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THE DIGITAL TRANSFORMATION OF PUBLIC INSTITUTIONS IN ROMANIA: A MATERIAL, NOT HUMAN, DIVIDE? EMPIRICAL TERRITORIAL PERSPECTIVES ON DIGITAL MATURITY

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Abstract
The digital transformation of public administration is usually diagnosed through aggregate indicators that place Romania at the bottom of European rankings and that associate rurality with a generalized digital lag. This paper empirically tests that assumption from a territorial perspective, drawing on primary data collected through a 23-item questionnaire administered in November–December 2023 to 568 respondents from municipalities, prefectures and county councils (response rate 17.8%; 9 historical regions, more than 30 counties). Digital maturity is measured through a composite Digital Maturity Index (DMI) built from 18 ADKAR-type Likert items (Cronbach's $\alpha = 0.96$). The results show that there are no significant differences in DMI either between rural (3.57) and urban (3.53; Mann-Whitney $p = 0.54$) institutions, between regions (Kruskal-Wallis $p = 0.34$), or across seniority levels ($p = 0.75$). By contrast, urban institutions hold significant advantages at the material level, equipment, software, dedicated digital roles, Ghișeul.ro enrolment and citizen-communication practices (all $p < 0.01$). The strongest and only robust correlate of DMI is the practice of monitoring and two-way communication with citizens ($\rho = 0.34$), a relationship that holds within both environments. An item-level analysis reveals that the weakest links of maturity are not attitudes but continuous training and hands-on practice. The central conclusion is that the digital divide of the Romanian administration is predominantly material and organizational, not attitudinal, with direct implications for the design of digitalization policies.
Keywords: *digital governance; institutional transformation; digital maturity; territorial development; public administration.*
JEL Classification: H40; O33; D73; R58.

1. INTRODUCTION

The digitalization of the public sector has ceased to be a technical option and has become a structural dimension of contemporary governance. In a broad sense, it denotes the transition from a paper-based administration to one mediated by digital tools and technologies; in a narrow sense, it entails functional transformations of the administrative apparatus that reconfigure decision-making processes and place the emphasis on intra- and inter-institutional collaboration and on participatory governance (Mergel, Edelmann and Haug, 2019; Vial, 2019).

Romania offers a particular context for studying this process. The European DESI index has consistently placed the country at the bottom of the digital maturity ranking (European Commission, 2022), while international assessments highlight a persistent gap between strategic ambitions and effective administrative capacity (OECD, 2023). Most diagnoses, however, remain quantitative and aggregated at the national level, offering a limited picture of internal territorial heterogeneity and, above all, of the organizational mechanisms that support or hinder digitalization at the local level.

This paper addresses that gap through an empirical, primary-data analysis of the digital maturity of Romanian public institutions, with a focus on the territorial dimension (rural/urban and regional). It is part of a broader research program on the same dataset, the results of which were previously published from a multidimensional perspective (infrastructure – employees – citizens) by Greavu-Șerban, Gheorghiu and Ungureanu (2025) in *World Development*. Unlike that paper, the present contribution shifts the analytical focus from the general multidimensional framework towards the **statistical testing of territorial hypotheses** and towards the decomposition of the digital divide into its material and its human components.

The central question is twofold: (a) to what extent do residence environment and region explain the level of digital maturity of public institutions, and (b) if they do not, which organizational factors do? The answer outlines a counter-intuitive thesis with respect to the dominant narrative: the digital divide of the Romanian administration is predominantly material and organizational, whereas digital human capital, awareness, motivation, competencies, citizen orientation, is distributed remarkably uniformly across the territory.

2. THEORETICAL FRAMEWORK AND RELATED LITERATURE

The study sits at the intersection of four complementary theoretical strands, presented in turn below: institutional transformation, digital-era governance, citizen orientation and co-production, and territorial development and the digital divide.

2.1. Institutional Transformation and Digital Isomorphism

The first strand treats digitalization not as a mere adoption of technology but as a change in organizational routines, norms and competencies. Recent literature defines digital transformation as a socio-technical process whereby organizations respond to pressures in their environment by using digital technologies to reconfigure their value-creation processes (Vial, 2019), with success depending less on the availability of equipment and more on the capacity to manage organizational barriers. In the public sector, Mergel, Edelmann and Haug (2019) show, based on expert interviews, that civil servants themselves define digital transformation in terms of culture, skills and ways of working, not merely of tools.

