Cloud Competitiveness Index

2023

Measuring the Regional Cloud Ecosystem

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PREFACE

The MENA Cloud Alliance has received a lot of helpful feedback on our Cloud Competitiveness Index, which inspired us to create an even more comprehensive and inclusive version of the report.

We worked with some of the best minds in the industry, both within the region and globally, to develop the 2023 version of the Index. We also made sure to refine our methodology to provide a more accurate and objective portrayal of the regional cloud landscape. Our team at the alliance also designed an interactive tool to help visualise our findings and facilitate the consumption of the Index.

The Index serves as a tool to encourage conversations within the cloud computing ecosystem and as a way to measure the health of the cloud market and track the progress of regional economies in adopting cloud technologies.

We welcome members of the regional and global cloud community to share their thoughts and provide feedback on the Index so that we can continue to improve it each year.

OMID MAHBOUBI

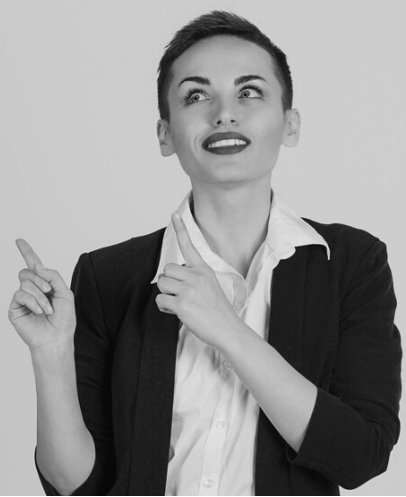
FOUNDER - EXECUTIVE DIRECTOR

EXECUTIVE SUMMARY

WHY AN INDEX

The Middle East and North Africa region is home to some of the world's most innovative and tech-savvy nations. As these countries transition from oil-dependent economies to digital ones, they have become early adopters and even pioneers of cutting-edge technology. Cloud computing is at a turning point, moving from a promising concept to a true enabler of emerging technologies. A status that has been cemented by the cloud's undeniable role in helping us cope with the pandemic. The cloud is now expected to deliver on many aspects of our lives and provide a foundation for more emerging technological advancements to be built.

There are many new buzzwords in the market that would be difficult or entirely impossible to implement without a cloud-based support system. However, this transition also comes with a number of challenges such as regulation, security, talent, connectivity, government and business community support. To make informed decisions, it is important for players in the ecosystem to have a good understanding of the current state of regional cloud computing markets.



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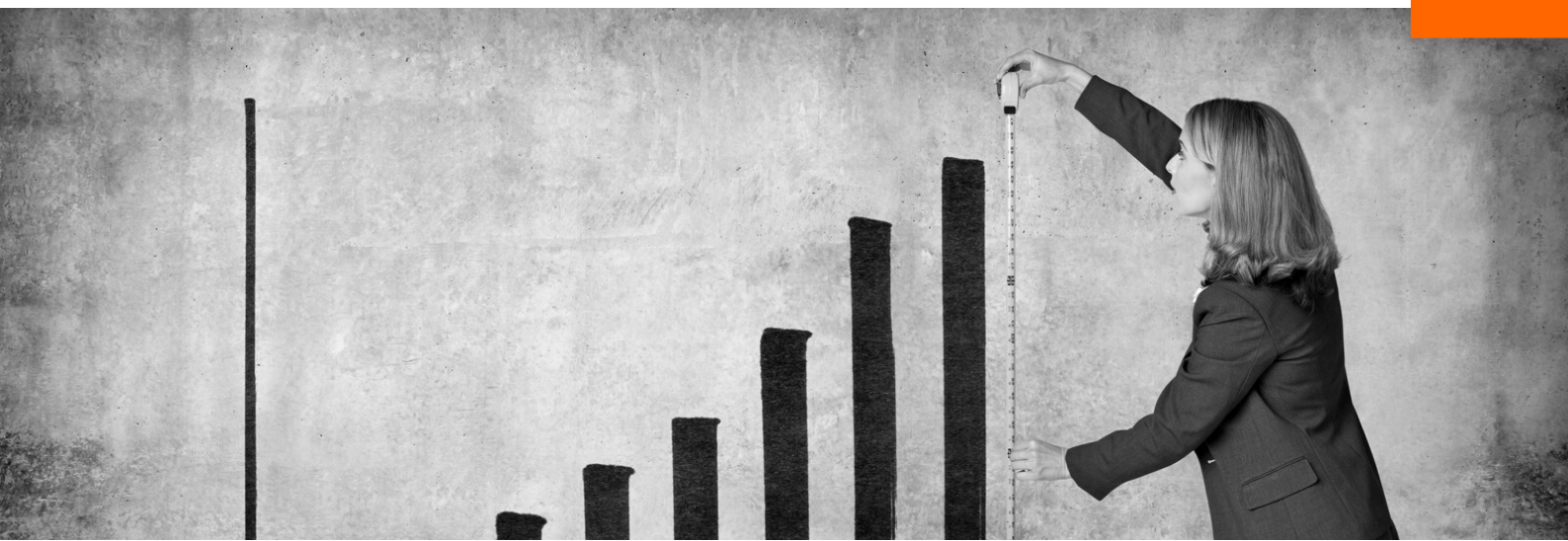
THE INDEX

The Cloud Competitiveness Index 2023 (CCI2023) is an ongoing project that provides an overview of the current state and future prospects of the cloud ecosystem in 15 countries in the region. We have created an index that measures the competitiveness of the cloud computing market in these countries and provides a tool for identifying the strengths and weaknesses of the regional economies. We used mostly publicly available data to create a composite index that represents the complexities of a nation's technology infrastructure and helps to advance cloud computing in the region. Our goal is to provide major market players with a fact-based understanding of the status of the cloud ecosystem in these countries.

MENA Cloud Alliance recognizes that cloud competitiveness can vary significantly depending on the economic and institutional context, and we see this report as an opportunity for dialogue, debate, and ongoing learning.



EXECUTIVE SUMMARY

MEASURING COMPETITIVENESS

Fig. 1: CCI 2023 Domains

Domains & Pillars

In the context of the Cloud Competitiveness Index 2023 (CCI2023), cloud competitiveness refers to the policies, practices, and characteristics that allow a country to effectively use cloud computing. The index provides a way to evaluate what makes a country more conducive to cloud services. Like the previous version, the CCI2023 consists of domains and sub-domains (pillars) that contribute to a country's overall score. The final ranking is calculated by taking the average of scores in each of the five domains.

(Fig 1: CCI 2023 Domains)

EXECUTIVE SUMMARY

WHAT WE MEASURED

The index consists of five domains: "Regulation" (Domain 1) assesses the extent to which a country's regulatory framework supports the development and use of cloud services; "Talent" (Domain 2) measures the competitiveness of the workforce in the country's cloud market; "Connectivity" (Domain 3) refers to the quality of the network infrastructure that supports the delivery of cloud products and services; "Government" (Domain 4) describes the role of the government in the country's cloud ecosystem, and "Business" (Domain 5) evaluates the business environment for cloud stakeholders in the country.

(Fig 2: CCI 2023 Pillars)

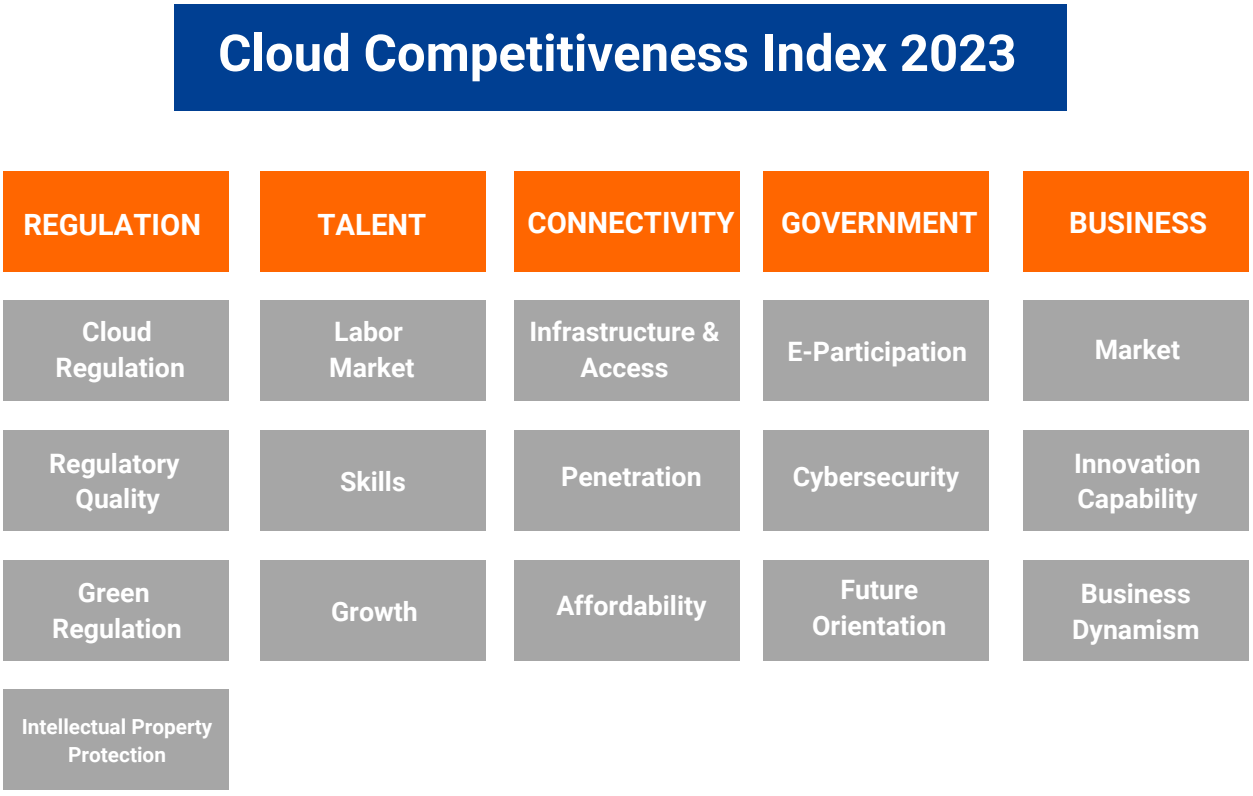


Fig. 2: CCI 2023 Pillars

MEMBERS THOUGHTS

Arpad Gered
President IP/TMT, AIJA International Association of Young Lawyers

Lessons from the GDPR

MENACA: *We here in the Middle East and North Africa region, much like many other geographies, have had to use GDPR as an example to create data regulations. What can we learn from GDPR?*

Arpad: We have to look a little bit behind it because originally the entire system of the GDPR was not envisioned only as protecting the data of individuals. But if you look at it closely, you see that it has actually been drafted with cybersecurity in mind. And it is not a coincidence that the Network and Information Security Directive was developed at the very same time; though it was in part less detailed because the target audience for that already knew about cybersecurity whereas general businesses did not. I believe that the main benefit of the GDPR is to set in stone the principle that you need to ***have the technological and organizational measures in place to protect the data***.

