THE GLOBAL IMAGE OF UKRAINE'S TECH SECTOR

ANALYTICAL PAPER

CONTENTS

When it comes to any country's tech image assessment, it is most often evaluated in terms of the following three components:

● Human potential,

● Tech infrastructure and business environment,

● E-governance capabilities.

Many steps and decisions announced by the state demonstrate the undeniable progress of Ukraine in developing its tech potential. These include the main trends of transformation outlined in the Ukrainian Doctrine promulgated by the President of Ukraine and the vision of the innovation ecosystem being developed by the Ministry of Digital Transformation of Ukraine, among other initiatives.

This document aims to draw attention to the international perception and expert assessment of Ukraine's tech potential as reflected in global rankings and indices, as well as its portrayal in international media. Based on a comprehensive analysis of the gathered data, the paper identifies key areas for growth where Ukraine can seize opportunities to enhance its standing as an emerging 'tech (IT) country' in the near future.

KEY THESES

Despite the ongoing full-scale war, Ukraine maintains a visible presence in global rankings as a country with a highly promising tech industry. The nation's human capital is consistently recognised for its professional skills excellence, and international e-government experts have noted the achievements of the Ukrainian government in ensuring sustainable access to information and public services in times of war.

The full impact of the war on Ukraine's tech industry is challenging to quantify at present due to the scarcity of comprehensive statistical data and the ongoing turbulence from active hostilities at the frontline, and consistent shelling across the country. Industry experts acknowledge significant challenges, particularly in attracting investments, as the high-risk environment jeopardises the operational viability of Ukrainian IT firms. Additionally, there is concern over the talent drain as professionals leave the country. Amidst these challenges, observers frequently characterise the Ukrainian tech sector as 'resilient' in the face of such trying circumstances.

In 2022, Ukraine achieved 12th place in the **IT competitiveness index** among 23 countries across Central, Eastern, Southeast, and Northeast Europe, climbing two spots from the previous year.

It is believed (in particular, as noted by Emerging Europe experts in the **Future of IT 2023 Report**) that after 24 February 2022, Ukrainian IT companies have become more aggressive in promoting their business and more confident in the quality of their products and services. Expanding their global presence by opening offices worldwide and enhancing their negotiation capabilities are also highlighted as notable advancements in 2022.

Human resources stand out as Ukraine's strongest asset in its tech potential. However, according to the **Global Startup Ecosystem Index 2022 Report**, a significant challenge facing the sector due to the full-scale war is the potential exodus of talent. This is exacerbated by the substantial support offered to Ukrainian refugees by other European countries. **Sequoia**'s data indicates that since the onset of the full-scale invasion, 16% of IT professionals have departed Ukraine.

Over the past few years, Ukraine has made significant progress in public sector digitalisation and e-governance, as documented in most prominent studies on the subject, including **the UN E-Governance Development Index**. While the most current rankings are based on data collected until 24 February

2022, researchers have already highlighted the substantial achievements of the Ukrainian authorities in maintaining access to information and critical public services in the territories under their control despite the challenges posed by ongoing hostilities.

In 2023, Kyiv was ranked 77th globally for IT startup development, according to **the Global Startup Ecosystem Index 2023** by Startup-Blink. In terms of e-governance development (online public services), Kyiv climbed 29 places in the 2022 ranking, up from its 2020 position to 21st among 193 cities. This places it in the company of leading cities like Helsinki, Riga, and Stockholm.

The "Tech (IT) Country" is a pivotal brand attribute for Ukraine, and its active promotion is crucial for enhancing the nation's international image. This, in turn, could greatly expedite Ukraine's recovery after the war. Yet, an examination of foreign media coverage throughout 2022 and into the first half of 2023 reveals that this narrative is seldom highlighted. To address this, launching vigorous information campaigns focused on Ukraine's tech advancements should be a prominent agenda for the country's international communications strategy in the near future.

METHODOLOGY

The international perception of the Ukrainian tech sector is measured in three dimensions.

