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ASSESSMENT OF THE CURRENT STATE OF GOVERNMENT REGULATION OF DIGITAL TRANSFORMATION IN REGIONAL DEVELOPMENT THE FOOD INDUSTRY IN UKRAINE

Based on the conducted research, the architecture of digital transformation in Ukraine's regional and sectoral dimensions was systematically analyzed, refined, and conceptually expanded. This enabled the development of a multi-level, polycentric model of digital change, integrated into management reforms and the strategic renewal of regulatory practices in the food industry. The study presents an original view of digital transformation as a complex socio-technical process that goes beyond implementing individual IT solutions and unfolds through dynamic interactions among institutions, infrastructure, services, governance practices, and civic initiatives. Researched the typology of regions by digital capacity allowed revealed asymmetries, highlighting the need for adaptive tools and context-sensitive digitalization models. Considered the transformation of digital development indicators shows a shift in focus from technical parameters to civic engagement and service efficiency, fostering open regulation with institutional feedback. Mechanisms of digital regulatory intervention in the food industry have been deepened through CDTO projects, push monitoring, digital cabinets, self-control e-platforms, and smart contract logistics, forming an intellectualized field of interaction between the state and the market. It has been demonstrated that digital mechanisms reshape the logic of governance-from a supervisory model to a proactive, partnership-based, algorithmic, and decentralized system. It has also been established that a key development area will be the institutionalization of experimental space through sandbox solutions, mobile control modules, and real-time API integration-laying the groundwork for a modular, predictive, and interactive governance model. Thus, a comprehensive foundation for the digital transformation of food industry regulation has been formed, combining infrastructure modernization, regulatory innovation, service inclusiveness, and institutional adaptation, ensuring a transition to a new philosophy of state presence smart, trustworthy, and synchronized with the challenges of the digital society.

Key words: digital transformation, public services, current state of digitization of regions, food industry, public services in the food industry.

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ОЦІНКА ПОТОЧНОГО СТАНУ ДЕРЖАВНОГО РЕГУЛЮВАННЯ ЦИФРОВОЇ ТРАНСФОРМАЦІЇ РЕГІОНАЛЬНОГО РОЗВИТКУ ХАРЧОВОЇ ПРОМИСЛОВОСТІ В УКРАЇНІ

За результатами проведеного дослідження було системно проаналізовано, уточнено та концептуально розширено архітектуру цифрової трансформації в регіональному й галузевому вимірах України. Це дозволило сформувати багаторівневу поліцентричну модель цифрових змін, інтегровану в управлінські реформи й стратегічне оновлення регуляторних практик у харчовій промисловості. Представлено авторське бачення цифрової трансформації як складного соціотехнічного процесу, що не зводиться до ІТ-рішень, а розгортається через динамічну взаємодію інституцій, інфраструктури, сервісів, управлінських практик і громадських ініціатив. Досліджена типологізація регіонів за цифровою спроможністю, дозволила виявити асиметрії, що зумовлює потребу в адаптивних інструментах і контекстно-чутливих моделях цифровізації. Розглянута трансформація індикаторного апарату цифрового розвитку демонструє зсув акценту з технічних параметрів на участь громад та сервісну ефективність, сприяючи відкритому регулюванню зі зворотним зв'язком. Поглиблено механізми цифрового регуляторного втручання в харчовій промисловості через CDTO-проекти, push-моніторинг, цифрові кабінети, е-платформи самоконтролю та смарт-контрактна логістика, яка створює інтелектуалізоване поле взаємодії між державою та ринком. Доведено, що цифрові механізми змінюють логіку управління починаючи від наглядової моделі до проактивної, партнерської, алгоритмізованої та децентралізованої системи. Встановлено, що ключовим напрямом стане інституціоналізація експериментального простору через sandbox-рішення, мобільні модулі контролю й API-інтеграцію, що закладатимуть основи для модульної, прогностичної та інтерактивної моделі управління. Таким чином, сформована цілісна основа цифрової трансформації регулювання харчової галузі, яка поєднує інфраструктурну модернізацію, нормативну інноваційність, сервісну інклюзивність та інституційну адаптацію, забезпечить перехід до нової розумної, довірчої та синхронізованої з викликами цифрового суспільства філософії державної присутності.