MENACA: *How can policymakers in our region help businesses understand the existing or future laws?*

Arpad: ***Technological neutrality is a must.*** I think the best example here is the UN where certain ideas are discussed which may or may not become rules in a few years and then be applied in another few years. There are three ways in which policymakers can help here. One, as was the case when GDPR was introduced, is that regulators can provide examples to guide businesses. So, for instance, when they mention "technological measures", it should be subsequently enumerated adding randomisation, encryption, pseudonymization, etc.

Second, policymakers can regularly introduce recommendations on current issues. Without these recommendations, most businesses would be afraid that they would invest into measures that eventually prove to be non-compliant. Another measure which we have in Article 42 of the GDPR is the certification scheme. Currently existing certification schemes in the EU are mostly focused on software-as-a-service but it is growing to also cover IaaS and PaaS. Such schemes can also help push forward proper organizational measures and ensure businesses that once they have become certified, they will be accepted by public authorities.

EXECUTIVE SUMMARY

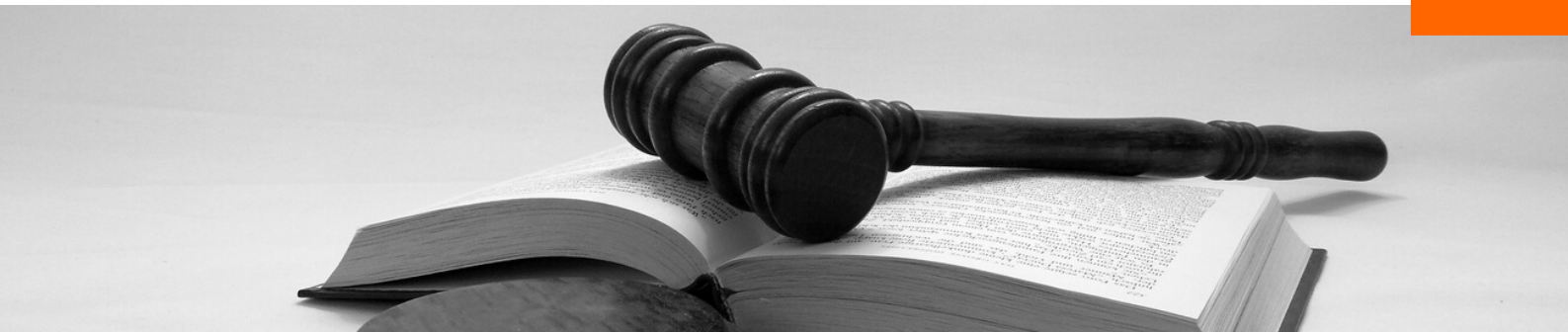
DOMAINS & PILLARS

REGULATION

The regulatory environment must support the cloud computing model for services to take off on a national, regional, and even global level. One of the biggest challenges for cloud adoption is the absence of relevant regulatory frameworks or, just as challenging, the presence of vague, cumbersome, or outdated legislation.

In the post-GDPR technology world, it is crucial that countries have clear laws and regulations regarding the collection, use, and cross-border transfer of data. Countries should also create national data protection regimes that are consistent with those of the region and the world. However, simply having these laws in place does not make an economy competitive in the cloud. It takes a strong regulatory environment to both protect a country's data assets and encourage the adoption of new technologies.

A regulatory environment that supports the development, distribution, and use of cloud services is characterized by the existence of a Cloud First Policy, an efficient cross-border data transfer regime, adequate regulatory quality, a responsible green regulation mechanism, and a protective intellectual property environment.



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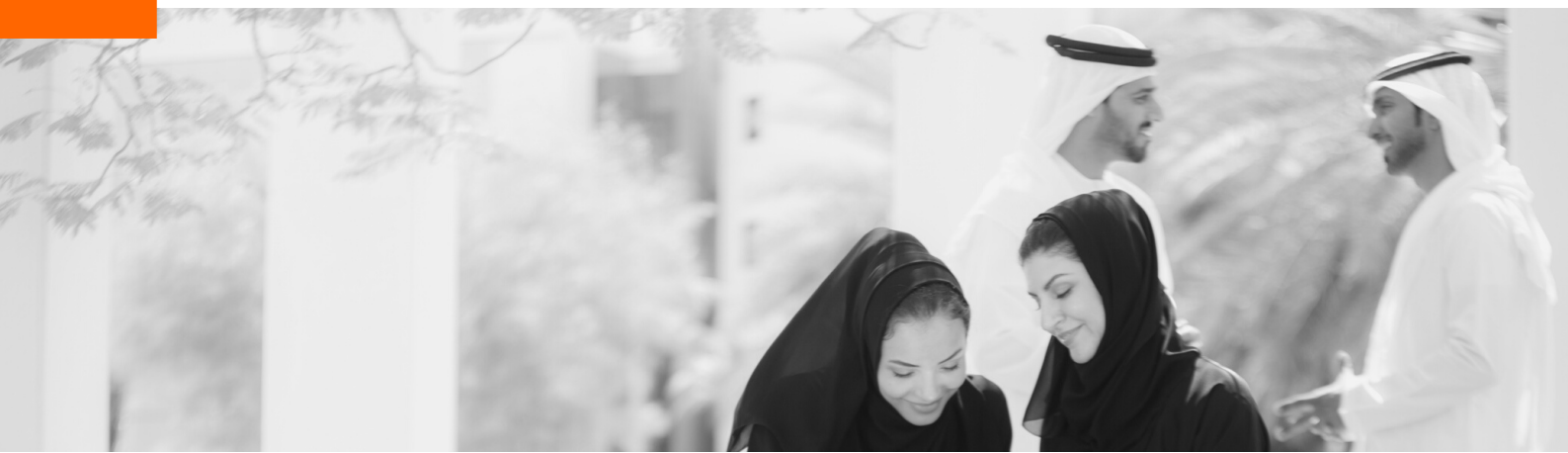
TALENT

Finding top talent in the field of cloud computing can be a challenge for organizations around the world. The demand for skilled professionals in this field is high, as more and more companies are adopting cloud technologies and services to support their operations.

In our region, the demand for cloud computing talent may be especially acute, as it is home to many rapidly-growing businesses that are looking to leverage the benefits of the cloud. In response to feedback we received after the release of the previous iteration of the index, we conducted a detailed analysis of indicators to accurately represent the current state of local cloud talent.

Many regional economies are heavily reliant on the expatriate community to achieve their ambitious goals. In order to become a talent hub, policies must be implemented to not only attract skilled individuals but also retain them. It is also essential for an economy to develop a strong local workforce capable of filling current gaps and expanding the talent pool to meet future needs. However, the challenge remains of how to prepare an increasingly educated population for jobs of the future.



MEMBERS THOUGHTS

Kevin L. Jackson

Best Selling Author / Influencer / Industry Thought Leader

The Cloud Talent Crisis &The Role of Cloud Champions

According to McKinsey & Company, the cloud has become a key area for tech talent competition, with over $1 trillion in value at stake. However, many organizations are struggling because they don't have the necessary talent in place. Investment in cloud transformation has increased significantly in recent years, but this has not been matched by an increase in talent. This lack of talent has made it difficult for these companies to effectively navigate complex cloud economics, make changes to their operating models, and meet the technical requirements needed to realize the value of the cloud. A recent McKinsey survey found that 95% of respondents cited a lack of talent as a major obstacle they faced.

One of the root causes of the talent crisis is a failure to invest in the next generation of talent. In addition, unrealistic and ineffective hiring practices also present significant challenges. Companies must not only bring in new talent, but also invest in the development of their current staff. There are generally three types of talent needed in this field:

1. Engineers who determine which cloud services can be used safely, reliably, and cost-effectively to achieve organizational and business success metrics.
2. Developers who focus on integrating those services in innovative ways.
3. Nontechnical staff who focus on enabling maximum benefit from the cloud while maintaining the value that their function typically brings, such as risk management.

More than 80 percent of cloud professionals in the United States and Australia have held at least five technology roles during careers spanning ten years or more. They are typically generalists with some deep specializations. They are also unlikely to have been focused on a highly specialized role immediately before shifting to the cloud. but may well have occupied one or more such roles earlier in their career.

Experience working in traditional IT-infrastructure organizations is important since this experience gives them an understanding of fundamental cost-benefit design choices that are needed to develop applications or platforms. Blending traditional expertise with deep cloud-specific knowledge and experience is critical to achieving robust, scalable, and secure solutions. Cloud developers and engineers don’t need the hyperspecialized technical knowledge required to manage on-premises environments.

As I wrote in my earlier book, "Architecting Cloud Computing Solutions," cloud senior and middle management need to avoid focusing on meeting IT technical requirements. They need to design with business economics in mind when using cloud computing. Instead of building technical designs, they must focus and collaborate to deploy solutions that appropriately balance technology, strategy, economics, and risk. These 'Cloud Champions' don't just list requirements for the CSP.

MEMBERS THOUGHTS

They define critical enterprise goals and challenges while relaying the organization's risk-related viewpoints. The thinking must shift to focus on mapping a cloud-based solution to business challenges and matching available technology services to desired business goals. With this change in mindset, processes, and approach, executors can accelerate organizations, motivate teams, and increase control over their business strategy.

Cloud computing represents a new model for consuming information technology services. It also requires adopting as many as six new business process models within an enterprise. I say models because any cloud computing deployment requires the organization to rethink and possibly revamp multiple internal business processes. These business processes include:

- Technology service procurement;
- Information technology operations, security, and governance;
- Data access, privacy, distribution, and destruction;
- Business partner ecosystem selection and management;
- Application development and security; and
- Business model economics.

