attests to the reliability of their measurement.

4. Results

The results of the analysis showed that the respondents mostly highly rated the organisational dimension of digital maturity in the institutions examined (Table 1). The average general rating of the organisational dimension of digital maturity was 4.58 on the 7-point Likert scale (median 4.72). The ratings of the subdimensions of organisational digital maturity were generally at a similar level. However, the highest rated of its subdimension was 'data privacy' (mean 5.36) (Table 1). The lowest rated subdimension was 'employees' (mean 4.25).

Table 1.
Descriptive statistics of organisational dimension and its subdimensions of digital maturity

Variables	Mean	Median	Std. Deviation	Minim.	Max.
Leadership	4.56	4.75	1.11	1.00	7.00
Data privacy	5.36	5.50	0.94	1.00	7.00
Organisational culture	4.47	4.67	0.95	1.00	7.00
Internal collaboration/networks	4.27	4.33	1.04	1.00	7.00
Employees	4.25	4.33	0.97	1.00	7.00
Organizational digital maturity (overall)	4.58	4.72	0.83	1.00	7.00

Source: own developed.

Then, the average level of organisational digital maturity was compared between private and public organisations (Table 2). Generally, private institutions had a higher average level of digital maturity than public ones. This difference was particularly evident in the 'internal collaboration' and 'employees' subdimensions. The average level was only slightly higher in public institutions for the 'data privacy' subdimension.

Table 2.
The level of organisational dimension and its subdimensions of digital maturity in public and private institutions

Dimensions		N	Mean	Std. Deviat.	Std. error	95% confidence interval for the mean		Min.	Max.
						Lower boundary	Upper boundary		
Leadership	Private	66	4.93	0.78	0.10	4.74	5.12	2.25	7.00
	Public	242	4.46	1.16	0.07	4.32	4.61	1.00	7.00
Data privacy	Private	66	5.28	0.56	0.07	5.14	5.42	4.00	7.00
	Public	242	5.38	1.01	0.07	5.24	5.50	1.00	7.00
Organisational culture	Private	66	4.87	0.54	0.07	4.72	4.50	3.33	7.00
	Public	242	4.37	1.00	0.06	4.24	4.49	1.00	7.00
Internal collaboration	Private	66	4.72	0.61	0.08	4.58	4.88	2.00	7.00
	Public	242	4.14	1.09	0.07	4.00	4.28	1.00	7.00
Employees	Private	66	4.65	0.57	0.07	4.51	4.79	3.33	7.00
	Public	242	4.14	1.02	0.07	4.01	4.27	1.00	7.00
Organizational digital maturity (overall)	Private	66	4.89	0.47	0.06	4.77	5.00	3.15	7.00
	Public	242	4.50	0.89	0.06	4.39	4.61	1.00	7.00

Source: own developed.

The significance of the differences in mean scores across the subdimensions studied in public and private institutions was then tested. Since the distribution was close to normal, a Levene's test was performed to check the homogeneity of variance assumption. If the test is statistically insignificant and the assumption of homogeneity of variance is met, a Student's t-test could be used to analyse the significance of the differences for independent samples. Since the variances in the groups were heterogeneous for all dimensions, a Student's t-test with Welch's correction was used to check for significant differences in the means (Table 3).

Table 3.
The results of the Levene's test and the t-test for equality of means for independent samples for public and private institutions

Dimensions	Levene's test for homogeneity of variance		T test for equality of means					
	F	Sig.	t	df	Sig. one-tailed test P	Sig. two-tailed P	Difference in means	Std. error of the difference
Leadership	9.859	0.002	3.83	152.18	<0.001	<0.001	0.467	0.122
Data privacy	14.236	<0.001	-1.01	191.30	0.158	0.316	-0.096	0.095
Culture	19.339	<0.001	5.30	196.33	<0.001	<0.001	0.494	0.093
Collaboration	25.866	<0.001	5.70	189.75	<0.001	<0.001	0.587	0.103
Employees	17.699	<0.001	5.20	188.34	<0.001	<0.001	0.501	0.096
Organizational digital maturity (overall)	25.776	<0.001	4.81	203.84	<0.001	<0.001	0.391	0.081

Note. The significance level is 0.05.