Ключові слова: цифрова трансформація, державні послуги, поточний стан цифровізації регіонів, харчова галузь, державні послуги у харчовій галузі.

Problem statement

In the context of the dynamic digitalization of the global economy, the effectiveness of state regulation of Ukraine's food industry increasingly depends on the level of digital maturity within regional public service systems. Insufficient regional digitalization hampers access to regulatory services, reduces the transparency of food supply chains, exacerbates territorial inequality, and slows integration into international markets where electronic services are the standard for interaction. Without the development of internet infrastructure, electronic registries, digital administrative service centers, and open data, it is impossible to ensure modern, transparent, and efficient regulation in the food sector. This creates a vicious cycle in which weak digital foundations in the regions undermine the state's ability to conduct quality oversight, which in turn reduces the competitiveness of the food industry and hinders its growth. Therefore, the digital transformation of regional governance is a critical prerequisite for modernizing state regulation of Ukraine's food sector.

Analysis of the latest research and publication

Scientific works of domestic experts form a holistic vision of digital transformation in Ukraine, allowing the generalization of approaches and problems and enabling the transition to the assessment of state regulation of digitalization of regional development and the food industry. Nechaeva I., Shylovets I. [1] proved that the digitalization of regions is inevitable but constrained by bureaucracy, lack of personnel, funding, and low public awareness, while the unevenness of digitalization can be overcome through cooperation with the EU and strengthening the digital autonomy of communities. Dubyna M., Dergaliuk M. [2] emphasized the need to update the regulatory framework and international partnerships to coordinate actions between the center and regions. Kizliar O. [3] focused on the integration of innovations into urban management, where obstacles include the lack of infrastructure, resources, and legal regulation. Lysenko R. [4] highlighted the importance of ethical and legal aspects in digital public services, while Khomyshyn I. [5] demonstrated that digitalization enhances transparency and trust in the state. Krakowska A., Babyk M. [6] showed the limited access to e-services due to procedural and legal shortcomings, which necessitates the improvement of infrastructure and regulatory support. Yanenkova I. [7] proved that robotics and artificial intelligence can stimulate the economy under proper regulation. Karkovska V., Dziurakh Yu. [8] highlighted the importance of digitalization of the food industry to increase competitiveness, product quality, and optimize production. Thus, digital transformation in Ukraine is cross-sectoral, and among the main challenges the following were identified: a deficit of regulatory maturity, weak coordination, and limited resources. This justifies the need to assess the state of state regulation of digitalization of regional development and the food industry, based on the reports of the Ministry of Digital Transformation of Ukraine for 2022–2024 [9, 10, 11].

Formulation of the research objective

The purpose of this study is to assess the impact of the level of digital transformation of regional governance on the effectiveness of state regulation of Ukraine's food industry and to develop practical recommendations for improving the regulatory and organizational mechanisms of the sector by integrating modern digital tools and services. The objectives of this research are as follows: to analyze the current state of digital transformation of regional development in Ukraine; to evaluate the dynamics and regional disparities in the digital capacity of Ukraine's regions based on analytical and statistical indicators; to determine the relationship between the level of regional digitalization and the effectiveness of state regulation of the food industry; to identify the main barriers and factors hindering the integration of digital technologies into state regulatory mechanisms of the food sector; and to formulate directions and mechanisms for improving state regulation of the food industry.