Domain	Transition	Transition To
Security Framework	Infrastructure-centric	Data-Centric
Application Development	Tightly Coupled	Loosely Coupled
Data	Mostly Structured	Mostly Unstructured
Business Processes	Mostly Serial	Mostly Parallel
Security Controls	Enterprise Responsibility	Shared Responsibility
Economic model	Mostly CapEx	Mostly OpEx
Infrastructure	Mostly Physical	Mostly Virtual
IT Operations	Mostly Manual	Mostly Automated
Operational scope	Local/Regional	International/Global

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DOMAINS & PILLARS

CONNECTIVITY

Connectivity is an often undervalued aspect of the cloud. In order to be competitive, cloud services need to be supported by a reliable, high-quality, and reasonably priced infrastructure.

This domain of the Index examines a country's competitiveness in terms of providing reliable access to the cloud. Excellent international connectivity and high-quality broadband are fundamental for the growth of the cloud market. As cloud service providers prioritize proximity and accessibility to end users, it is important to assess a country's ability to create an optimal environment for the cloud.

We believe that top-quality connectivity is essential for digitization. Another important aspect of this domain is affordability, which can be both a barrier and a contributor to the digital divide in many parts of the world, including the MENA region.

MEMBERS THOUGHTS

Andrew Grenville
Founder-Orixcom
Chairman - Connectivity Working Group

The Cost of Cloud Connectivity

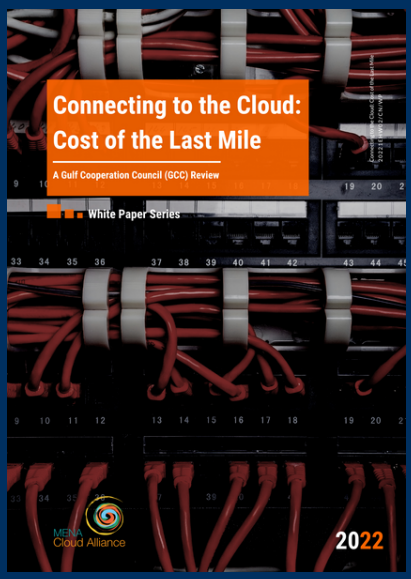
Advanced global economies are marked by competitive and dynamic sectors in areas such as finance and telecoms.

In recent years, IT and technology including cloud availability and usage, has emerged as equally important strategic measure. For this reason, any factor considered an inhibitor to the adoption of the cloud must be viewed with concern and fully understood to try to mitigate the impact.

The Connectivity Working Group, a subcommittee of the MENA Cloud Alliance, has long held the view that whilst several factors impact the pace of cloud adoption in our region, one of the primary inhibiting influences in the GCC could be the cost of connectivity.

We decided to explore this matter in depth using both qualitative and quantitative research and found out that there is indeed a significant negative impact from the connectivity cost on cloud adoption in the GCC. In the report titled: "Connecting to the Cloud: Cost of the Last Mile", we provide a breakdown of the main contributory factors and suggests where action is required across commercial areas, policy & regulatory, and competitive technology innovation. Doubtless there is more detailed work to be done and further conclusions to be drawn in this important area, and we would welcome comments, input and engagement from all relevant and interested stakeholders.

The Connectivity Working Group has a remit to promote and enhance the adoption of cloud in the region by ensuring suitable connectivity exists for cloud services (both in country and international). As a neutral body we bring together industry experts to provide thought leadership around best practice and a provide a forum for informed debate.



Check out the report here:
https://www.menacloud.org/cost-of-the-last-mile/

EXECUTIVE SUMMARY

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GOVERNMENT

The government's role in promoting and adopting cloud technologies cannot be underestimated. When governments actively use and promote innovative ICT products and services, it can have a transformative impact not only on the ICT industry and cloud computing, but on many other sectors of the economy as well.

The adoption of cloud-first policies, national G-cloud initiatives, and the provision of e-services by technologically competitive countries highlight the important role of governments as major stakeholders in the cloud. Governments can also help address security concerns related to cloud consumption, which may be of particular concern in the Middle East & North Africa region compared to other regions.

One of the reasons for the region's success is the government's preparation for the future. Many regional governments have started to digitize their economies, and this is an area in which the region excels on a global scale. It is worth noting that, due to the adoption of cloud technologies, some regional players are becoming leaders in new technologies and are transitioning from being merely tech importers to competitive tech exporters.

MEMBERS THOUGHTS

Georges Haddad
Security Regulatory Program Lead - MENA
Amazon Web Services (AWS)

Operational Technology (OT) Security

***MENACA**: The convergence of IT & OT and an increase in cloud adoption have inevitably expanded the attack surface within organizations. What would your recommendations be for organizations to elevate their cloud security posture in order to address these new threats?*

Georges: The number of devices and the functionality of those devices have increased in operational systems and networks. There are more, "smarter" devices in place. This trend also produces greater data available to analyze operational performance. Cloud technology enables users to increase their compute capacity and analytics capabilities to monitor system functions and respond to undesirable conditions. The increased visibility from the robust logging and monitoring available also expands security analysis, anomaly detection, and alerting and response.

For organizations to elevate their security, applying the AWS Well Architected Framework and conducting a Well Architected review are valuable steps. As well, take advantage of AWS customer enablement tools available such as conformance packs to check configurations and quick starts to ensure that controls are built into cloud architectures. Take advantage of cloud training to learn about security best practices and to implement aspects such as fine-grained access controls, logical isolation and network segmentation, among other security measures.

***MENACA**: OT environments have deep roots in legacy systems. How big of a challenge is it nowadays for organizations to leverage the cloud while addressing security concerns of the OT devices?*

Georges: OT systems and environments vary widely by their operational requirements. The Purdue Model is one framework that helps illustrate the distinctions across OT systems and their varying operational requirements. To illustrate varying latency tolerances, OT systems like protective relays in the field may rely on millisecond communications between localized systems. Meanwhile, an Outage Management System (OMS) may function on much longer timelines.

It is the system's requirements that dictate location of data, and architectural and availability requirements, and there are many OT systems that can benefit greatly from the compute capacity and resilience of cloud technology.

Considering cloud technology for OT is also an opportunity to rethink the traditional monolithic approach of OT systems. Many think of an OT system as one system, but operationally, it is a system of systems. For instance, and Energy Management System (EMS) is made up of multiple systems performing different functions. The systems within an EMS also have varying operational requirements. By deconstructing the monolithic approach, operators can consider which systems can benefit from cloud technology and which are preferred to remain on-prem.

MEMBERS THOUGHTS

Cloud technology comes in many forms and can be leveraged for operational environments. For many systems, an AWS Regional cloud data center can meet the operational requirements and provide the full suite of services, resiliency, and hyperscale cloud benefits. Within a hyperscale cloud data center, the data is anonymized. There is no assignment or designation that a specific server hosts a specific customer data. As a result, a person in a data center does not know what data is on which server. Next, is the immutability of data in the cloud. Once you've established your instance in the cloud, the data can't be altered. It can only be replaced by a different version but not modified. Immutability enables teams to quickly replicate infrastructure reliably and with confidence.

In addition to Regional DC resources in which ***the customer brings data to the cloud regional infrastructure,*** cloud technology can also come to the customer. For the middle tier, cloud technology can provide infrastructure and services into customers' on-premises environments. For systems that need to run in remote locations where there's a lack of consistent network connectivity, and no on-premises availability, there are families of devices for rugged environments to capture and create value from local data. There is a continuum of cloud technology.

Even legacy systems that remain on-premise can benefit from cloud technology that can augment OT operations by capturing data from OT systems that remain on-prem and analyzing it for operational and security value.

MENACA: *Historically speaking, risk management in operational environments has been focused on physical threats i.e. to staff or to the environment. As OT assets connect to the internet, data breach risks become a part of the equation. How important is the change of mindset when dealing with such new threats?*

Georges: Understanding the risk landscape of operational environments is fundamental to OT risk management as both the technologies and risks evolve. Building cloud knowledge is key to a cloud adoption plan. The learning process includes challenging assumptions about cloud and diving deeper to understand how the technology work and the options within cloud technology to achieve functionality and mitigate risks. For example, there are many options for "connecting to the internet". There are multiple communications options for connecting to cloud resources such as dedicated links through private dedicated connections through fiber, private 5G, satellite communications.

Encryption is recommended to secure communications. Cloud architectures can be built to meet the defined requirements such as recovery time objectives and recovery point objectives to reduce the impact of a potential disaster and to speed up recovery.

MENACA: *Are the emerging OT security challenges changing the scope of CIOs & CISOs responsibilities?*

Georges: We hear from customers that their leadership are taking a more in-depth look at vulnerabilities, risks and mitigations for OT systems and operations. Many of our security partners emphasize an assessment of traditional assumptions about how OT systems are protected. For example, assumptions about airgapping are being questioned and those that evaluate their networking show that their "airgapped' systems are not actually airgapped.

EXECUTIVE SUMMARY

DOMAINS & PILLARS

BUSINESS

An accommodating business landscape can greatly impact the creation and provisioning of cloud services. Both global and local players require a supportive environment to operate.

The region has made significant progress in this area over the years. In order to successfully transition from an oil-based economy to a digital one, it is crucial for the region to attract global investors. Cloud computing can help facilitate this transition by providing benefits such as faster time-to-market and agility, but these benefits can only be fully realized in a supportive market that encourages adoption.

In order to assess the elements that make up a competitive business ecosystem that can effectively utilize cloud computing, we analyzed indicators related to Market, Innovation Capability, and Business Dynamism in this iteration of our index.

MEMBERS THOUGHTS

Haider Pasha
Chief Security Officer, EMEA & LATAM
Palo Alto Networks

Overcoming "Cybersecurity" Implementation Challenges

Cybersecurity has long been one of the advanced landscapes a company should navigate; with every new menace or vulnerability, complexity continues to develop. That is very true for organizations which have historically taken some extent product strategy to their safety as a result of implementing new safety measures correctly and reliably takes time and experience. Right now, as extra companies look to digitize their providers, coping with these cybersecurity challenges is now not elective.

Each new instrument have to be put in, examined, and validated, after which individuals have to be educated to leverage them nicely. On common, organizations are adopting dozens of various merchandise, providers, and instruments for his or her cybersecurity. So, discovering methods to make implementing cybersecurity smoother, quicker, and extra environment friendly has grow to be a key purpose for cybersecurity professionals. As companies plan for a post-pandemic and digitally accelerated period, many CISOs throughout a number of industries try for simplicity and concentrate on lowering their safety vendor blueprint as a part of their annual KPIs. Implementation, specifically, has all the time been an essential consideration for profitable cybersecurity applications due to the time, expense, personnel, and experience typically required not solely to implement particular person level merchandise however to sew them collectively as a way to keep away from safety gaps whereas additionally eliminating redundancies.