1	2	3
International Rankings and Indices of the IT Industry	**Perception of Ukraine as a tech country by the World Population**	**The Presence of the Brand Attribute "Ukraine is a Tech (IT) country" in the Foreign Media**

According to official statistics

Based on sociological surveys

Based on media monitoring data

UKRAINE'S RESULTS OVERVIEW

1. Human Potential

● **IT Competitiveness Index**
Emerging Europe Future of IT Report 2023

According to official statistical data and other rankings of 2021 – early 2022

Within the group of 23 countries across Central, Eastern, Southeast, and Northeast Europe, Ukraine is ranked 7th for human talent in the IT sector. This ranking is attributed primarily to the country's educational level in information and communication technologies, as evidenced by the number of students and graduates, its performance in the International Mathematics Olympiad, and the PISA mathematical literacy ranking. While Ukraine has fallen behind Poland, Lithuania, and Hungary, it has surpassed Bulgaria, Estonia, Slovenia, and several other countries. However, when it comes to the labour force indicator — which considers the number of individuals employed in the ICT sector and the number of developers — Ukraine significantly trails behind the other countries in the Top-10.
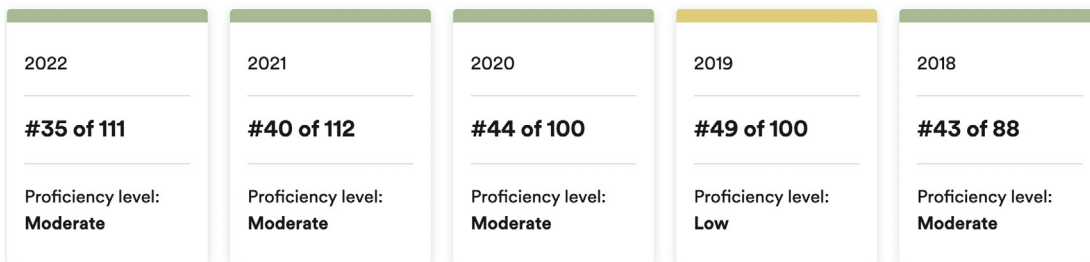
● EF English Proficiency Index

Rating of 111 countries in terms of the population's English proficiency (according to 2021 data). This ranking is derived from an online English test and should be interpreted with caution, as the sample may not be fully representative of the entire country's population.

English proficiency is a crucial factor in the success of a country's IT industry. In 2022, **Ukraine was ranked 35th** out of 111 countries worldwide **average English proficiency level,** placing it between France and South Korea. Ukrainians who took a specialised test demonstrated an average proficiency level of B2, which is categorised as Upper Intermediate.

Ukraine is the third fastest-growing country in Europe in terms of English proficiency and stands out as one of the few European nations without gender disparity in English language skills.

Proficiency trends

2022	2021	2020	2019	2018
#35 of 111	**#40 of 112**	**#44 of 100**	**#49 of 100**	**#43 of 88**
Proficiency level: **Moderate**	Proficiency level: **Moderate**	Proficiency level: **Moderate**	Proficiency level: **Low**	Proficiency level: **Moderate**

● Coursera Global Skills Report 2023

Based on the results of mastering professional courses on the Coursera platform

In 2023, Ukraine ascended six places from the previous year to rank **15th globally for the professional skills** of its population in business, technology, and data science.

Moreover, Ukraine boasts the **third-highest level of technical skills in Europe.**

However, when it comes to business and data science, the qualifications of Ukrainians are relatively lower, with the country ranking 23rd and 20th, respectively, among the 34 European countries assessed.

Regional Ranking among European Countries

Regional Skill Proficiencies

GLOBAL RANK	COUNTRY NAME	BUSINESS 66%*	TECHNOLOGY 67%*	DATA SCIENCE 68%*
1	Switzerland	96%	99%	77%
2	Spain	48%	100%	97%
3	Germany	93%	84%	92%
4	Luxembourg	98%	58%	95%
7	Slovakia	80%	90%	76%
8	The Netherlands	87%	83%	84%
9	France	65%	88%	89%
10	Belgium	83%	75%	91%
11	Denmark	95%	65%	85%
12	Italy	89%	86%	64%
13	Sweden	77%	82%	83%
14	Austria	86%	71%	82%
15	Ukraine	54%	94%	67%
17	Finland	71%	80%	81%
18	Bulgaria	84%	76%	71%
21	Belarus	47%	85%	87%
22	Norway	74%	79%	70%

● **Global Soft Power Index 2023 by Brand Finance**

Perception of the country by the world population based on a sociological survey

In the latest ranking released in early 2023, which reflects data from 2022, Ukraine is positioned at 55th out of 121 countries regarding the global perception of its education and science development. This places it alongside nations such as Greece, Indonesia, Bulgaria, Slovakia, Uruguay, Romania, Cuba, Malta, Paraguay, Iran, Barbados, and Honduras. Despite a marginal increase in its score by 0.1 points to 2.7, Ukraine experienced a slip of 10 places in the year-over-year international comparison.