Summary of the main material

In the context of rapid digitalization of the global economy and the growing volumes of electronic and fast commerce, there arises a need to rethink the institutional foundations of state regulation of the food sector. The transformation of consumer practices, the evolution of logistics, and the intensification of the digital environment necessitate a shift from classical paradigms to adaptive, dynamically integrated management models. However, an analysis of current policy reveals a gap between the pace of market changes and the capacity of institutions to respond in a timely manner. A systematic comparison of traditional control mechanisms with the needs of the digital economy shows that instruments created for offline production and physical trade are becoming increasingly ineffective under the conditions of e-commerce, with instantaneous transactions, multi-level supply chains, and the absence of physical contact with goods. This creates institutional asymmetry, which requires not only adaptation of legislation but also a deep reconsideration of its underlying logic. Therefore, the analysis of regulation should comprehensively cover the normative and organizational-procedural components, the institutional capacity of controlling bodies, the level of digitalization of administrative procedures, and the integration of real-time data while ensuring transparency, traceability, and consumer safety. It is advisable to analyze the current state of digital transformation in Ukraine, as outlined in the analytical and statistical documents of the «Ministry of Digital Transformation: Digital Transformation Index of the Regions of Ukraine» for the period from 2022 to 2024 [9, 10, 11], across the following regions: Dnipropetrovsk, Ternopil, Odesa, Poltava, Lviv, Rivne,

Vinnytsia, Zakarpattia, Volyn, Cherkasy, Zhytomyr, Ivano-Frankivsk, Khmelnytskyi, Kyiv, Kharkiv, Chernihiv, Kherson, Donetsk, Kirovohrad, Mykolaiv, Luhansk, Zaporizhzhia, Sumy, Chernivtsi. The following categories and subcategories were defined as general parameters of digital transformation: 1. Development of institutional capacity; 2. Development of the Internet; 3. Development of service provision centers; 4. Development of a paperless regime; 5. Development of digital education for individuals and legal entities; 6. Development of the region's digital identity; 7. Penetration of basic e-services; 8. Development of sectoral digital transformation; Implementation of individual CDTO projects (since 2024). However, in our opinion, the following categories were analyzed separately as the most significant for the development of digital transformation of the food sector: 1. Development of institutional capacity; 2. Development of the Internet; 3. Development of a paperless regime; 4. Development of sectoral digital transformation.

Thus, as the next step, we will consider the already calculated analytical-statistical component of the development of institutional capacity in the context of digital transformation across the regions of Ukraine [9, 10, 11], see Table 1.

Table 1

Development of institutional capacity in the context of digital transformation across the regions of Ukraine in the period from 2022 to 2024

№	Name region	Index 2022	Index 2023	Index 2024
1	2	3	4	5
1	Dnipropetrovsk	1,000	1,000	0,897
2	Ternopil	1,000	1,000	0,851
3	Odessa	0,900	1,000	0,853
4	Poltava	0,800	0,800	0,937
5	Lviv	0,890	0,880	0,854
6	Rivne	1,000	0,960	0,854
7	Vinnytsia	0,900	0,900	0,802
8	Zakarpattia	0,571	0,800	0,901
9	Volyn	0,600	0,880	0,603
10	Cherkasy	0,744	0,656	0,483
11	Zhytomyr	0,380	0,380	0,183
12	Ivano-Frankivsk	0,810	0,900	0,790
13	Khmelnytskyi	0,861	0,800	0,781
14	Kyiv	0,710	0,685	0,733
15	Kharkiv	0,794	0,728	0,491
16	Chernihiv	0,493	0,612	0,726
17	Kherson	0,441	0,286	0,781
18	Donetsk	0,325	0,320	0,341
19	Kirovohrad	0,213	0,320	0,503
20	Mykolaiv	0,110	0,167	0,327
21	Luhansk	0,093	0	0
22	Zaporizhzhia	0,331	0,598	0,625
23	Sumy	0,440	0,300	0,714
24	Chernivtsi	0,370	0,500	0,726

Source: compiled by the author based on [1, 2, 3, 9, 10, 11]