Neo-institutional theory offers an additional lens: isomorphic pressures, coercive (European regulations and obligations), mimetic (imitation of institutions perceived as successful) and normative (the professionalization of civil servants), explain why organizations operating in different material contexts come to share similar norms and expectations regarding digitalization (DiMaggio and Powell, 1983). This perspective anticipates a certain homogenization of digital attitudes, independent of local resources, a hypothesis that our data will support. The ADKAR model (Hiatt, 2006), which decomposes change into awareness, desire, knowledge, ability and reinforcement, provides the operational instrument through which this human dimension can be measured.

2.2. Digital-Era Governance and the Stages of E-government

The second strand, digital-era governance (Dunleavy et al., 2006), reinterprets post-New Public Management administrative reform by reintegrating processes around citizens' needs and by digitalizing the state–citizen relationship. The e-government literature has documented an evolution in stages, from mere online presence to transaction, vertical/horizontal integration and transformation (Layne and Lee, 2001), an evolution accompanied by changes in citizens' attitudes towards public services (West, 2004). Janowski (2015) nuances this model through the concept of contextualization: digital maturity is not a universal scale but depends on the specific institutional and territorial context.

An important consensus in this literature is that the determinants of e-government success are predominantly organizational and managerial rather than technological: Gil-García and Pardo (2005) map success factors around institutional capacity, leadership and collaboration, while Meijer and Bekkers (2015) propose a metatheory that places the interaction between technology and institutions at its core. For the local level, Norris and Reddick (2013) empirically

find that change is often incremental and far less determined by size or location than commonly assumed, a direct warning against geographic determinism.

2.3. Citizen Orientation, Co-production and Social Media

The third strand shifts the emphasis from service delivery to the two-way relationship with the citizens. Linders (2012) proposes a move from "e-government" to "we-government," in which the citizen becomes a partner rather than a customer, through coproduction mediated by social media and digital platforms. Bonsón et al. (2012) document how local administrations use social networks for transparency and engagement, albeit with uneven intensity. This literature suggests that genuine digital maturity is manifested less through equipment and more through practices of listening, monitoring and responding to citizens, precisely the dimension that, in our data, proves to be the strongest correlate of maturity.

2.4. Territorial Development and the Digital Divide

The fourth strand draws attention to the risk that digitalization may reproduce or deepen pre-existing spatial inequalities. The classic urban–rural digital divide hypothesis predicts more digitally mature urban institutions, since these have greater fiscal capacity, human expertise and more robust administrative systems, whereas rural administrations face limited resources and institutional fragmentation. Recent research nuances this picture, however, distinguishing between a divide of ***access and endowment*** (infrastructure, equipment, connectivity) and one of ***use and skills***. Classic empirical decompositions of the digital divide show that an important part of it stems from differences in unit attributes, with the remainder attributable to "place" differences. The distinction is crucial for public policy: a material divide is addressed through infrastructure investment, whereas a skills divide requires training. The present paper contributes precisely by empirically separating these two components at the level of Romanian public institutions.

2.5. Synthesis of the Literature and Research Gap

The four strands converge towards a common hypothesis, insufficiently tested empirically in the Eastern European context: the digital maturity of the administration depends more on organizational factors (capabilities, communication practices, institutional culture) than on material endowment or geographic location. Yet most studies either aggregate data at the national level (DESI, OECD) or treat digitalization as a unitary construct, without separating the material from the human component. For Romania and, more broadly, for Central and Eastern Europe, there is a lack of primary-data, institution-level analyses that explicitly distinguish these components and test the role of the

residence environment. The present paper addresses this gap by offering an empirical decomposition of the digital divide into its material and its human components, on a national sample.

3. DATA AND METHODOLOGY

3.1. Sample and Data Collection

The data comes from an online questionnaire (Microsoft Forms) with 23 items, including demographic, Likert, open-ended and multiple-choice items. The target population consisted of the administrative-territorial units (municipalities), prefectures and county councils of Romania. Contact details were collected through web scraping and manual correction, starting from 3,186 units; 6,990 county-personalized e-mails were sent via mail merge, of which 13.3% required subsequent correction.