Changes in Global Perception of Ukraine as a Country with a Developed Education and Science System

	2020	2021	2022	2023
Score	1,9	2,0	2,6	2,7
Place	48	60	45	55

For reference, Estonia ranked 30th (+34 positions in the year) with an overall score of 3.3.

● **The U.S. News Best Countries**

Based on a global polling about people's attitudes towards other countries

According to the study's results, the global population holds a moderate perception of Ukraine's level of technological development. Ukrainians are most acknowledged for their level of education and professional skills. In 2023, Ukraine holds the following positions in international comparison:

Level of education

33	Slovakia
34	**Ukraine**
35	Estonia

Technological Expertise

36	Iran
37	**Ukraine**
38	Hungary

Level of Professional Skills

44	Turkey
45	**Ukraine**
46	Sri Lanka

Level of Innovation

44	Vietnam
45	**Ukraine**
46	Lithuania

Level of Digital Infrastructure Development

53	🇮🇩	Indonesia
54	🇺🇦	**Ukraine**
55	🇯🇴	Jordan

Level of Entrepreneurship

61	🇷🇸	Serbia
62	🇺🇦	**Ukraine**
63	🇰🇭	Cambodia

2. Tech Infrastructure and Business Environment

● **IT Competitiveness Index**
  Emerging Europe Future of IT Report 2023

Based on official statistical data and other rankings of 2021 – early 2022

In terms of its impact on the national economy, Ukraine's IT infrastructure is ranked 7th among 23 countries in Central, Eastern, Southeast, and Northeast Europe, with Estonia leading the group. Ukraine outperforms the majority of the countries in the ranking with its IT exports and contribution to the GDP. However, it falls behind when it comes to the salary levels within its IT industry.

As of 2023, Ukraine was positioned **11th out of 23 countries in the development of IT infrastructure,** nestled between Serbia at 10th place and the Czech Republic at 12th. This ranking takes into account factors such as the quality and affordability of internet coverage, the degree of digitalisation (including digital public services), and the security of internet servers.

In the 'Business Environment' category, Ukraine's score was hindered primarily by concerns over cybersecurity, intellectual property protection, economic freedoms, and prevalent corruption.

● Startup Ecosystem Report 2023 by StartupBlink

Benchmark study of 100 countries based on the number and quality of local startups

The study revealed that the full-scale war in 2022 severely impacted Ukraine's startup sector, resulting in a significant decline in global rankings. From a 34th place in previous years, Ukraine dropped to the 50th position, coming in behind Hungary and ahead of the Republic of South Africa, with the USA retaining the top spot. In the European context, Ukraine slipped nine places to 30th. By 2023, there was a modest improvement, with Ukraine moving up to 49th place globally, surpassing its close competitors, Hungary and Serbia.
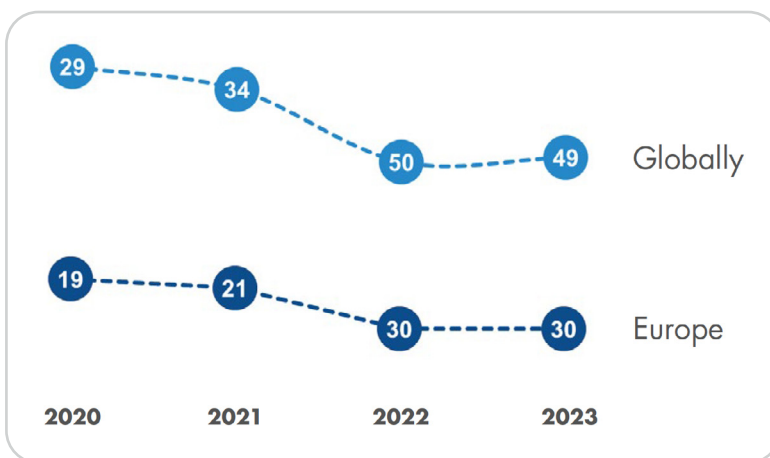
Rank	Country	Rank Change (from 2022)	Total Score
41	Indonesia	−3	5.411
42	Romania	−3	5.196
43	Malaysia	−1	5.144
44	Croatia	+1	5.136
45	Türkiye	+1	5.126
46	Greece	+2	5.071
47	Argentina	−10	5.068
48	Slovenia	−1	4.720
49	Ukraine	+1	4.634
50	Hungary	+1	4.438
51	Serbia	+1	4.424
52	Thailand	+1	3.428
53	South Africa	−4	3.002
54	Cyprus	+1	2.941