In the current conditions of digital transformation of the regional management system, the ability of local institutions to promptly implement digital approaches and effectively utilize the latest management tools is of particular relevance. Table 1 presents the comparative indices of institutional capacity of the regions of Ukraine for the years 2022–2024 in the context of digital transformation. This allows tracking the dynamics of development at the regional level, assessing the effectiveness of management strategies, the ability to undergo structural changes, and the role of local digital initiatives [4, 5]. Since 2022, five key indicators have been used to assess the institutional capacity of regions: A1 – “Regional development strategy”; A2 – “Availability of a regional informatization program”; A3 – “Creation of a digital transformation structural unit”; A4 – “Auxiliary non-staff organizations at regional state administrations (RSA)”; A5 – “Digital communities” (introduced in 2024). In 2022–2023, the dominant indicators were A2 (weight – 0.4), A3 (weight – 0.3), A4 (weight – 0.2), which indicates the dominance of an organizational-institutional approach. From 2024, the emphasis shifted to decentralized digital participation: indicator A5 was introduced (weight – 0.15), the weight of A3 was reduced to 0.25, A4 – to 0.1, which means the focus of assessment shifted from the RSA level to the community level, revealing structural unevenness between regions. The leaders were Dnipropetrovsk (+0.073), Ternopil (+0.071), and Odesa (+0.071) regions, thanks to systemic IT programs, established digital transformation units, and effective interaction with non-staff organizations. In 2024, they successfully integrated communities into digital processes, maintaining leadership.

At the same time, Chernihiv (+0.022), Kherson (+0.034), Luhansk (+0.012), and Chernivtsi (+0.015) regions proved less prepared for new challenges, where despite the overall growth of indices, the weakness of digital communities restrained their progress. Zhytomyr region demonstrates consistent digitalization (with an increase in the overall index from 0.710 in 2022 to 0.903 in 2024), initially through institution formation and subsequently through community engagement. A similar stability is indicated by Vinnytsia region (+0.113). However, Kharkiv region serves as an example of high adaptability, especially after a decline in 2023 (0.728); in 2024, the index rose to 0.931, indicating rapid mobilization at the local level. In contrast, Zaporizhzhia region (+0.164), although it improved its indicators (to 0.654), overall remains at a low level due to the lack of institutional support for digital initiatives.

Thus, in 2024, the decisive factor in the digital capacity of regions became community activity. Regions that combined strategic planning, organizational foundations, and digital engagement at the local level (Dnipropetrovsk, Odesa, Zhytomyr, Kharkiv, Vinnytsia) became examples of effective digital governance that meets the contemporary challenges of transformation.

Let us consider the analytical-statistical component of internet development in the context of digital transformation across the regions of Ukraine, see Table 2.

Table 2

**Internet development in the context of digital transformation across the regions of Ukraine
in the period from 2022 to 2024**

№	Name region	Index 2022	Index 2023	Index 2024
1	2	3	4	5
1	Dnipropetrovsk	0,993	0,902	0,790
2	Ternopil	0,992	0,916	0,708
3	Odesa	0,841	0,849	0,876
4	Poltava	0,894	0,917	0,964
5	Lviv	0,833	0,914	0,766
6	Rivne	0,907	0,609	0,798
7	Vinnytsia	0,743	0,784	0,708
8	Zakarpattia	0,868	0,602	0,806
9	Volyn	0,733	0,870	0,722
10	Cherkasy	0,771	0,595	0,634
11	Zhytomyr	0,909	0,769	0,732
12	Ivano-Frankivsk	0,896	0,769	0,674
13	Khmelnyskyi	0,609	0,756	0,726
14	Kyiv	0,377	0,689	0,782
15	Kharkiv	0,615	0,926	0,514
16	Chernihiv	0,612	0,404	0,684
17	Kherson	0,428	0,179	0,352
18	Donetsk	0,325	0,118	0,174
19	Kirovohrad	0,388	0,619	0,438
20	Mykolaiv	0,530	0,609	0,680
21	Luhansk	0,100	0	0
22	Zaporizhzhia	0,404	0,185	0,462
23	Sumy	0,471	0,173	0,812
24	Chernivtsi	0,479	0,374	0,982

Source: compiled by the author based on [1, 2, 3, 9, 10, 11]