Within the occasion of a critical incident, safety operations middle (SOC) analysts usually confess to switching between a number of vendor consoles and occasion varieties as a way to decipher alerts. Organizations and groups want a greater strategy, so that they're not both regularly uncovered or overworked from the alerts created by overlap.

Implementation Advantages of Cybersecurity Platforms

Analysis performed by Palo Alto Networks with a variety of its prospects, supplemented by further first-person, one-on-one interviews, highlighted a variety of implementation advantages that consequence from taking a platform strategy to cybersecurity structure. By definition, a platform is the fruits of built-in factors, reminiscent of built-in menace intelligence utilizing automation and orchestration throughout quite a lot of safety instruments to take motion towards incidents in actual time and as one system. This strategy helps ease the procurement, administration, and operations of the cybersecurity stack whereas lowering cyber threat. Deploying a number of merchandise from completely different distributors usually requires a degree of experience past the capabilities of many in-house groups. Fairly than "shopping for" implementation sources from consultants or cybersecurity providers corporations, organizations are on the lookout for a extra built-in strategy to options implementation. Platforms, reminiscent of these offered by Palo Alto Networks, clean and facilitate implementation whereas lowering the chance typically related to integrating completely different merchandise in a seamless method

MEMBERS THOUGHTS

Figuring out the High Areas of Worth

Respondents surveyed on the implementation advantages pinpointed 5 particular areas the place a platform strategy delivers tangible worth:

- Lowering options complexity and the variety of integration factors
- Reducing deployment time
- Slicing the chance of time and price range overruns
- Trimming deployment effort and personnel "touches"
- Lowering the quantity of practitioner and person coaching

On common, respondents stated that our **platforms** helped them scale back answer complexity and the variety of integration factors by 29%, whereas every of the opposite 4 advantages resulted in financial savings of roughly 23.3%. As organizations evolve their cloud infrastructure, for instance, taking a platform strategy helps scale back the variety of distributors required to safe a number of situations on the cloud, reminiscent of containers, serverless methods, and conventional digital machines. By binding the cloud safety instruments beneath one administration system, the complexity of deployment in addition to the procurement course of implies that prospects are capable of scale their cloud infrastructure a lot quicker than earlier than. platform mannequin for options implementation.

This typically interprets to value financial savings within the type of quicker safety coverage updates, incident administration lifecycles, and discount of alerts.

Actually, in accordance with calculations made by Palo Alto Networks associated to prospects' precise implementation prices, a typical group can obtain an annual financial advantage of greater than $500,000 by using a cybersecurity platform mannequin for options implementation.

In buyer interviews, these operational and monetary advantages of implementation have been introduced into larger focus.

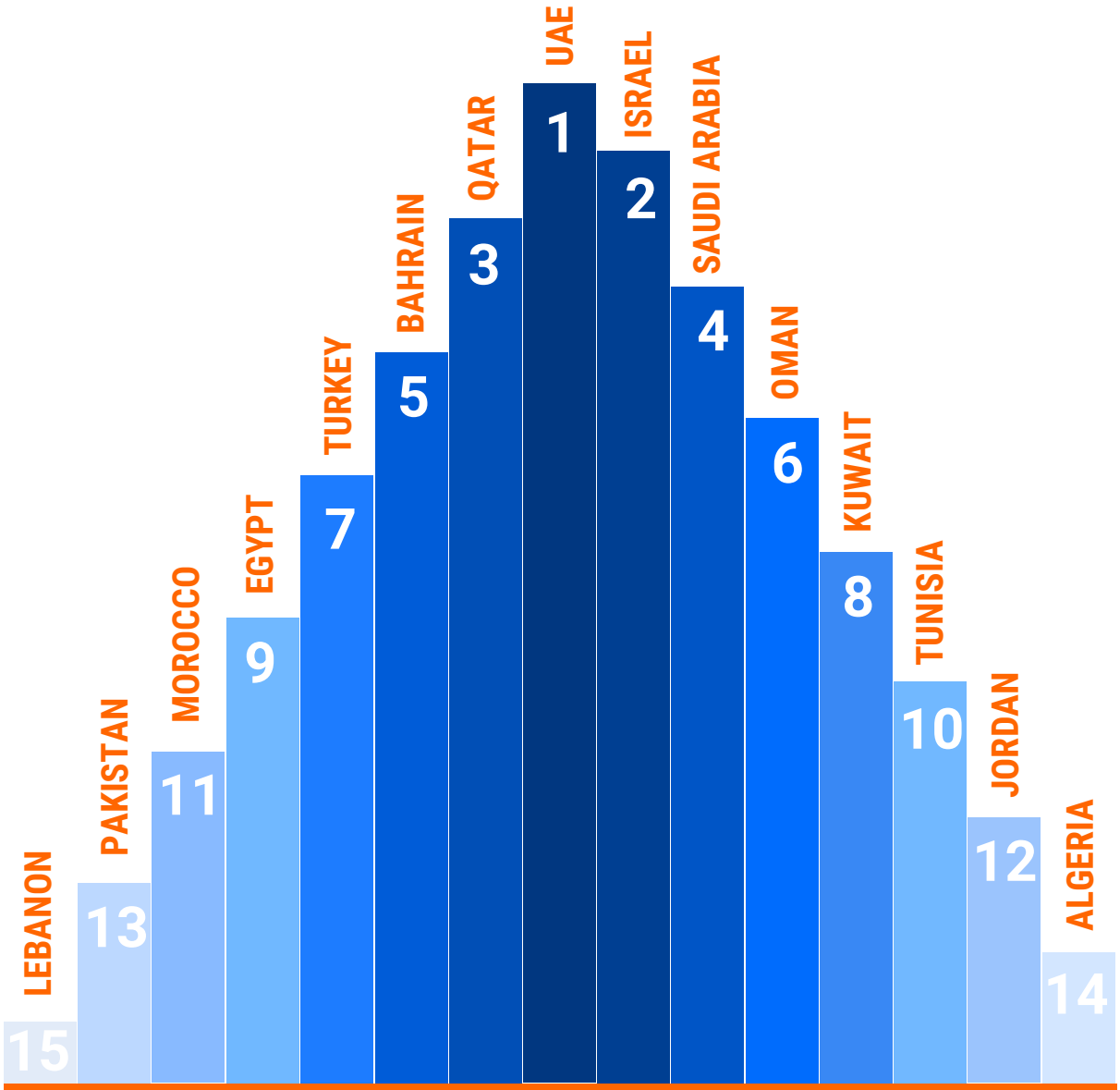
"Earlier on, we had not less than 4 to 6 completely different integration factors only for **firewalls** and **endpoint safety** earlier than we went with Palo Alto," stated one buyer. Utilizing Palo Alto Networks platforms, prospects are capable of standardize and unify safety insurance policies and scale back their threat publicity because of the chance of decreased human errors.

As a platform-based strategy encourages an open consortium of cybersecurity distributors, prospects see the worth of this ecosystem: "Having one ecosystem actually does get quite a lot of efficiencies with integrations being so seamless." Yet one more consumer put it succinctly: "Individuals already know find out how to do troubleshooting."

One other tangential but crucial implementation profit to platforms is the power to beat the much-discussed **cybersecurity abilities hole**. By consolidating all cybersecurity instruments beneath the identical structure with simple integration and customary connectors, organizations alleviate the necessity for armies of technical employees—every with completely different certifications and experiences—to combine new instruments as the necessity happens.

As organizations search for complete options and providers to safe the community, cloud, and endpoint and optimize their SOC, our Palo Alto Networks portfolio of platforms permits them best-in-class capabilities together with main third-party evaluations and efficacy exams, and collectively, ship coordinated safety enforcement throughout our prospects.

RANKINGS



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MENA Cloud Alliance

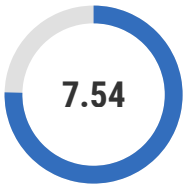
RANKINGS

COUNTRIES	RANKING	Cloud Regulation	Regulatory Quality	Green Regulation	Intellectual Property Protection	Labor Market	Skills	Growth	Infrastructure & Access	Penetration	Affordability	E-Participation	Cyber Security	Future Orientation	Market	Innovation Capability	Business Dynamism
UAE	7.57	8.00	7.29	7.21	7.58	6.62	4.93	7.29	9.07	9.31	8.16	9.01	9.81	8.31	6.97	5.23	6.93
ISRAEL	7.41	8.50	5.83	7.24	7.60	7.11	5.96	5.12	7.81	8.92	8.11	8.75	9.09	6.85	6.72	7.42	7.96
QATAR	6.93	10.00	6.95	5.97	7.45	6.34	3.83	5.33	8.67	8.20	8.61	6.09	9.45	7.38	5.99	5.00	6.60
SAUDI ARABIA	6.82	8.50	6.64	6.15	7.17	5.66	4.19	5.40	8.89	8.74	5.81	8.22	9.95	8.08	6.05	5.06	5.31
BAHRAIN	6.45	8.50	6.09	4.92	6.96	6.64	3.31	5.38	9.02	7.44	6.25	7.52	7.79	7.55	6.09	3.88	6.43
OMAN	6.38	7.75	6.63	5.15	7.59	5.58	3.00	4.09	8.54	8.01	6.19	7.42	9.60	7.51	5.54	4.13	6.28
TURKEY	5.81	4.00	3.68	6.45	4.79	5.29	2.87	4.27	8.44	6.63	6.29	8.60	9.75	6.34	4.86	4.45	5.88
KUWAIT	5.59	5.75	5.49	4.57	5.18	5.43	2.76	3.64	8.77	7.77	6.26	6.97	7.51	5.68	5.13	3.03	5.61
EGYPT	5.55	5.50	5.03	6.65	4.75	5.55	3.00	3.09	7.68	5.58	6.86	5.73	9.55	6.06	4.53	3.96	5.61
TUNISIA	5.37	5.50	4.18	7.30	4.50	4.64	2.68	3.05	7.15	6.65	6.90	6.03	8.62	4.78	5.18	3.27	5.90
MOROCCO	5.36	5.50	5.41	6.79	6.54	5.15	2.19	2.89	8.15	6.68	4.34	4.72	8.24	5.64	5.40	3.51	5.98
JORDAN	5.23	3.00	5.69	7.43	6.43	5.77	2.67	3.80	6.89	4.68	4.22	6.59	7.10	5.75	5.48	3.88	5.66
PAKISTAN	4.64	4.25	4.72	5.13	5.03	5.13	2.12	3.44	5.56	3.12	5.07	5.65	6.49	5.31	4.05	3.58	6.33
ALGERIA	4.36	4.00	4.48	5.65	4.99	4.71	2.04	2.85	7.08	6.13	4.04	3.74	3.40	4.03	4.48	3.44	5.62
LEBANON	4.31	1.25	3.38	5.98	3.85	5.44	3.80	3.74	7.69	4.91	4.48	4.25	3.04	3.19	4.98	3.85	5.30