Source: own developed.

The results revealed that private institutions had a statistically significantly higher overall average level of organisational digital maturity than public institutions. Private institutions also demonstrated significantly higher levels of particular subdimensions of digital organisational

maturity than public ones, except for the ‘data privacy’ dimension. However, in the case of the 'data privacy' dimension, which was higher in public organisations, these differences were found to be statistically insignificant.

Next, to test hypothesis H2, the averages of the examined subdimensions and the overall organisational digital maturity were compared across institutions of different sizes, measured by the number of employees.

Three groups of institutions were examined: small institutions with 1 to 49 employees (104 institutions); medium institutions with 50 to 249 employees (103 institutions); and large institutions with more than 249 employees (101 institutions). First, the mean level of the studied subdimensions and the overall level of organisational digital maturity were calculated for each group (Table 4).

Table 4.
Descriptive statistics of the subdimensions of organisational digital maturity in small, medium and large institutions

Subdimensions	Institution (size)	N	Mean	SD	Std. error	Minim.	Max.
Leadership	small	104	4.48	1.01	0.10	1.00	7.00
	medium	103	4.54	1.25	0.12	1.00	7.00
	large	101	4.68	1.05	0.10	1.00	7.00
Data privacy	small	104	5.37	0.88	0.09	2.50	7.00
	medium	103	5.44	1.01	0.10	1.00	7.00
	large	101	5.25	0.91	0.09	1.00	7.00
Culture	small	104	4.53	0.88	0.09	1.50	7.00
	medium	103	4.28	1.09	0.11	1.00	7.00
	large	101	4.60	0.84	0.08	1.00	7.00
Collaboration	small	104	4.23	0.99	0.10	1.00	7.00
	medium	103	4.13	1.10	0.11	1.00	7.00
	large	101	4.45	1.00	0.10	1.00	7.00
Employees	small	104	4.24	0.90	0.09	1.00	7.00
	medium	103	4.11	1.11	0.11	1.00	7.00
	large	101	4.41	0.84	0.08	1.00	7.00
Organizational digital maturity (overall)	small	104	4.57	0.76	0.07	1.57	7.00
	medium	103	4.50	0.95	0.09	1.00	7.00
	large	101	4.68	0.78	0.08	1.00	7.00

Source: own developed.

To determine whether an ANOVA analysis could be performed, Levene's test for homogeneity of variance was performed. This revealed the homogeneity of variance for all subdimensions (p-value greater than or equal to 0.05). Therefore, an ANOVA analysis was then performed to test whether the differences in the mean level of the examined were statistically significant (Table 5).

Table 5.
Results of ANOVA analysis: subdimensions of organisational digital maturity

Subdimensions		Sum of Squares	df	Mean Square	F	Sig.
Leadership	Between Groups	2.075	2	1.038	0.842	0.432
	Within Groups	375.751	305	1.232		
	Total	377.826	307			
Data privacy	Between Groups	1.861	2	0.930	1.059	0.348
	Within Groups	267.960	305	0.879		
	Total	269.821	307			
Culture	Between Groups	5.550	2	2.775	3.132	0.045
	Within Groups	270.298	305	0.886		
	Total	275.848	307			
Collaboration	Between Groups	5.330	2	2.665	2.497	0.084
	Within Groups	325.505	305	1.067		
	Total	330.835	307			
Employees	Between Groups	4.888	2	2.444	2.651	0.072
	Within Groups	281.194	305	0.922		
	Total	286.081	307			

Note. The significance level is 0.05.

Source: own developed.