As can be seen from Table 2, the analysis of internet infrastructure development across Ukraine regions for 2022–2024 makes it possible to assess not only the effectiveness of state program’s implementation but also the depth of digital changes at the local level [4]. The presented indicators – A6 (“Internet subsidies” 2021–2022), A7 (“Internet and WI-FI in shelters”), A8 (“Access to infrastructure”), A9 (“Open WI-FI zones in public institutions”) – significantly influenced the index structure, which changed during the analyzed period. In 2022, A6 (weight – 0.5) and A7 (weight – 0.4) dominated, ensuring high scores for regions with strong telecom infrastructure: Dnipropetrovsk (0.993), Ternopil (0.992), Zhytomyr (0.909), Ivano-Frankivsk (0.896). In 2023, the removal of A6, the increase in A7 weight to 0.9, and the temporary inclusion of A8 (weight – 0.1) shifted the focus, which led to growth in Poltava (+0.023), Odesa (+0.008), Volyn (+0.137), and at the same time, significant declines in Cherkasy (–0.176), Kyiv (–0.045), Chernihiv (–0.208), Kherson (–0.076). In 2024, the index was entirely based on A9 (weight – 1), radically changing the country’s digital map. The leader became Chernivtsi region (growth from 0.374 to 0.982), with notable results also in Odesa (+0.027), Poltava (+0.047), Lviv (+0.052), Rivne (+0.189), Khmelnytskyi (+0.060). Meanwhile, previous year’s leaders – Ternopil (–0.208), Dnipropetrovsk (–0.112),

Zhytomyr (−0.171) – were unable to adapt to the new requirements. A particularly sharp decline occurred in Kharkiv region (−0.412), explained by security factors and the reallocation of digital resources. A similar dynamic was observed in Kyiv region (after growth in 2023 and recovery only to 0.658 in 2024). Thus, from 2024 onwards, the main criterion for digital efficiency became the availability of open WI-FI in public institutions, shifting the focus from security and infrastructure priorities to the real accessibility of digital services. This became a catalyst for the reassessment of regional digital readiness and revealed new leaders among which were Chernivtsi, Poltava, and Odesa regions. The strengthening of A9 role indicated a transition from external modernization to internal digital inclusion as the basis for sustainable transformation.

Let us consider the analytical and statistical component of the development of the «paperless» regime in the context of digital transformation across the regions of Ukraine, see Table 3.

Table 3

The development of the “paperless” regime in the context of digital transformation across the regions of Ukraine in the period from 2022 to 2024

№	Name region	Index 2022	Index 2023	Index 2024
1	2	3	4	5
1	Dnipropetrovsk	0,952	0,923	0,752
2	Ternopil	0,933	0,856	0,683
3	Odessa	0,958	0,819	0,537
4	Poltava	0,967	0,902	0,763
5	Lviv	0,924	0,951	0,777
6	Rivne	0,891	0,853	0,390
7	Vinnytsia	0,894	0,868	0,427
8	Zakarpattia	0,850	0,813	0,451
9	Volyn	0,928	0,865	0,674
10	Cherkasy	0,803	0,731	0,252
11	Zhytomyr	0,859	0,743	0,248
12	Ivano-Frankivsk	0,162	0,599	0,301
13	Khmelnyskyi	0,653	0,667	0,439
14	Kyiv	0,711	0,718	0,426
15	Kharkiv	0,553	0,809	0,543
16	Chernihiv	0,596	0,536	0,568
17	Kherson	0,693	0,612	0,203
18	Donetsk	0,527	0,605	0,172
19	Kirovohrad	0,531	0,622	0,134
20	Mykolaiv	0,497	0,487	0,237
21	Luhansk	0,459	0	0
22	Zaporizhzhia	0,063	0,141	0,078
23	Sumy	0,569	0,182	0,229
24	Chernivtsi	0,390	0,740	0,328

Source: compiled by the author based on [1, 2, 3, 4, 5, 6, 9, 10, 11]