In 2022, Ukrainian cities experienced a notable decline in the startup ecosystem ranking, yet Kyiv maintained its position within the Top-100 worldwide, ranking at 93rd despite a 45-place drop. In 2023, Kyiv climbed 16 spots to secure the 77th position. Lviv, in particular, made a remarkable leap, ascending 258 places to rank 491st. Overall, four out of the five Ukrainian cities listed in the Top-1000 for startup development registered positive momentum in 2023.

National Rank & Change (from 2022)	City	Global Rank & Change (from 2022)	Total Score	Top Industry Global Rank
1 —	Kyiv	77 +16	8.49	Software & Data ⭐52
2 +1	Lviv	491 +258	0.52	—
3 -1	Odessa	750 -8	0.23	—
4 —	Kharkiv	762 +93	0.22	—
5 New	Ternopil	950 New	0.13	—

In the startup development landscape, Kyiv demonstrates its strongest performance in the following sectors:

- Software and Data: ranking 52nd based on the number and calibre of startups;
- Marketing and Sales: achieving 67th place for the number and quality of startups.

The ranking's authors attribute Ukraine's achievements in startup development primarily to the **expertise of its developers**, who are highly sought after by numerous major international firms.

According to the report, the leading Ukrainian startups include Grammarly, People.ai, Gitlab, Ahrefs, and Ajax Systems.

● 2022 Global Business Services World Competitiveness Index

In a ranking based on a survey of 140 global companies that are consumers of IT services, Ukraine is positioned **15th among the world's best countries for software development outsourcing.**