ANOVA analysis revealed that the observed differences in the levels of organisational digital maturity across the investigated subdimensions were only significant in the case of 'organisational culture' when comparing institutions of different sizes. Therefore, a post-hoc analysis was performed using the Tukey test for this subdimension (Table 6).

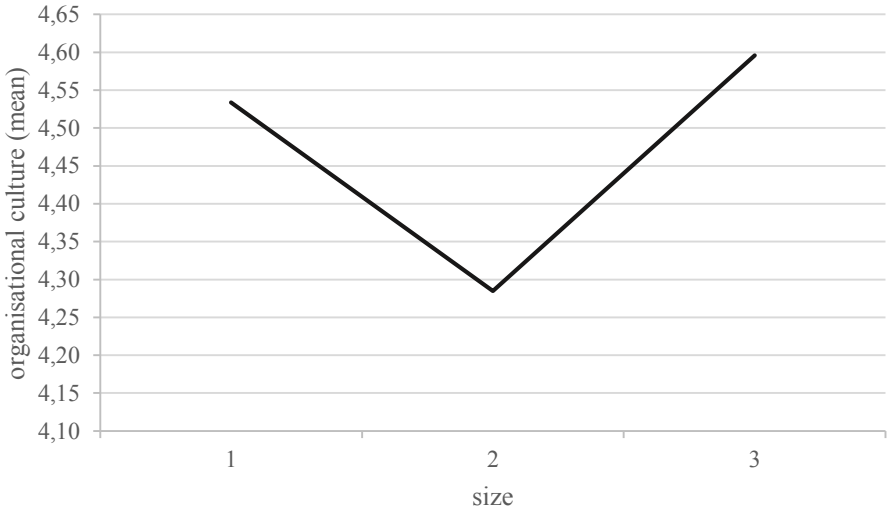
Table 6.
The results of comparisons between the institutions examined: 'culture' subdimension (Tukey's test)

(I) size	(J) size	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
small	medium	0.249	0.131	0.140	-0.059	0.557
	large	-0.062	0.132	0.885	-0.372	0.248
medium	small	-0.249	0.131	0.140	-0.557	0.059
	large	-0.311	0.132	0.050	-0.621	-0.000
large	small	0.062	0.132	0.885	-0.248	0.372
	medium	0.311*	0.132	0.050	0.000	0.621

Note. The significance level is 0.05.

Source: own developed.

A post-hoc analysis revealed that there were statistically significant differences in the level of 'organisational culture' between medium-sized and large institutions (Figure 1).



Note. 1 – small institutions, 2- medium institutions, 3 – large institutions.

Figure 1. Differences in the level of organisational culture between medium-sized and large institutions. Source: own developed.

Next, the level of digital maturity of the overall organisational dimension was examined in small, medium, and large institutions. Since Levene's test revealed heterogeneity of its variance, the nonparametric Kruskal-Wallis test was used for this purpose (Table 7).

Table 7.
Statistical significance of differences between the average levels of the overall organisational dimension of digital maturity in small, medium, and large institutions

Null hypothesis	Test	Test statistic	Significance	Decision
The distribution of the organizational dimension is the same across institutions	Independent samples Kruskal-Wallis test	3.299	0.192	Accept the null hypothesis

Note. Asymptotic significances are displayed. The significance level is 0.05.

Source: own developed.

The analysis showed that the differences are statistically insignificant. Therefore, there are no significant differences in the level of overall organisational digital maturity between the institutions surveyed of different sizes.

5. Discussion and Conclusions

According to the results obtained, there is no reason to reject the first hypothesis (H1). The analyses revealed that the overall level of organisational maturity, as well as the levels of its subdimensions, were statistically significantly higher in private institutions than in public ones. The only exception was the 'data privacy' subdimension, which was higher in public institutions, though this difference was not statistically significant.