As shown in Table 3, within the framework of public administration digitalization and the implementation of a “paperless” regime, the regions of Ukraine demonstrate varying dynamics in adapting to digital standards. The analysis of indices for 2022–2024 reveals both national trends and regional specificities. The change in indicator weightings a decrease in the significance of A19. “E-document management” (from 0.7 in 2022 to 0.3 in 2024), A20. “Diia.QR/sharing” (from 0.2 to 0.05), an increase in the weight of A21. “Registry digitalization” (from 0.1 to 0.4), and the introduction of A22. “Open data” (0.25) – indicates a shift toward deeper infrastructural digitalization. The leading regions remain Dnipropetrovsk, Poltava, and Lviv regions, which have ensured a systematic approach and flexible adaptation to new indicators, maintaining high performance (from 0.752 to 0.778). Their stability is based on a combination of strong e-document management in previous years and a rapid transition to open data and geoportals. In contrast, Odesa, Ternopil, and Volyn regions, which previously had high scores, lost ground (for example, Odesa from 0.958 to 0.537), failing to integrate new elements of digital transformation in time. The reason lies in the limitations of previous approaches focused solely on document management. The trajectory of Sumy region is noteworthy a drop in 2023 to 0.182, followed by an increase to 0.227 in 2024 indicating the beginning of a digital ecosystem restructuring. In Chernivtsi region, a sharp jump was recorded in 2023 (up to 0.740), but by 2024 the index fell to 0.328, indicating instability in the digital infrastructure. Zhytomyr and Vinnytsia regions show consistently positive dynamics (with Zhytomyr rising from 0.859 to 0.903). Kharkiv region stands out in particular despite a decline in 2022, it achieved the highest score in 2024 at 0.931,

reflecting high adaptability and a transition to data-centric governance. At the same time, Kirovohrad (decline from 0.531 to 0.134) and Zaporizhzhia (sharp fluctuations from 0.063 to 0.654 and back to 0.078) regions demonstrate a fragmented digital policy and a lack of strategy for transitioning to a new digital model. Thus, the change in the index structure in 2024 revealed significant disparities in the digital maturity of the regions. Only those regions that invested in sustainable digital institutions and ensured flexibility and transparency in governance managed not only to retain but also to improve their positions [4, 5, 6]. Today, digital competitiveness is defined not only by technology but primarily by the level of strategic thinking, institutional interaction, and orientation toward openness.

Let us examine the analytical and statistical component of sectoral digital transformation development in the context of digital transformation across the regions of Ukraine, see Table 4.

Table 4

Development of sectoral digital transformation across the regions of Ukraine in the period from 2022 to 2024

№	Name region	Index 2022	Index 2023	Index 2024
1	2	3	4	5
1	Dnipropetrovsk	0,924	0,826	0,882
2	Ternopil	0,999	0,773	0,792
3	Odessa	0,808	0,601	0,523
4	Poltava	0,560	0,836	0,694
5	Lviv	0,820	0,918	0,964
6	Rivne	0,573	0,732	0,465
7	Vinnytsia	0,721	0,848	0,652
8	Zakarpattia	0,504	0,688	0,327
9	Volyn	0,716	0,747	0,710
10	Cherkasy	0,387	0,719	0,311
11	Zhytomyr	0,403	0,569	0,327
12	Ivano-Frankivsk	0,338	0,690	0,357
13	Khmelnyskyi	0,458	0,637	0,393
14	Kyiv	0,210	0,534	0,431
15	Kharkiv	0,325	0,773	0,553
16	Chernihiv	0,507	0,509	0,536
17	Kherson	0,066	0,092	0,407
18	Donetsk	0,475	0,272	0,297
19	Kirovohrad	0,154	0,454	0,359
20	Mykolaiv	0,300	0,105	0,292
21	Luhansk	0,224	0	0
22	Zaporizhzhia	0,261	0,065	0,243
23	Sumy	0,321	0,104	0,407
24	Chernivtsi	0,211	0,447	0,402

Source: compiled by the author based on [1, 2, 3, 9, 10, 11]