The campaign ran between 23 November and 22 December 2023 and generated 568 complete responses, equivalent to a 17.8% national response rate, above the 15% target threshold. The unit of analysis is the individual respondent (civil servant), not the institution; several respondents may come from the same administrative-territorial unit. The sample covers 9 historical regions and more than 30 counties, with 427 respondents from rural areas (75.3%) and 140 from urban areas (24.7%); one value is missing for the environment variable.

3.2. Construction of the Digital Maturity Index (DMI)

The Digital Maturity Index (DMI) was built as the mean of 18 Likert items (1 = strongly disagree – 5 = strongly agree) capturing the dimensions of the ADKAR model at the staff level: awareness of the strategy, understanding and motivation, absence of fears, active support, digital competencies, continuous training, the ability to perform the new activities, hands-on practice, the support received and organizational reinforcement. The internal consistency of the scale is very high (Cronbach's $\alpha = 0.96$; $n = 505$ complete cases), confirming the functional one-dimensionality of the index but also a degree of redundancy among items, which the interpretation considers.

In addition, the following variables were operationalized: material-endowment variables (the number of equipment/application types, of software solutions and of dedicated digital roles), an index of citizen-communication monitoring (the mean of six frequency items recoded 0 = never, 1 = occasionally, 2 = regularly), seniority in the position (ordinal, three levels), enrolment in the national Ghișeul.ro platform (dichotomous) and the institution's environment (rural/urban).

3.3. Statistical Analysis

Given the ordinal nature of the variables and departures from normality, non-parametric tests were used: Mann-Whitney U for dichotomous comparisons, Kruskal-Wallis for multiple comparisons, the Spearman coefficient (ρ) for associations and the χ^2 test for contingency tables. The robustness of the key relationship was verified through partial correlations computed separately within each environment. The significance threshold was $\alpha = 0.05$; analyses were performed in Python (SciPy 1.17).

4. RESEARCH HYPOTHESES

Based on the theoretical framework, six hypotheses were formulated:

H1. Urban institutions exhibit a significantly higher DMI than rural ones.

H2. Practices of using and monitoring digital communication are positively correlated with DMI.

H3. A greater number of equipment and software solutions is associated with a higher DMI.

H4. Enrolment in Ghișeul.ro is more frequent in institutions with high DMI and in urban areas.

H5. Greater seniority in the position is associated with a lower level of digital maturity.

H6. There are significant regional variations in DMI, independent of the rural/urban factor.

5. RESULTS

5.1. Sample Distribution

The sample is dominated by rural areas (75.3%), reflecting the country's administrative structure, in which communal municipalities are the majority. The regional distribution is uneven: Moldova, Transylvania and Muntenia account for approximately 68% of responses, while Dobrogea (n = 13) and Bucovina (n = 21) are underrepresented (Table 1). This imbalance calls for caution in interpreting regional estimates, especially for small urban subgroups.

Table 1. Distribution of respondents and mean DMI by historical region (DMI computed on n = 543 valid cases)

Region	N	% of sample	Mean DMI
Moldova	142	25.0%	3.47
Transylvania	124	21.8%	3.53
Muntenia	122	21.5%	3.59
Oltenia	73	12.9%	3.57
Banat	26	4.6%	3.51
Maramureș	25	4.4%	3.46
Crișana	22	3.9%	3.68
Bucovina	21	3.7%	3.71
Dobrogea	13	2.3%	4.22
Total / National	568	100%	3.56

Source: author's elaboration

5.2. Digital Maturity: No Rural/Urban Divide

The national DMI is 3.56 (SD = 0.90), corresponding to a moderate-to-high level on the 1–5 scale. Contrary to the expectation in H1, the difference between rural (M = 3.57; n = 405) and urban (M = 3.53; n = 138) institutions is negligible and statistically non-significant (Mann-Whitney U = 28,924; p = 0.54; effect size r = 0.03). Hypothesis H1 is therefore rejected: in attitudinal-competency terms, rural institutions are no less digitally mature than urban ones.

5.3. Regional Variation is Not Significant

Although the regional means of the DMI vary apparently between 3.46 (Maramureș) and 4.22 (Dobrogea), the Kruskal-Wallis test indicates no significant differences across the 9 regions (H = 9.03; df = 8; p = 0.34). Dobrogea's high value rests on a very small subsample (n = 13) and does not survive the omnibus test. Hypothesis H6 is thus rejected. This result corrects an earlier descriptive interpretation according to which regional variations were substantial: inferential analysis shows that they fall within the limits of sampling variability.