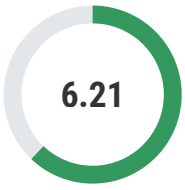
COUNTRY PROFILES

UNITED ARAB EMIRATES

OVERALL

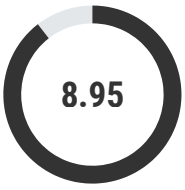


REGULATION

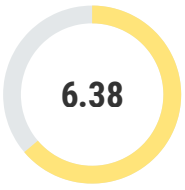


TALENT

CONNECTIVITY



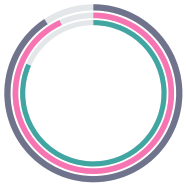
GOVERNMENT



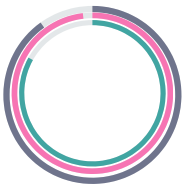
BUSINESS

8.00 Cloud Regulation
7.29 Regulatory Quality
7.21 Green Regulation
7.58 Intellectual Property Protection

6.62 Labor Market
4.93 Skills
7.29 Growth



9.07 Infrastructure & Access
9.31 Penetration
8.16 Affordability



9.01 E-Participation
9.81 Cybersecurity
8.31 Future Orientation

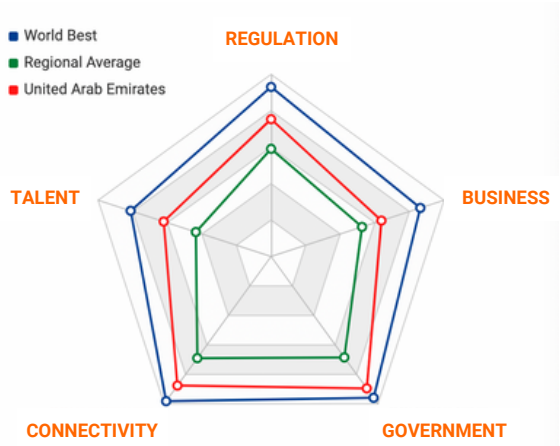
6.97 Market
5.23 Innovation Capability
6.93 Business Dynamism

COUNTRY PROFILES

UNITED ARAB EMIRATES

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	1	7.57

	Rank (out of 15)	Value (0-10)
REGULATION	2	7.54
Cloud Regulation	5	8.00
Regulatory Quality	1	7.29
Green Regulation	4	7.21
Intellectual Property Protection	3	7.85
TALENT	1	6.21
Labor Market	3	6.62
Skills	2	4.93
Growth	1	7.29



CONNECTIVITY	1	8.76
Infrastructure & Access	1	9.07
Penetration	1	9.31
Affordability	2	8.16
GOVERNMENT	1	8.95
E-Participation	1	9.01
Cybersecurity	2	9.81
Future Orientation	1	8.31
BUSINESS	2	6.38
Market	1	6.97
Innovation Capability	2	5.23
Business Dynamism	2	6.93

COUNTRY PROFILES

UNITED ARAB EMIRATES

The National Digital Government Strategy of the United Arab Emirates (UAE) aims to fully integrate digital technology into all government operations and plans, in order to become a digitally advanced government.[1]

The UAE has consistently been the most cloud competitive economy in the Middle East and North Africa (MENA) region, outperforming other countries in 8 pillars of the index. The Government domain is the UAE's strongest, with standout performances in E-Participation and Future Orientation on both a regional and global scale. The UAE has also made significant improvements in regulation, with the release of the Personal Data Protection Law, Federal Decree Law No. 45 of 2021,[2] which now places the UAE among jurisdictions with an overarching data protection law. The UAE performs well in the Regulatory Quality pillar, securing top spots for indicators such as Burden of Government Regulation, Efficiency of Legal Framework in Settling Disputes, and Challenging Regulations. The Green Regulation pillar also records the UAE as the top scorer in Energy Efficiency Regulation.

In the Talent domain, the UAE excels in the Labour Market pillar, achieving the highest scores in 6 indicators including Ease of Hiring Foreign Workers, Internal Labor Mobility, and Reliance on Professional Management. The Growth pillar is another area of strength for the UAE, with strong scores in Employee Development and Delegation of Authority.

The Connectivity domain is another area of competitiveness for the UAE. The UAE performs well in the Infrastructure & Access and Penetration pillars in this domain. The Business domain is also dominated by the UAE, with strong scores in the Product Market pillar and in the Innovation Capability pillar, particularly in the Interaction & Diversity indicators of Diversity of Workforce and State of Cluster Development.

The official introduction of a cloud first policy, which has been in consultation since 2018, would further strengthen the UAE's standing in the Regulation domain. Additionally, mechanisms to facilitate cross-border data transfers would positively impact the national cloud ecosystem, particularly in highly regulated industries. Improvements in Talent Impact indicators, including Innovation Output, High-value Exports, and Software development, could also elevate the UAE's position in the index further.

1) https://u.ae/en/about-the-uae/digital-uae/uae-national-digital-government-strategy
2) https://u.ae/en/about-the-uae/digital-uae/data/data-protection-laws

COUNTRY PROFILES

ISRAEL

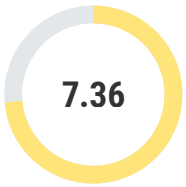
OVERALL

REGULATION

TALENT

CONNECTIVITY

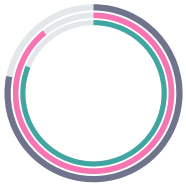
GOVERNMENT



BUSINESS

8.50 Cloud Regulation
5.83 Regulatory Quality
7.24 Green Regulation
7.60 Intellectual Property Protection

7.11 Labor Market
5.96 Skills
5.12 Growth



7.81 Infrastructure & Access
8.92 Penetration
8.11 Affordability

8.75 E-Participation
9.09 Cybersecurity
6.85 Future Orientation

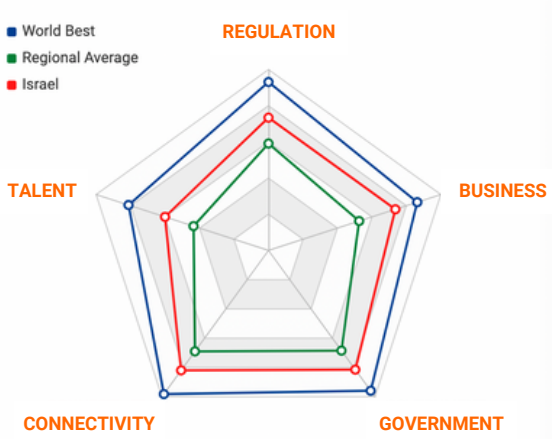
6.72 Market
7.42 Innovation Capability
7.96 Business Dynamism

COUNTRY PROFILES

ISRAEL

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	2	7.41

	Rank (out of 15)	Value (0-10)
REGULATION	3	7.34
Cloud Regulation	3	8.50
Regulatory Quality	6	5.83
Green Regulation	3	7.24
Intellectual Property Protection	1	7.60
TALENT	2	6.00
Labor Market	1	7.11
Skills	1	5.96
Growth	5	5.12



	Rank (out of 15)	Value (0-10)
CONNECTIVITY	3	8.20
Infrastructure & Access	9	7.81
Penetration	2	8.92
Affordability	3	8.11
GOVERNMENT	3	8.15
E-Participation	2	8.75
Cybersecurity	7	9.09
Future Orientation	6	6.85
BUSINESS	1	7.36
Market	2	6.72
Innovation Capability	1	7.42
Business Dynamism	1	7.96

COUNTRY PROFILES

ISRAEL

Israel is a strong competitor in the regional cloud ecosystem and has secured the runner-up position among the 15 economies included in the index. It has the largest public cloud market (weighted by GDP) among the regions represented in the index. In December 2022, the Government Cloud Strategy, a part of the "Nimbus" project, was published. This strategy is seen as an opportunity for both a technological and organizational and business revolution.[1]

In terms of data protection, Israel has laws including the Basic Law: Human Dignity and Liberty, the Protection of Privacy Law, and regulations and guidelines issued by the Israel Privacy Authority. Israel performs well in the Green Regulation pillar, particularly in the Energy Efficiency Regulation and Renewable Energy Regulation sub-pillars. The country also ranks first regionally in the Intellectual Property Protection pillar.

In the Talent domain, Israel recorded strong scores for Employability, Lifelong Learning, and Access to Growth Opportunities. There are indicators that make Israel stand out not only in the region but also on a global scale, such as Workers' Rights, Labor Tax Rate, The Ratio of Wage and Salaried Female Workers to Male Workers, and Youth Inclusion.

Israel also recorded impressive numbers in terms of cloud connectivity. Its competitive broadband penetration numbers and affordable connectivity options made the Israeli connectivity ecosystem the third most competitive in the region.

Israel's strong Innovation Capability and Business Dynamism pillars contributed greatly to its second-place ranking in the Business domain of our index. The country's strong entrepreneurial culture has produced some of the most successful startups, making it the most up-and-coming country for cloud entrepreneurs in the world.[2] Indicators such as Growth of Innovative Companies, Willingness to Delegate Authority, and Companies Embracing Disruptive Ideas are all areas where Israel scores the highest in the region.

To further enhance its standing in our index, Israel could make improvements in overall Regulatory Quality, particularly with regard to Burden of Government Regulation. Additionally, progress in indicators related to the Future Orientation of Israel, such as the Government's Long-term Vision and its Responsiveness to Change, could elevate the country's position in our index.