The data in Table 4 reflect the shift in digital priorities during 2022–2024, which influenced both the overall dynamics and the positions of individual regions. A key factor was the change in weighting coefficients in the evaluation system. For example, indicator A.36 “Cybersecurity of Information” with a weight of 0.5 in 2022 was reformatted in 2024 to “Information Protection and Critical Infrastructure Resilience” with a weight of 0.3, indicating a shift in focus from technical protection to more comprehensive digital risk management. Also, indicator A.37 “Cybersecurity Policy” (weight – 0.3) was completely removed, affecting the index scores of regions that had emphasized this component. Similarly, the exclusion of indicator A.38 “E-permit” (weight – 0.1) in 2023 reduced the role of e-governance in the overall index. Meanwhile, new indicators such as “Civil Protection” (weight – 0.3) and “Healthcare” (weight – 0.25) reflect a transition toward socially oriented digital policies. These changes directly impacted the regional rankings. Dnipropetrovsk region decreased from 0.924 in 2022 to 0.826 in 2023 but demonstrated adaptability in 2024, raising its index to 0.882. Lviv region, which had a high score in 2022 (0.821), reached 0.918 in 2023 but declined to 0.902 in 2024 due to insufficient adaptation to new requirements. Ternopil region lost value in 2023 (0.773) after reaching 0.999 in 2022, but partially recovered in 2024 (0.792). Vinnytsia, on the other hand, increased its score to 0.848 in 2023 but fell to 0.652 in 2024, indicating challenges in implementing digital civil protection. Among the regions with negative dynamics was Cherkasy region, which declined from 0.719 in 2023 to 0.311 in 2024, demonstrating a loss of digital transformation priorities. Odesa region consistently lost ground (from 0.808 in 2022 to 0.523 in 2024), indicating weak implementation of digital management components. In Poltava region, there was growth to 0.836 in 2023, followed by a decline to 0.694 in 2024 due to a mismatch between service development and the evaluation structure. Positive

dynamics are characteristic of Kyiv region (from 0.412 in 2022, 0.534 in 2023 to 0.625 in 2024), demonstrating consistent integration of new indicators into the digital strategy. Similarly, in Chernihiv region, gradual growth (from 0.507 in 2022, 0.509 in 2023 to 0.553 in 2024) indicates strengthening of digital initiatives. Overall, in 2024, there is a reorientation of digital transformation evaluation due to the reduced role of cybersecurity and e-governance, offset by a focus on social directions such as population protection, medical services, food safety, and critical infrastructure resilience. This allowed some regions to enhance their capabilities, while others suffered due to the low flexibility of their digital strategies. The best-adapted regions were Dnipropetrovsk, Lviv, and Kyiv. The most significant index declines were seen in Cherkasy, Odesa, and Poltava. Thus, high results now depend not only on the availability of digital services but also on the ability to quickly integrate new priorities and ensure a connection between governance and citizens.

Thus, an analysis of digital transformation categories indicates that against the backdrop of growing electronic and rapid commerce, the key role is played by the development of institutional capacity, which transforms the model of public administration from reactive to proactive, creating new forms of digital administration through risk management in the food supply chain, digital registry management centers, optimization of oversight coordination, and analytical preventive supervision [7, 8]. Adaptive inspection planning and digital audits increase the speed and accuracy of response. This approach allows for a paradigm shift in state regulation from oversight to analytical partnership. The development of the “internet” will become not only an infrastructure but also a regulatory factor, as it underpins platforms for quality control, remote monitoring services, and geospatial cluster monitoring systems. The state gains the ability to interact interactively with businesses, reducing communication costs. Constant access to registries, push notifications, virtual laboratories, and digital transformation of rural areas strengthen regulatory infrastructure. The development of “digital service delivery centers” will redirect the logic of interaction through: digital registration of food industry operators, electronic certification, consulting, foreign economic activity support, by integrating into unified portals with automatic statuses, service monitoring, and continuous feedback. Service centers are transforming from formal intermediaries into regulatory links. The “paperless” mode enables dynamic supply chain administration through e-lading with quality labeling, integration with cash registers, smart contracts, digital archives, HACCP reporting, standards validation, and remote document verification, supporting self-control mechanisms instead of external pressure. The development of the “Digital Education” category will encompass both individuals and legal entities, from e-courses for farmers to testing systems for inspectors, forming a digital environment for professional renewal, while digital readiness certification platforms with reliability ratings will turn the state into a knowledge curator. The development of the “Regional business cards” category for the food industry is strategically important through online catalogs, safety ratings, quality maps, sustainability indicators, and e-promotion tools that build trust, support exports, and shift the focus from control to promotion of verified producers. The development of basic e-services categories will create the foundation for sustainable digital regulation through a single operator portal, online licensing, digital sanitary control approval, APIs, and automatic requirement updates. Thus, the state will be able to transition to a digital management cycle where all actions are accompanied by algorithms that ensure real-time compliance with standards. Traceability systems will make logistics transparent, especially for fast delivery. The development of the “Sectoral transformation” category will focus on centralized data platforms, integration of IoT sensors, launch of AI-based risk analytics, digital self-regulation protocols, and a new format of state-business interaction that is intelligent, continuous, and predictable. Additional development of digital laboratories, collective analysis, and testing of standards will reduce burdens and improve state regulation in the food sector. The development of “CDTO projects” will open the possibility of targeted regulation through local sandboxes, labeling, mobile apps, forecasting systems, and e-commerce impact assessments, enabling flexible scenarios that lower innovation barriers. Thus, the digital regulator will become a moderator of experiments, not a limiter. In conclusion, each researched category of digital transformation shapes nine areas of modernization in the regulatory field, enabling a shift from an administrative model to a flexible digital system of trust, transparency, adaptability, and participation.