5.4. Seniority Does Not Affect Digital Maturity

Contrary to hypothesis H5, there is no significant difference in DMI across seniority levels in the position: 1–5 years (M = 3.59; n = 210), 6–10 years (M = 3.58; n = 117) and over 10 years (M = 3.52; n = 213); Kruskal-Wallis H = 0.58;

$p = 0.75$. Senior civil servants are therefore no less digitally mature, a result that contradicts the stereotype of "resistance to change" among senior staff and suggests that normative professionalization pressures act transversally (DiMaggio and Powell, 1983). Hypothesis H5 is rejected.

5.5. The Real Divide is Material and Organizational

The picture changes radically at the level of material endowment. On average, urban institutions have significantly more equipment types (3.37 vs. 2.58), more software solutions (1.74 vs. 1.37) and more dedicated digital roles (1.89 vs. 1.05), all differences being highly significant ($p < 0.001$; Table 2). Enrolment in the Ghișeul.ro platform is far more frequent in urban areas (74.6%) than in rural ones (50.4%; $\chi^2 = 24.0$; $p < 0.001$). Moreover, the practice of monitoring and communicating with citizens is itself more developed in urban areas (mean index 0.95 vs. 0.66 on the 0–2 scale; $p < 0.001$).

Table 2. Rural vs. urban comparison: material endowment and practices vs. digital maturity (Mann-Whitney U and χ^2 tests; n.s. = non-significant).

Indicator	Rural (M)	Urban (M)	p	Verdict
No. of equipment types	2.58	3.37	< 0.001	Urban >
No. of software solutions	1.37	1.74	< 0.001	Urban >
No. of dedicated digital roles	1.05	1.89	< 0.001	Urban >
Citizen-monitoring index (0–2)	0.66	0.95	< 0.001	Urban >
Ghișeul.ro enrolment	50.4%	74.6%	< 0.001	Urban >
DMI ("human" maturity)	3.57	3.53	0.54	n.s.

Source: author's elaboration

The contrast is the essence of the contribution: the urban–rural divide is real, but it manifests at the level of material resources, access to the national e-government infrastructure and organizational practices, not at the level of staff training and attitudes. Rural institutions have civil servants who are just as aware, motivated and digitally competent as their urban counterparts, but who work with fewer means.

5.6. What explains digital maturity?

The analysis of Spearman correlations with DMI (Table 3) clarifies the hierarchy of factors. The strongest and only robust correlate of DMI is the index of monitoring and two-way communication with citizens ($\rho = 0.34$; $p < 0.001$).

The number of equipment types (ρ = 0.09; p = 0.04) and of dedicated roles (ρ = 0.10; p = 0.02) show positive but weak associations, while the number of software solutions (ρ = 0.08; p = 0.08) does not reach the significance threshold. Thus, H3 receives only weak support, while H2 is confirmed in its "practice" variant (monitoring/communication) rather than its purely infrastructural one. Seniority (ρ = −0.03) and urban environment (ρ = −0.03) do not correlate with DMI, reconfirming the earlier results.

Table 3. Spearman correlations between DMI and the main factors (n ≈ 536–543; *** p < 0.001, * p < 0.05)

Factor associated with DMI	ρ (Spearman)	p	Interpretation
Citizen-monitoring index	+0.34	< 0.001	strong ***
No. of dedicated digital roles	+0.10	0.02	weak *
No. of equipment types	+0.09	0.04	weak *
No. of software solutions	+0.08	0.08	non-significant
Urban environment	−0.03	0.54	non-significant
Seniority in position	−0.03	0.52	non-significant

Source: author's elaboration

The relationship between monitoring and DMI is robust: it holds, with similar intensity, within both environments (rural ρ = 0.33; urban ρ = 0.39; both p < 0.001), which rules out the possibility that the association is a mere artefact of the urban/rural difference. Notably, material endowment does not "buy" the communication practice: the correlation between the number of equipment types and the monitoring index is null (ρ = 0.07; p = 0.08). In other words, an institution may have equipment without communicating with its citizens, citizen orientation is an organizational choice, not an automatic consequence of endowment.