1) https://www.gov.il/en/departments/news/cloud-first
2) https://blog.sageintacct.com/blog/cloud-computing-startups-hubs 76 cloud startups with a population of only 9 million

COUNTRY PROFILES

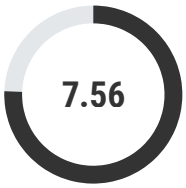
QATAR

OVERALL

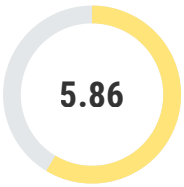
REGULATION

TALENT

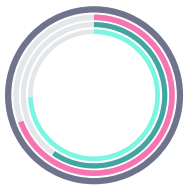
CONNECTIVITY



GOVERNMENT



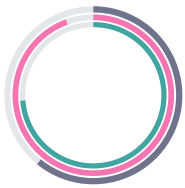
BUSINESS



10.00 Cloud Regulation
6.95 Regulatory Quality
5.97 Green Regulation
7.45 Intellectual Property Protection

6.34 Labor Market
3.83 Skills
5.33 Growth

8.67 Infrastructure & Access
8.20 Penetration
8.61 Affordability



6.09 E-Participation
9.45 Cybersecurity
7.38 Future Orientation

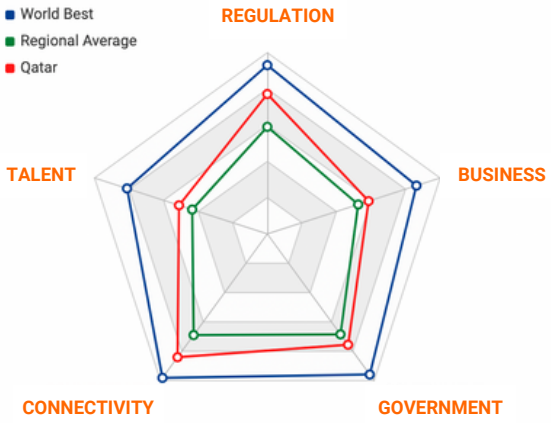
5.99 Market
5.00 Innovation Capability
6.60 Business Dynamism

COUNTRY PROFILES

QATAR

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	3	6.93

	Rank (out of 15)	Value (0-10)
REGULATION	1	7.72
Cloud Regulation	1	10.00
Regulatory Quality	2	6.95
Green Regulation	10	5.97
Intellectual Property Protection	4	7.45
TALENT	3	5.11
Labor Market	4	6.34
Skills	4	3.83
Growth	4	5.33



	Rank (out of 15)	Value (0-10)
CONNECTIVITY	2	8.41
Infrastructure & Access	5	8.67
Penetration	4	8.20
Affordability	1	8.61
GOVERNMENT	6	7.56
E-Participation	9	6.09
Cybersecurity	6	9.45
Future Orientation	5	7.38
BUSINESS	3	5.86
Market	5	5.99
Innovation Capability	4	5.00
Business Dynamism	3	6.60

COUNTRY PROFILES

QATAR

The National Vision of Qatar has set a goal for the country to become an advanced society with a high standard of living for its citizens by 2030.[1]

Qatar ranked third in the Index this year. The country once again topped the Regulation domain of the Index. In June 2022, the Qatari Communications Regulatory Authority (CRA) published the Cloud Policy Framework, which defines a "comprehensive set of policy and regulatory recommendations that align Qatar with international laws and best practices." The document states Qatar intends to provide a wide range of mechanisms to allow data to flow freely while ensuring an adequate level of protection.[2] The CRA also published a Cloud Computing Handbook for SMEs, which aims "to create a safe cloud environment and to facilitate a large-scale adoption of cloud computing by SMEs, in line with the digital development of Qatar."

Qatar was the first country in the region to introduce a data privacy law. The Compliance & Data Protection Department (CDP), which is part of the Ministry of Transport & Communications, is now the data protection authority in Qatar. In November 2020, the CDP issued 14 regulatory guidelines on the data protection law, introducing new concepts not explicitly addressed in the law. Qatar's strong scores in the Regulatory Quality and Intellectual Property Protection pillars also contributed to its top rank in the Regulation domain.

In the Talent domain, Qatar scored the highest in some indicators of the Flexibility sub-pillar of the Labor Market pillar, including Hiring & Firing Practices & Active Labor Market Policies. The country also scored very competitively in the Skills pillar, with the highest regional score for the Relevance of the Education System to the Economy.

Connectivity is also a major focus area for Qatar, which aims to establish itself as a major data hub in the region. Strong Infrastructure & Access values, high broadband penetration numbers, and affordable connectivity prices earned Qatar second place in the Connectivity domain. In the Government domain, Qatar recorded relatively high numbers for Cybersecurity and Future Orientation indicators.

The business environment in Qatar is also very accommodating for cloud services, particularly in terms of indicators of the country's Innovation Capability.

While half of the government entities have already migrated to the cloud in Qatar,[3] the country could improve its position in the index by increasing investment in the provisioning of online services.[4] Qatar could also strengthen its standing by improving its Green Regulation indicators, particularly Renewable Energy Regulations, and by improving Higher-level Skills indicators, such as Professionals, Researchers, and Senior Officials and Managers.

1) https://www.gco.gov.qa/en/about-qatar/national-vision2030/
2) https://www.cra.gov.qa/en/document/cloud-policy-framework
3) MENA Cloud Roadshow 2021 - Qatar Edition
4) https://desapublications.un.org/sites/default/files/publications/2022-09/Web%20version%20E-Government%202022.pdf P 69

COUNTRY PROFILES

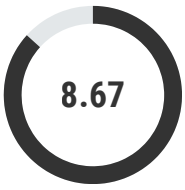
SAUDI ARABIA

OVERALL

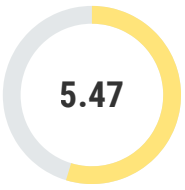
REGULATION

TALENT

CONNECTIVITY



GOVERNMENT

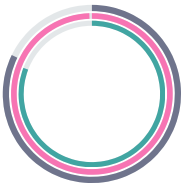


BUSINESS

8.50 Cloud Regulation
6.64 Regulatory Quality
6.15 Green Regulation
7.17 Intellectual Property Protection

5.66 Labor Market
4.19 Skills
5.40 Growth

8.89 Infrastructure & Access
8.74 Penetration
5.81 Affordability



8.22 E-Participation
9.95 Cybersecurity
8.08 Future Orientation

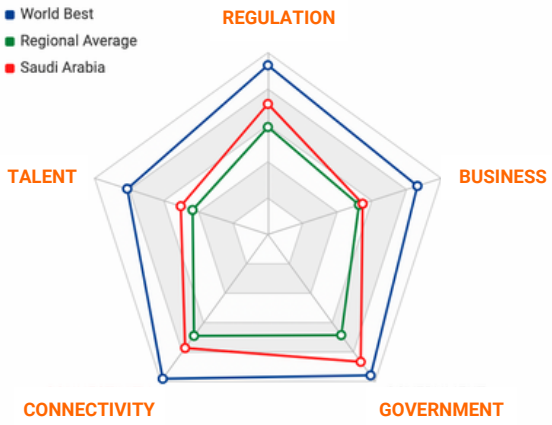
6.05 Market
5.06 Innovation Capability
5.31 Business Dynamism

COUNTRY PROFILES

SAUDI ARABIA

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	**4**	**6.82**

	Rank (out of 15)	Value (0-10)
REGULATION	**4**	**7.18**
Cloud Regulation	4	8.50
Regulatory Quality	3	6.64
Green Regulation	8	6.15
Intellectual Property Protection	5	7.17
TALENT	**5**	**5.03**
Labor Market	6	5.66
Skills	3	4.19
Growth	2	5.40



CONNECTIVITY	**4**	**7.73**
Infrastructure & Access	3	8.89
Penetration	3	8.74
Affordability	10	5.81
GOVERNMENT	**2**	**8.67**
E-Participation	4	8.22
Cybersecurity	1	9.95
Future Orientation	2	8.08
BUSINESS	**4**	**5.47**
Market	4	6.05
Innovation Capability	3	5.06
Business Dynamism	14	5.31

COUNTRY PROFILES

SAUDI ARABIA

Since the launch of Saudi Vision 2030, the kingdom of Saudi Arabia has implemented significant reforms in the public sector's operating model, the economy, and society as a whole, laying the foundations for future success. These efforts have focused on improving the effectiveness and responsiveness of the government, creating opportunities for growth and investment, opening Saudi Arabia to the world, establishing platforms for future growth, and enhancing the quality of life for citizens.[1] Saudi Vision 2030 has aspirations to build a digitally-led economy and envisions bold projects like Neom, "a dream of a New Future." [2]

Compared to the previous version of the index, Saudi Arabia has significantly improved its position (from 5th among 14 to 4th among 15). The strongest domain for the Saudi cloud ecosystem proved to be the Government. Coming in second only to the top scorer (the UAE), the Saudi government's Responsiveness to Change and Long-term Vision are second to none in the region. The index also shows that the Kingdom has managed to have the most secure cyberspace in the region. In fact, Saudi Arabia has secured its second place (joint 2nd with the United Kingdom) on the ITU's Global Cybersecurity Index,[3] thanks to its efforts towards capacity building as well as legal, organizational, and cooperative measures.

The Kingdom introduced the Cloud First Policy in February 2019, which was released by the Ministry of Communications and Information Technology (MCIT) in October 2020. This policy aims to encourage the adoption of cloud computing in the country and accelerate the process of transitioning government agencies from traditional IT infrastructure to cloud platforms.[4]

The implementation of the Saudi Personal Data Protection Law [5] and the Cloud Computing Regulatory Framework,[6] which has undergone three iterations, have contributed to the country's Cloud Regulation score. Additionally, improvements in certain indicators related to the labor market, such as the Ease of Hiring Foreign Labor and the Ratio of Female to Male Wage and Salaried Workers, can improve the kingdom's ranking in the Talent domain of the index. Efforts to make connectivity more affordable can also enhance Saudi Arabia's score in the Connectivity domain of the index.

Finally, perhaps the biggest room for improvement is in the Business Dynamism pillar of our index. Although the kingdom introduced a new Bankruptcy Law in 2018,[7] scores for Insolvency-related indicators have negatively impacted the country's standing in the business domain.