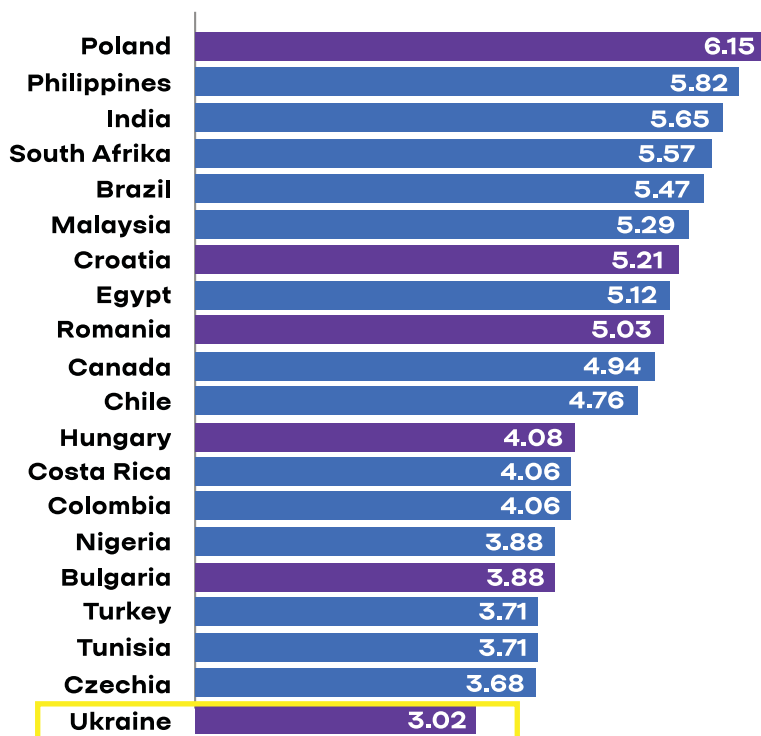| Country	Value
India	5.94
China	5.82
Poland	5.79
Egypt	5.65
Mexico	5.47
Malaysia	5.39
Philippines	5.29
Romania	5.29
Brazil	4.94
Singapore	4.76
Bulgaria	4.38
Czechia	4.20
Taiwan	4.06
Vietnam	4.06
Ukraine	4.05
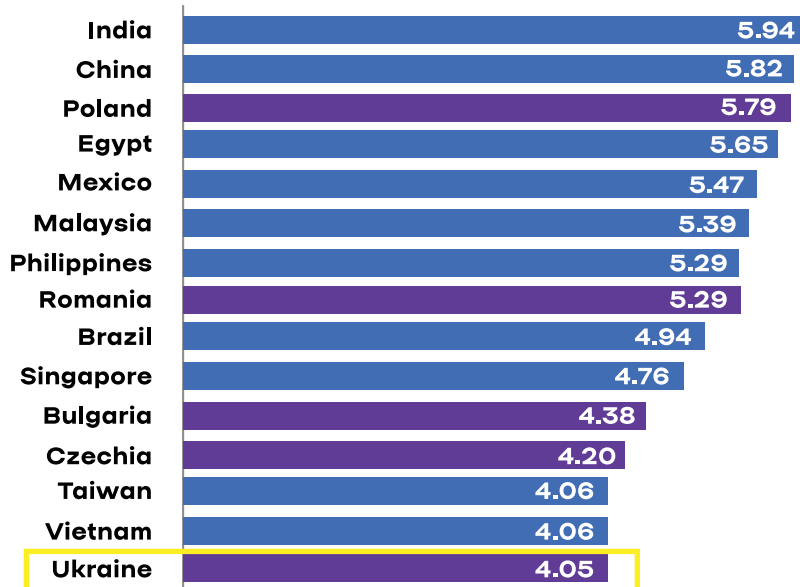
In the same ranking, Ukraine was placed **20th on the list of the best countries for outsourcing technical support services,** including technical and helpdesk support.

Country	Value
Poland	6.15
Philippines	5.82
India	5.65
South Afrika	5.57
Brazil	5.47
Malaysia	5.29
Croatia	5.21
Egypt	5.12
Romania	5.03
Canada	4.94
Chile	4.76
Hungary	4.08
Costa Rica	4.06
Colombia	4.06
Nigeria	3.88
Bulgaria	3.88
Turkey	3.71
Tunisia	3.71
Czechia	3.68
Ukraine	3.02

3. E-Governance Capabilities

● **United Nations E-Government Development Index** (EGDI)

Based on official statistical data for 2021 – early 2022 and expert assessments*
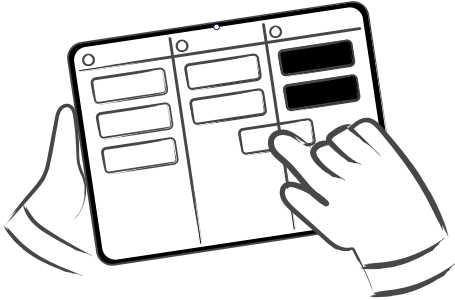
In 2022, **for the first time ever, Ukraine was among the countries with a very high level of e-government development,** rising 23 positions from the 2020 result and ranking 46th globally (between the Czech Republic and Slovakia, with Denmark in first place).
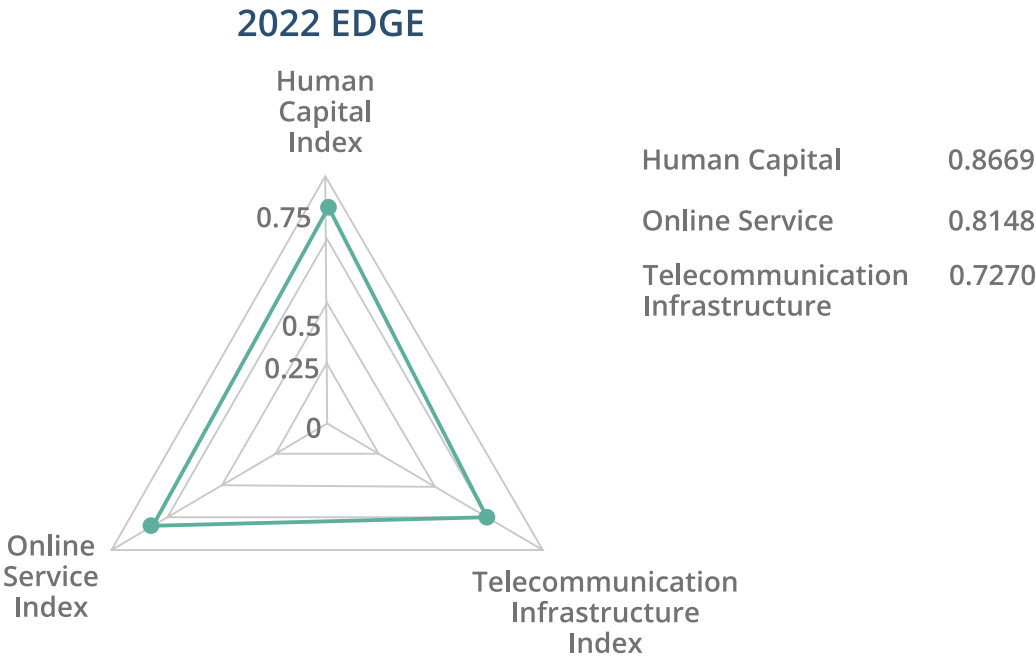
Ukraine achieved its highest performance indicators in human capital, while its telecommunications infrastructure lagged behind, showing the lowest indicators.