5.7. The ADKAR Profile: Where the Weak Links Lie

Decomposing the DMI at the item level reveals a coherent pattern. The highest-rated items pertain to awareness and understanding: civil servants understand why the institution is digitalizing (M = 3.93), understand its impact (M = 3.89) and are informed about projects (M = 3.89). The lowest-rated items pertain to knowledge and operational ability: the opportunity to practice the new activities (M = 3.10), continuous training in the digital field (M = 3.14) and in communicating with citizens (M = 3.21). This profile, high awareness but

deficient training and practice, shows that where a "human" deficit exists, it is one of training supply, not of attitude. It is therefore, again, an organizational and resource deficit, not one of mindset.

At the ADKAR dimension level, the profile is telling: Awareness = 3.85, Desire = 3.57, Reinforcement = 3.49, Ability = 3.41 and Knowledge = 3.27. The pattern A > D > R > B > K confirms that the Romanian administration has already gone through the awareness and motivation stages but lags in operational knowledge (training) and ability (practice), precisely the components that depend on the organizational supply of training (Table 4).

Table 4. Means of the 18 DMI items, grouped by the dimensions of the ADKAR model (ordered descending within each dimension)

Dimension	Item (synthesized wording)	Mean (1–5)
Awareness	Understand why the institution is digitalizing	3.93
Awareness	Have received information about projects	3.89
Awareness	Understand the impact of the changes	3.89
Awareness	Know the digitalization strategy	3.80
Awareness	Informed about the digital means	3.73
Desire	Management supports the process	3.77
Desire	Motivated to be part of the process	3.54
Desire	Actively support digitalization	3.54
Desire	Have no fears about change	3.41
Knowledge	Have the necessary digital competencies	3.46
Knowledge	Continuously trained (citizen communication)	3.21
Knowledge	Continuously trained (digital field)	3.14
Ability	Receive support when facing difficulties	3.81
Ability	Can easily perform the new activities	3.32
Ability	Have been able to practice the new activities	3.10
Reinforcement	Perceive support for the change	3.69
Reinforcement	Are encouraged to use the tools	3.57
Reinforcement	No consequences if they do not use them	3.21

Source: author's elaboration

5.8. Enrolment in Ghișeul.ro

Institutions enrolled in Ghișeul.ro have a significantly higher DMI than non-enrolled ones (3.67 vs. 3.41; Mann-Whitney $p = 0.002$), and enrolment is significantly more frequent in urban (74.6%) than in rural (50.4%) areas, fully confirming H4. At the regional level, enrolment rates range from 38.5% (Banat) to about 69% (Dobrogea, Transylvania), suggesting that access to the national e-government infrastructure exhibits a territorial heterogeneity that the DMI does not reflect, further evidence that the divide is located in the material and access sphere, not in the human one.

5.9. Summary of Hypothesis Testing

Table 5. Summary of the verdicts on the hypotheses

Hypothesis	Statement (summary)	Verdict
H1	Urban > rural in DMI	Rejected ($p = 0.54$)
H2	Use/monitoring ↔ DMI	Confirmed (monitoring, $\rho = 0.34$)
H3	More equipment/software ↔ DMI	Weak support ($\rho \approx 0.08–0.10$)
H4	Ghișeul.ro ↔ high DMI and urban	Confirmed ($p = 0.002$; $p < 0.001$)
H5	Greater seniority ↔ lower adoption	Rejected ($p = 0.75$)
H6	Significant regional variations	Rejected ($p = 0.34$)

Source: author's elaboration

6. DISCUSSION

6.1. A Reinterpretation of the Digital Divide

The results converge towards a reinterpretation of the "digital divide" in the Romanian public administration. The dominant narrative, supported by aggregate DESI-type indicators, associates rurality with a generalized digital lag. The present data nuance this picture: the divide exists, but it is located in the material sphere, equipment, software, specialized roles, access to the national e-government infrastructure, and in that of organizational practices, not in the human sphere, where the awareness, motivation, basic competencies and citizen orientation of staff are remarkably uniform across environments, regions and generations. The theoretical distinction between an access/endowment divide and a skills divide thus finds empirical confirmation at the level of public institutions: in the Romanian case, the dominant divide is one of endowment.

6.2. The Human Deficit, Where it Exists, is One of Training

The ADKAR profile refines this conclusion. The fact that awareness and understanding items are the highest-rated, while the training and practice items are the lowest, shows that resistance to digitalization is not a matter of attitude but of opportunity: civil servants are willing and understand, but do not receive enough continuous training and practice opportunities. This places responsibility at the organizational and policy level, not at the level of the individual. The result is consistent with the literature that links the success of digital transformation to the development of capabilities rather than to the mere acquisition of technology (Vial, 2019; Mergel, Edelmann and Haug, 2019).