1) https://www.vision2030.gov.sa/media/rc0b5oy1/saudi_vision203.pdf
2) https://www.vision2030.gov.sa/v2030/v2030-projects/neom/
3) https://www.itu.int/epublications/publication/D-STR-GCI.01-2021-HTM-E
4) https://www.mcit.gov.sa/sites/default/files/ksa_cloud_first_policy_en.pdf
5) https://www.tamimi.com/law-update-articles/an-overview-of-saudi-arabias-new-personal-data-protection-law/
6) https://www.cst.gov.sa/en/RulesandSystems/RegulatoryDocuments/Documents/CCRF_En.pdf
7) https://bankruptcy.gov.sa/en/BankruptcyLaw/StatutoryDocuments/Documents/Bankruptcy%20Law.pdf

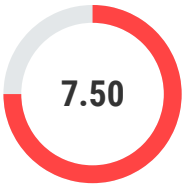
COUNTRY PROFILES

BAHRAIN

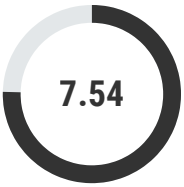
OVERALL

REGULATION

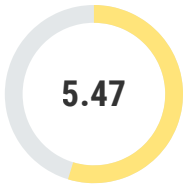
TALENT



CONNECTIVITY



GOVERNMENT



BUSINESS

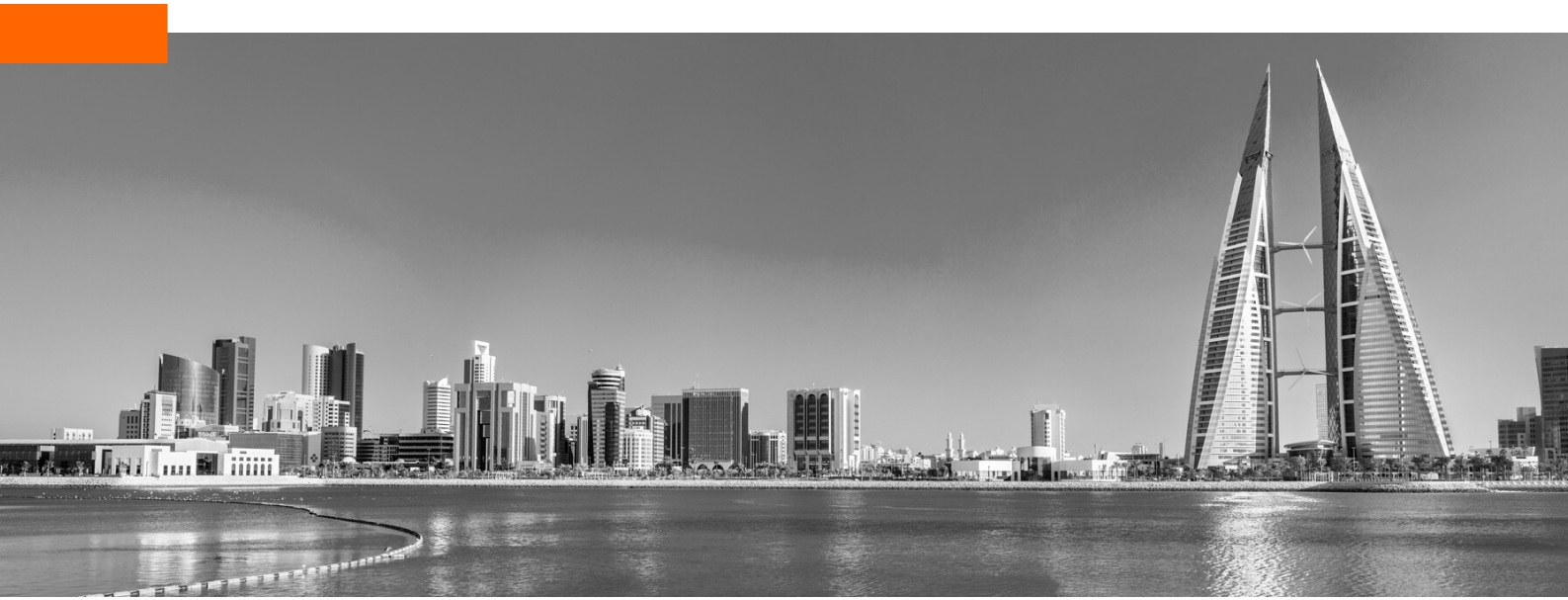
8.50 Cloud Regulation
6.09 Regulatory Quality
4.92 Green Regulation
6.96 Intellectual Property Protection

6.64 Labor Market
3.31 Skills
5.38 Growth

9.02 Infrastructure & Access
7.44 Penetration
6.25 Affordability

7.52 E-Participation
7.79 Cybersecurity
7.55 Future Orientation

6.09 Market
3.88 Innovation Capability
6.43 Business Dynamism

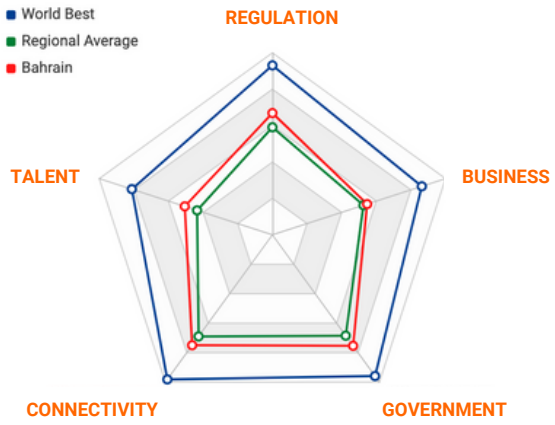


COUNTRY PROFILES

BAHRAIN

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	5	6.45

	Rank (out of 15)	Value (0-10)
REGULATION	6	6.69
Cloud Regulation	2	8.50
Regulatory Quality	5	6.09
Green Regulation	14	4.92
Intellectual Property Protection	6	6.96
TALENT	4	5.06
Labor Market	2	6.64
Skills	6	3.31
Growth	3	5.38



	Rank (out of 15)	Value (0-10)
CONNECTIVITY	6	7.50
Infrastructure & Access	2	9.02
Penetration	7	7.44
Affordability	8	6.25
GOVERNMENT	7	7.54
E-Participation	5	7.52
Cybersecurity	10	7.79
Future Orientation	3	7.55
BUSINESS	4	5.47
Market	3	6.09
Innovation Capability	8	3.88
Business Dynamism	4	6.43

COUNTRY PROFILES

BAHRAIN

The Economic Vision 2030 is a long-term plan for the economic development of Bahrain that was developed through consultation with various stakeholders in the public and private sectors. Its goal is to improve the lives of all Bahrainis through a focus on sustainability, fairness, and competitiveness. The Economic Development Board has been responsible for implementing the vision through a series of economic and institutional reforms, and the plan also aligns with the Sustainable Development Goals 2030.[1]

Bahrain has proven to be a strong player in the field of cloud computing, coming in at fifth place in our index. The country's government and connectivity domains appear to be the strongest among the five domains measured. From a regional perspective, Bahrain also ranked highly in the Talent & Business domain, coming in at fourth and fifth place, respectively.

Bahrain has a mature cloud regulatory environment, with a Personal Data Protection Law in place since 2018[2] and a cloud first policy introduced in 2017. As a result of these efforts, more than 70% of the operations and systems of 72 government entities have been migrated to the cloud by 2022,[3] resulting in one of the highest Cloud Regulation scores in our index.

In the Talent domain of our index, Bahrain stands out in the areas of Cooperation in Labor-Employer Relations and Flexibility of Wage Determination. Additionally, the country's scores in the Growth pillar are very competitive, particularly in the areas of Employee Development and Delegation of Authority.

Bahrain is a well-connected country. The kingdom scored some of the highest numbers in the Infrastructure & Access pillar of our Connectivity domain including the highest score for International Internet Bandwidth.

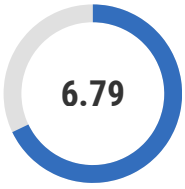
To improve its standing in our index, Bahrain can focus more on the Green Regulation indicators, including Environment-related Treaties in Force and regulations on Energy Efficiency and Renewable Energy. There is also room for improvement in the Innovation Capability indicators, particularly in the area of Research & Development.

1) https://www.bahrain.bh/wps/portal
2) http://www.pdp.gov.bh/en/regulations.html
3) https://www.bna.bh/en/iGACEOBahraingovernmenthassuccessfullyadoptedCloudFirstpolicy

COUNTRY PROFILES

OMAN

OVERALL

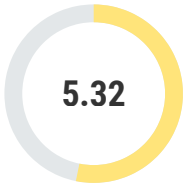


REGULATION

TALENT

CONNECTIVITY

GOVERNMENT

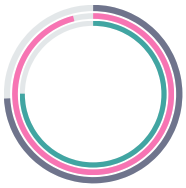


BUSINESS

7.75 Cloud Regulation
6.63 Regulatory Quality
5.15 Green Regulation
7.59 Intellectual Property Protection

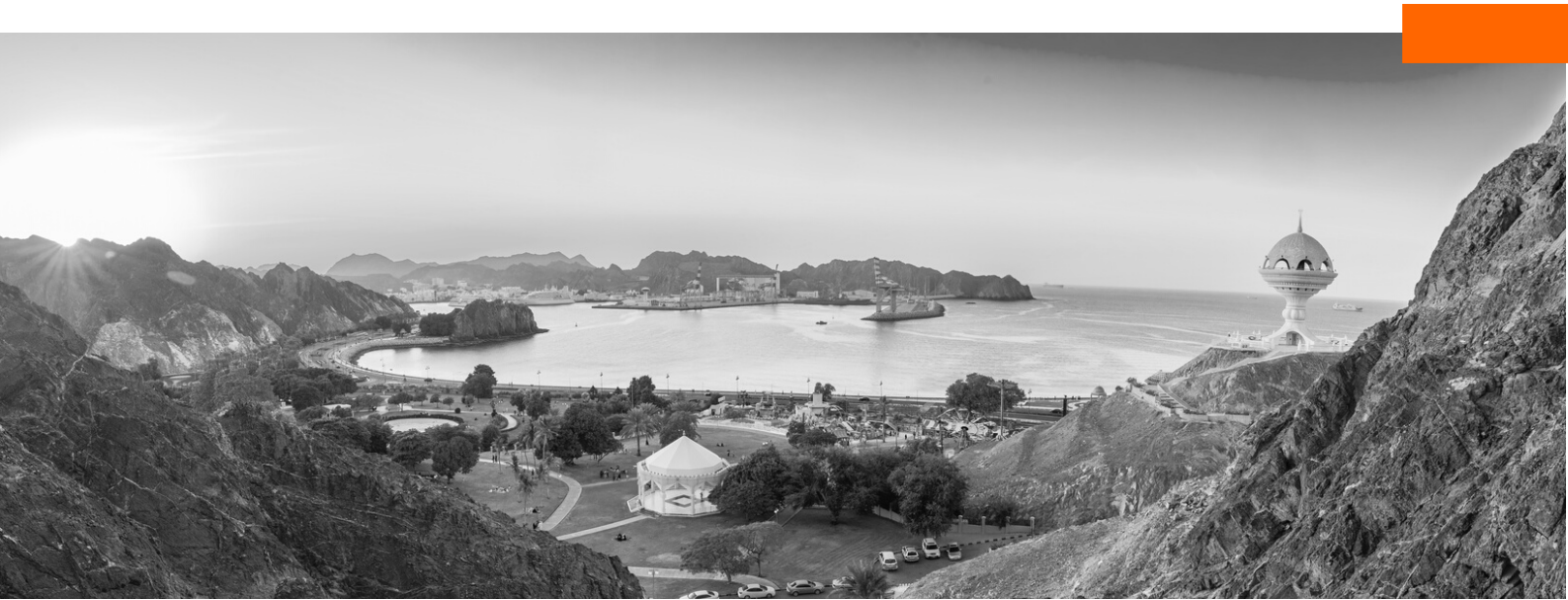
5.58 Labor Market
3.00 Skills
4.09 Growth