2022 EDGE

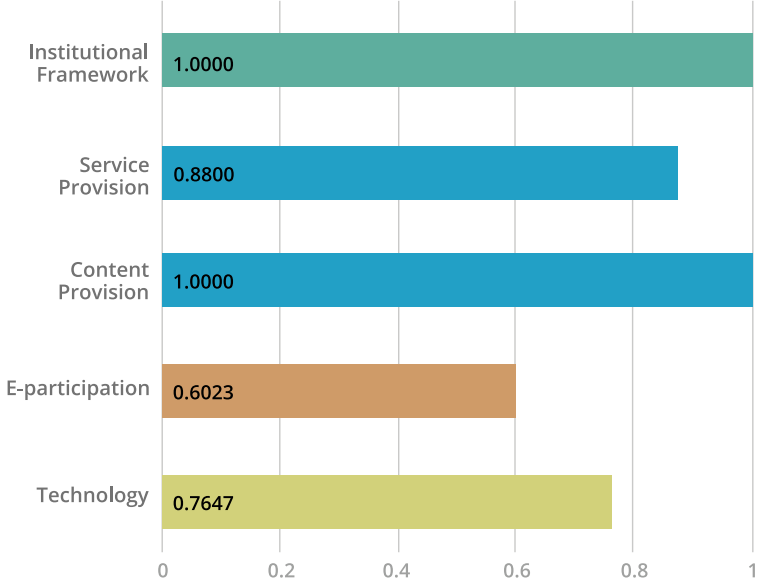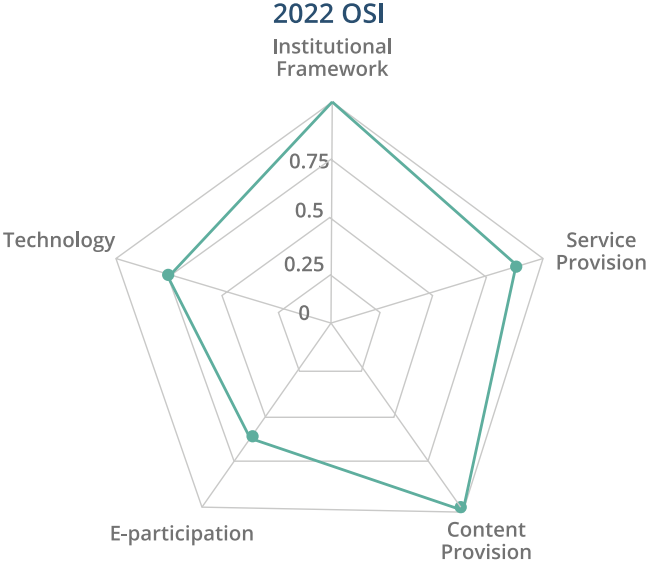| Human Capital | 0.8669 |
| Online Service | 0.8148 |
| Telecommunication Infrastructure | 0.7270 |

* The index assessing government success in e-governance development within a country comprises three components:

- Telecommunication infrastructure index (with data up to February 2022).
- Human Capital Index (UNESCO) (with data up to October 2021).
- Online service development index (based on expert assessment).