These findings indicate that private institutions are more effective in dealing with the organisational aspects of digitisation. It also suggests that public institutions are not fully exploiting the opportunities created by digitisation in the organisational dimension, despite the fact that information resources are strategically important to these institutions and IT systems are essential for their performance and execution of their basic tasks. It should be noted that the results obtained correspond to the findings of the previous study conducted in the Polish public sector, which showed a moderate level of digital maturity of public institutions (Kafel, Wodecka-Hyjek, Kusa, 2021). The relatively high level of organisational digital maturity of public institutions observed in this study can be explained by a strong emphasis on the digitisation of public institutions in recent years, resulting in its increase. However, this remains lower than that of private institutions, suggesting the need for public institutions to accelerate their digital transformation further. It must be stressed that today public institutions face challenges related to growing expectations about the quality of services, and the need to increase the effectiveness of their performance, and digitisation makes it possible to meet these requirements.

Regarding the second hypothesis (H2), the results obtained provide grounds for rejecting this hypothesis, since the differences between small, medium, and large institutions were statistically significant only in the 'culture' subdimension. It should be noted that organisational culture is the dimension of digital maturity that has been examined most frequently in studies (Teichert, 2019). The results revealed that in medium-sized institutions, such important characteristics for the digital maturity of organisational culture as support for entrepreneurial actions, openness to new ideas and technological changes, and willingness to take risks were rated lower than in small and large institutions.

This finding shows that the culture of medium-sized institutions is not conducive to enhancing their organisational digital maturity. These differences can be attributed to the fact that often large institutions tend to prioritise change and risk taking, while small institutions, with their frequently clan culture, foster an environment that encourages experimentation and the tolerance of potential mistakes and failures (Frączkiewicz-Wronka, Marzec, 2015). In practice, this means the need for a cultural change in medium-sized institutions and the development of an entrepreneurial culture that encourages innovation and risk taking.

The study also has other significant practical implications. To properly plan and implement digitalisation in public and private institutions, the initial level of their digital maturity must first be assessed to take appropriate action. These results clearly show that public institutions need to intensify their digitisation processes, because despite the declared policy of digitising the public sector (see Ministry of Digital Affairs, 2024), the level of their organisational digital maturity is still significantly lower than that of private institutions. Increasing the level of digital maturity of public institutions is essential to improve their efficiency, reduce costs, and improve service quality. However, it also requires ensuring additional public funding and resources for these activities.

In this context, it is pertinent to mention the limitations of the conducted study, which define potential directions for future empirical research. First and foremost, the study was limited to analysing differences in the level of organisational digital maturity and its subdimensions between public and private institutions, as well as between institutions of different sizes. In further research, other dimensions of digital maturity of public and private institutions need to be analysed. Other characteristics of institutions that may differentiate the level of organisational digital maturity should also be taken into account. This concerns in particular characteristics of public organisations, such as complex structures, rigid organisational hierarchies, and financial resources, all of which can influence the level of their digital maturity. Furthermore, no causal relationships were examined; the focus was only on comparing the levels of maturity between the selected groups of institutions. An analysis of causal relationships can explain how the digital maturity of institutions evolves. It is also important to identify the characteristics of the organisational culture that may hinder their digitisation process. In the future study, the institutional or regulatory conditions that may affect the level of the subdimensions examined within the organisational dimension of digital maturity should be identified. This is particularly relevant for the subdimension of 'data privacy', which was rated the highest among the subdimensions examined in the surveyed institutions. Furthermore, it should be noted that the sample was nonrandom; hence, the results of the study cannot be generalised to the entire population. In the future, it would be worthwhile to repeat the study on a larger scale using a random sampling method.

In conclusion, a high level of digital maturity is essential for modern public and private institutions to perform effectively. In the digital economy, it is a basic condition for their survival and development. An increasing number of public and private institutions are pursuing digital transformation because only those that are digitally mature can cope with the challenges posed by an unpredictable and rapidly changing organisational environment.

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