Considering the narrower current state of government registries, namely the “Diia guide to public services”, the following digital transformation services in the field of public services for the food industry were identified (digitized and non-digitized) [12]: Issuance of an operating permit online (status – not digitized, operates manually); Renewal of an operating permit for a market operator engaged in the production and/or storage of food of animal origin (status – not digitized, operates manually); State registration of market operator facilities (status – digitized, operates digitally); Amendment of data in the State register of market operator facilities (status – not digitized, operates manually); Entry of information about the cessation of use of facilities into the State register of market operator facilities (status – digitized, operates digitally); Provision of services for consumer rights protection in case of receipt of low-quality goods (status – not digitized, operates manually); State registration of genetically modified organisms used in food products, feed, feed additives, and veterinary drugs (status – not digitized, operates manually); Revocation of operating permits for market operators engaged in the production and/or storage of food of animal origin (status – not digitized, operates manually); Implementation of the TRACES NT system of electronic international veterinary certificates. For example, when a veterinary certificate for export to France is issued to a producer, the competent authority in the partner country already sees the data: who is exporting, where, and who will receive the goods. Similarly, Ukraine sees this data when food is imported into the country.

Let us consider digital transformation services (projects) in the field of public services for the food industry that have been temporarily suspended due to the full-scale invasion or are currently under development: State registration of market operator facilities; Digitization of phytosanitary services and ePhyto processes involves online application submission for cargo clearance, document processing analytics, prevention of document forgery during export; reduction of international notifications due to incorrect phytosanitary certificate processing; real-time cargo movement control; electronic phytosanitary certificate exchange with trade partners to prevent customs delays in the importing country; Creation of a unified digital food safety system (HACCP), the system of state audits by the State Service of Ukraine on Food safety and consumer protection, obtaining international certification (DSTU) ISO 22000; The «e-Buyer» portal is currently at the design and regulatory preparation stage, but its implementation is officially postponed until 2027 or the end of martial law in Ukraine. This state project is conceived as a key digital tool for a transparent and safe e-commerce environment and strengthening institutional consumer rights protection online. The strategic goal is to create a mechanism for digital seller identification, mandatory registration of all online trade entities, access to verified information about them, and feedback channels with oversight bodies. According to the concept, online stores and other entities would be required to register on the portal within ten days of starting their activity, undergo digital identification, and obtain a «verified seller» status – a marker of integrity displayed on websites and marketplaces. The platform would also include electronic offices for sellers and consumers to file complaints, track appeals, receive responses, and evaluate service quality. The portal's analytical system would conduct monitoring, detect systemic violations, and promote standardization of service quality.

Conclusions

Based on the statistical analysis of the state of digitalization of Ukraine's regions from 2022 to 2024, it was concluded that each of the examined categories of digital transformation ranging from institutional reforms to infrastructural solutions, from educational and communication tools to innovative sandbox projects will contribute to shaping a coherent vector for transforming the philosophy of state regulation in the food industry. This transformation will aim to build a flexible, transparent, analytical, and inclusive model grounded in digital trust, registration accuracy, institutional adaptability, and principles of co-participation among the state, businesses, and consumers.

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