In the assessment of the country's online service development level, the following characteristics had the most positive impact on Ukraine's outcomes:

● Institutional Structure: The availability and functionality of **official electronic portals** for state bodies and services.

● Content Provision: **The accessibility of official state information** for the public.

● Service Provision: **The availability and diversification of online public services**, such as marriage registration, business incorporation, etc.

2022 OSI

Indicator	Value
Institutional Framework	1.0000
Service Provision	0.8800
Content Provision	1.0000
E-participation	0.6023
Technology	0.7647

● **United Nations Local Online Services Index**

In 2022, Kyiv advanced 29 positions from its 2020 standing, reaching **21st place among 193 global cities for e-governance development,** standing alongside cities like Helsinki, Riga, and Stockholm.

This impressive climb in rank was largely due to the following factors:

● The level of electronic engagement, reflecting the mechanisms available for digital **interaction between citizens and local authorities, as well as citizen participation in local governance.** In this respect, Kyiv achieved a remarkable 6th place worldwide, on par with cities such as Tallinn and Helsinki.

● The online **availability of essential official information and resources,** where Kyiv holds the 18th position globally.

VISIBILITY OF 'UKRAINE AS A TECH (IT) COUNTRY' IN INTERNATIONAL MEDIA

Based on media monitoring data

The brand attribute of Ukraine as a tech (IT) nation consistently garners the least attention in international media coverage of the country.

Coverage of Ukraine as a Tech (IT) Country in English-Language Foreign Media: Quarterly Trends

	Q3 2022	Q4 2022	Q1 2023	Q2 2023
Number of articles	5.3 thousand	8.1 thousand	7.8 thousand	6.8 thousand
Share of total media mentions	0.67 %	0.67 %	0.61 %	0.77 %

Reputational Attributes and their Share of Voice in English-Language Articles about Ukraine, Q2 2023

1. Ukraine is a nation of heroes — 5.12%
2. Ukraine is a democratic country — 2.96%
3. Ukraine is a member of the European family — 1.59%
4. Ukraine is a free nation — 1.41%
5. Ukrainians are creative people — 1.31%
6. Ukraine has a 1000-year-old history and culture — 1.27%
7. Ukraine is a Tech (IT) Country — 0.77%
8. Ukraine has a beautiful nature — 0.07%

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How Ukraine Digitized Its Forces on the Cheap

Nearly a year after Russia's invasion of Ukraine, Kyiv's fighting forces have managed to rapidly digitize, something the U.S. has spent decades and billions of dollars to do. WSJ Brussels bureau chief Dan Michaels joins host Julie Chang to discuss the shoestring tactics of Ukraine's military and what the Pentagon can learn from them. Plus, assistive-tech company eSight showcases its next-generation eyewear for the visually impaired at CES.

13:07   1x

FINANCIAL TIMES   *my*FT

FT FILM — UKRAINE'S TECH WAR

Video description   **Transcript**

News in-depth **War in Ukraine**

Ukraine tech sector goes to war | FT Film

From the production of cheap battlefield drones to AI-powered missile detection, Ukrainian tech start-ups, IT workers and volunteers have been developing military tech and putting themselves on the front line of the war effort

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WORLD SERVICE

Digital Planet

The Tech of 2022

▶

leased On: 27 Dec 2022
Available for over a year

're looking back on the technology year at was 2022. We go firstly to Ukraine to look the booming tech industry before the war d discuss how that is doing now. Also how e cybersecurity declaration signed in Africa is already leading to the beginnings of a legal and regulatory framework across the

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Europe

Insight: Ukraine's tech entrepreneurs fight war on a different front

By **Michael Kahn**

April 4, 2023 4:22 PM GMT+3 · Updated 5 months ago

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Inside Ukraine's Thriving Tech Sector

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BUSINESS

The Remarkable Resilience of Ukraine's Tech Sector

Russia's invasion was devastating for Ukrainian startups. But many have adapted to survive—and even grow—despite constant attacks.