6.3. Citizen Orientation as the Engine of Maturity

The fact that the strongest predictor of DMI is the practice of monitoring and two-way communication with citizens, a relationship robust in both environments and independent of endowment, supports the digital-era governance perspective (Dunleavy et al., 2006) and the transition from "e-government" to "we-government" (Linders, 2012). Digital maturity appears to be a property of a citizen-oriented institutional culture and of coproduction practices (Bonsón et al., 2012) rather than of the technical inventory. The finding that equipment does not automatically generate communication confirms the classic thesis that the success factors of e-government are organizational, not technological (Gil-García and Pardo, 2005; Meijer and Bekkers, 2015).

6.4. Reconciliation with Literature and a Neo-institutional Interpretation

This distinction reconciles the apparent tension with results previously published on the same dataset (Greavu-Șerban, Gheorghiu and Ungureanu, 2025), which had found a more intensive urban adoption of certain digital tools. The two findings do not contradict each other: urban institutions use more tools because they have more resources, but this material advantage does not translate into superior "human" digital maturity. The uniformity of attitudes and competencies, across environments, regions and seniority levels, is consistent with the thesis of institutional isomorphism (DiMaggio and Powell, 1983): coercive (European and national requirements), mimetic (imitation of good practices) and normative (the professionalization of the civil service) pressures homogenize the digital culture of staff, even where material resources remain unequal. Digital human capital thus appears to be distributed more equitably across the territory than material capital.

7. POLICY IMPLICATIONS

If the divide is material and organizational, and human capital is uniform, then digitalization policies should be reordered accordingly. Four directions emerge:

1. ***Differentiated investment in infrastructure, not in generalized awareness-raising.*** Resources should be directed towards the material endowment of rural and small institutions (equipment, software solutions, digital roles), not towards awareness campaigns whose necessity the data do not confirm.
2. ***A government SaaS cloud for small administrative units.*** Since the urban advantage lies in access to infrastructure and platforms (including Ghișeul.ro), a centralized offering of web hosting, institutional e-mail and applications would reduce the material divide without depending on local budgets.
3. ***Continuous-training and hands-on-practice programs.*** Because the weakest links of maturity are continuous training and practice, rather than attitudes, applied training programs, with real opportunities for practice, would have a greater impact than theoretical awareness courses.
4. ***Stimulating citizen-communication practices.*** Since monitoring and two-way communication are the strongest correlate of maturity and do not depend on endowment, generalizing standards and indicators for citizen communication could have a knock-on effect on the entire digitalization process.

Unlike strictly regional recommendations, the data does not justify targeting by region (since regional variation is non-significant), but rather targeting by ***institution type and level of endowment***, the relevant criterion being material and organizational capacity, not geographic location.

8. LIMITATIONS

The study has several limitations. The data are self-reported and come from individual respondents, with possible social-desirability effects and with several respondents per administrative unit. The sample is imbalanced (75% rural / 25% urban), and some regional subgroups, especially urban ones, are too small for reliable estimates. The very high internal consistency of the DMI ($\alpha = 0.96$) suggests a degree of item redundancy that could be refined through confirmatory factor analysis. Finally, the cross-sectional design does not allow causal inference; the reported correlations describe associations, not mechanisms. Future research could test these relationships through a longitudinal design and through multivariate regression models that simultaneously control material, organizational and territorial factors.

9. CONCLUSIONS

Based on a sample of 568 respondents from public institutions across Romania, the paper shows that the “human” digital maturity of the administration, measured through awareness, motivation, competencies and

citizen orientation, does not differ significantly between rural and urban areas, between regions, or by seniority. The real digital divide is material and organizational: urban institutions have more equipment, software, dedicated roles, communication practices and access to the Ghișeul.ro platform. The strongest factor associated with digital maturity is the institutional practice of communicating with citizens, not technical endowment, geography or staff seniority, and where a human deficit exists, it is one of training and practice, not of attitude.

The policy implication is one of reordering priorities: from generalized awareness campaigns towards targeted material investment in poorly equipped institutions, applied training programs and the encouragement of a citizen-communication culture. The distinction between a material and a human divide, empirically confirmed here, provides a more precise criterion for allocating digitalization resources in public administration.

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