PETER GUEST

17.07.2023 07:00 AM

FIVE KEY GROWTH AREAS IN UKRAINE'S IMAGE AS AN INNOVATIVE AND TECH NATION

1. **The number of people involved in the IT industry.** While Ukraine is recognised for its education and professional expertise, it needs more employment numbers in the IT field.

   Programs designed to attract a broader range of people into IT careers, such as the government's 'IT Generation' initiative or similar private-sector efforts, send a powerful message to the global IT community, including specialists and investors. A crucial next step is to create initiatives that assist recent graduates in entering the IT job market. It is vital to strategically communicate these efforts to a carefully selected target audience, particularly those who compile international indices and ratings. Such communication will enhance Ukraine's overall nation brand and effectively bolster the perception of its tech potential.

2. **Overcoming the startup ecosystem developmental gap between the capital city and other regions.** The current state of the startup ecosystem in Ukraine shows a pronounced discrepancy between the capital city and other regions. In the 2023 Global Startup Ecosystem Index, Kyiv is positioned at 77th globally, significantly ahead of its nearest national counterpart, Lviv, which stands at 491st. Other Ukrainian cities such as Odesa, Kharkiv, and Ternopil rank 750th, 762nd, and 950th, respectively. These rankings reflect the concentration of startups, the robustness of local startup capacities, the accessibility of collaborative workspaces, and the presence of startup influencers within each city.

   To enhance Ukraine's investment appeal and fortify its reputation as a nation with a dynamic tech sector, it is prudent to cultivate an innovation-friendly atmosphere across diverse regions. Boosting local tech image of the regions would help to attract new players and influencers, and create meaningful communities in local tech industry. To achieve this, proactive external communications are vital, such as strengthening connections with twin cities, participating in international tech conferences and expos, joint projects with renowned tech universities, or hosting international tech events and hackathons.

3. **Boosting e-participation.** While Ukraine has garnered commendable recognition for the accessibility and comprehensiveness of its official state electronic portals and their content, there remains a significant gap

in citizen engagement within the digital governance framework (e-participation). Areas that particularly require attention include «digitalised public consultations» (surveys, feedback collection, etc.) and «digitalised decision-making processes,» where citizens can meaningfully influence policy and administrative decisions through digital government platforms.

Given the state's commitment to boosting digital literacy and the ongoing development of the Diia platform, Ukraine is well-positioned to solidify its reputation as a nation with robust IT capabilities. Platforms like E-Data from the Ministry of Finance, which serves as the official database of public finances in Ukraine, need effective communication to both internal and external stakeholders. These initiatives are particularly crucial during a full-scale war, as they set the stage for a more rapid economic recovery in the post-war period.

4. Highlighting Ukraine's IT human capital. There is a gap between expert assessments and public opinion regarding Ukraine's IT human capital. Expert rankings, which rely on objective criteria, consistently place Ukraine higher in terms of knowledge and skills of its workforce compared to rankings derived from the general public's subjective views.

Consistent efforts to enhance Ukraine's international image, specifically by promoting its status as a 'Tech (IT) Country,' are essential. Each instance of Ukrainian innovations being showcased globally, or when Ukrainian tech companies and professionals engage in prestigious collaborative platforms or participate in high-profile international events, contributes to strengthening Ukraine's tech image. Collaborative communication efforts and information exchange among various stakeholders could further solidify Ukraine's reputation as a nation with substantial, investment-worthy tech potential.

5. Ukraine speaks English. Currently ranked 35th out of 111 countries in the EF English Proficiency Index 2022, Ukraine is making significant strides in language skills.

Aligned with the country's new developmental doctrine spearheaded by President Volodymyr Zelenskyy, Ukraine prioritises enhancing English proficiency among its citizens and officials. Public policy mandates that civil servants and law enforcement personnel be proficient in English. It also promotes broader access to English content for all citizens. The 'Future Perfect' governmental program, launched in the autumn of 2023, includes several effective measures to improve English knowledge and usage in Ukraine. This includes providing payouts for English lessons through the state's Diia service and having a native-speaking tutor in each school. These strategic steps demonstrate Ukraine's commitment to progress and European Union integration. They also enhance the country's appeal to innovative investors and should be actively highlighted to international audiences.

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