8.54 Infrastructure & Access
8.01 Penetration
6.19 Affordability



7.42 E-Participation
9.60 Cybersecurity
7.51 Future Orientation

5.54 Market
4.13 Innovation Capability
6.28 Business Dynamism

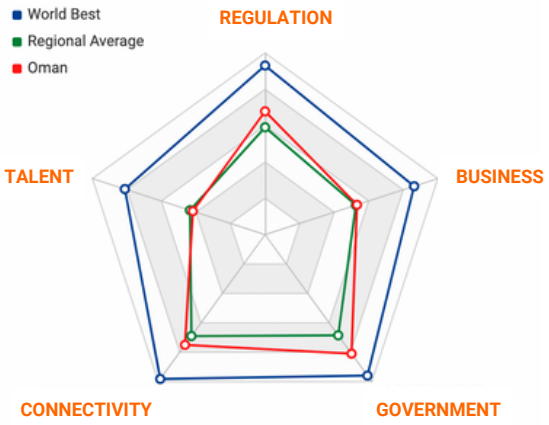


COUNTRY PROFILES

OMAN

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	5	6.45

	Rank (out of 15)	Value (0-10)
REGULATION	5	6.79
Cloud Regulation	6	7.75
Regulatory Quality	4	6.63
Green Regulation	12	5.15
Intellectual Property Protection	2	7.59
TALENT	7	4.18
Labor Market	7	5.58
Skills	8	3.00
Growth	7	4.09



CONNECTIVITY	6	7.50
Infrastructure & Access	6	8.54
Penetration	5	8.01
Affordability	9	6.19
GOVERNMENT	5	8.10
E-Participation	6	7.42
Cybersecurity	4	9.60
Future Orientation	4	7.51
BUSINESS	6	5.32
Market	6	5.54
Innovation Capability	6	4.13
Business Dynamism	6	6.28

COUNTRY PROFILES

OMAN

Oman has traditionally performed well in our indices. The Oman Vision 2040, which aims to develop the country's technology and communication capabilities and fuel digital transformation, is expected to boost Oman's ICT market to RO2.2 billion ($5.6 billion) by 2024.[1]

In this year's index, Oman's strongest domain score belonged to the Government domain, where it ranked fifth in the region. The Omani government's commitment to securing its cyber space and its focus on the future contributed to the country's performance in this domain.

On February 9, 2022, Oman passed the Royal Decree 6/2022, which established the Personal Data Protection Law (PDPL). This law will replace Chapter Seven of the Electronic Transactions Law and go into effect on February 9, 2023, requiring businesses operating in Oman to adhere to stricter requirements for processing personal data. The Ministry of Transport, Communication, and Information Technology (MTCIT) has been designated as the regulatory body responsible for enforcing the PDPL, as stated in Article 7 of the new law. The establishment of an independent regulatory body for the PDPL will increase the country's score in the Regulation domain. In June 2021, the Ministry also released a cloud first policy, which provides guidelines for the government's use of cloud computing services, including classification, security, and administrative requirements.[2]

Oman's cloud connectivity landscape is relatively competitive on a regional scale, as was the case in our previous measurement of this domain. The same is true for the Business domain, where the country's performance is relatively strong, particularly in the area of Innovation Capability.

Oman could have scored even more strongly in the Government domain if its E-Participation indicators were as strong as they used to be, particularly in terms of online service provisioning. Additionally, the Green Regulation pillar could be an area of focus for Oman, where the country recorded the lowest score in the Energy Efficiency Regulation indicator. Finally, improvements in the indicators comprising the Affordability sub-pillar would strengthen the country's score even further in the Connectivity domain.

1) https://www.telecomreview.com/index.php/articles/reports-and-coverage/5066-vision-2040-to-boost-oman-s-ict-market-value-by-2024
2) https://www.mtcit.gov.om/ITAPortal/Pages/Page.aspx?NID=292560&PID=200208

COUNTRY PROFILES

TURKEY

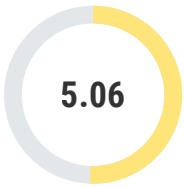
OVERALL

REGULATION

TALENT

CONNECTIVITY

GOVERNMENT

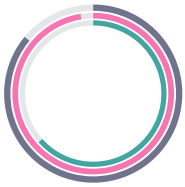


BUSINESS

4.00 Cloud Regulation
3.68 Regulatory Quality
6.45 Green Regulation
4.79 Intellectual Property Protection

5.29 Labor Market
2.87 Skills
4.27 Growth

8.44 Infrastructure & Access
6.63 Penetration
6.29 Affordability



8.60 E-Participation
9.75 Cybersecurity
6.34 Future Orientation

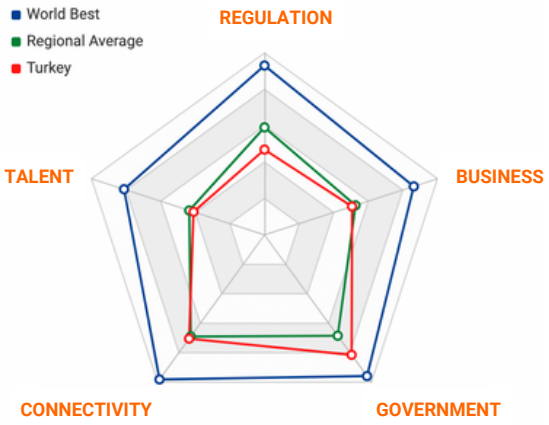
48.6 Market
4.45 Innovation Capability
5.88 Business Dynamism

COUNTRY PROFILES

TURKEY

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	7	5.81

	Rank (out of 15)	Value (0-10)
REGULATION	14	4.69
Cloud Regulation	13	4.00
Regulatory Quality	14	3.68
Green Regulation	7	6.45
Intellectual Property Protection	12	4.79
TALENT	8	4.10
Labor Market	11	5.29
Skills	9	2.87
Growth	6	4.27



	Rank (out of 15)	Value (0-10)
CONNECTIVITY	8	7.05
Infrastructure & Access	7	8.44
Penetration	10	6.63
Affordability	6	6.29
GOVERNMENT	3	8.15
E-Participation	3	8.60
Cybersecurity	3	9.75
Future Orientation	7	6.34
BUSINESS	7	5.06
Market	12	4.86
Innovation Capability	5	4.45
Business Dynamism	9	5.88

COUNTRY PROFILES

TURKEY

Turkey has ambitious plans for its digital future. The government's 2023 vision aims to significantly improve the country's economy through customized energy, technology, healthcare, transportation, and infrastructure projects, with the goal of making Turkey one of the top 10 global economies.[1]

The Digital Transformation Office has been tasked with leading the digital transformation of the public sector in accordance with the policies and strategies determined by the President.[2] Digital Türkiye Version 1.1, which is currently in development, will introduce user and topic-based integrated services such as "My Vehicles," "My Home," and "My Health," which will make life easier for people.

These ambitions have resulted in major digital transformation implementations in Turkey, which have propelled the country into one of the highest scorers in the Government domain of our index. The country's efforts towards cybersecurity and very strong numbers in terms of E-Participation have contributed the most to its standing in this domain.

Turkey's Innovation Capability is another area where the country stands out regionally, coming in third after Israel and the UAE,[3] largely thanks to its strong Creative Output.

Turkey can greatly enhance its standing in our index by addressing regulatory concerns around the cloud. The introduction of a cloud first policy would provide much-needed guidance and clarity for public sector workload migrations. Equally important are regulations around cross-border personal data transfers, which can significantly impact the adoption of cloud services in the country. Additionally, improvements in the Checks and Balances sub-pillar indicators, such as Judicial Independence and the Efficiency of the Legal Framework in Challenging Regulations, would help the country achieve a better standing in our index.

In terms of talent, Turkey can improve its position by investing in Digital Skills, for example. While the country tops the region in terms of Renewable Energy regulation, there is still room for improvement in indicators such as Energy Efficient Regulation and Environment-related Treaties in Force.

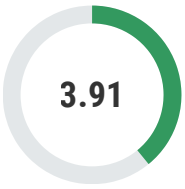
1) https://www.dailysabah.com/business/tech/digital-transformation-tops-turkeys-agenda
2) https://cbddo.gov.tr/en/digital-turkey
3) GII 2022: https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2022-section1-en-gii-2022-at-a-glance-global-innovation-index-2022-15th-edition.pdf

COUNTRY PROFILES

KUWAIT

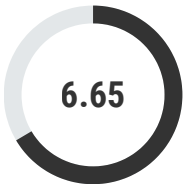
OVERALL

REGULATION

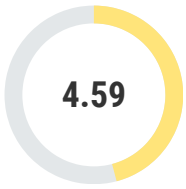


TALENT

CONNECTIVITY



GOVERNMENT



BUSINESS

5.75 Cloud Regulation
5.49 Regulatory Quality
4.57 Green Regulation
5.18 Intellectual Property Protection

5.43 Labor Market
2.76 Skills
3.64 Growth

8.77 Energy
7.77 Quality
6.26 Affordability

6.97 E-Participation
7.51 Cybersecurity
5.68 Future Orientation

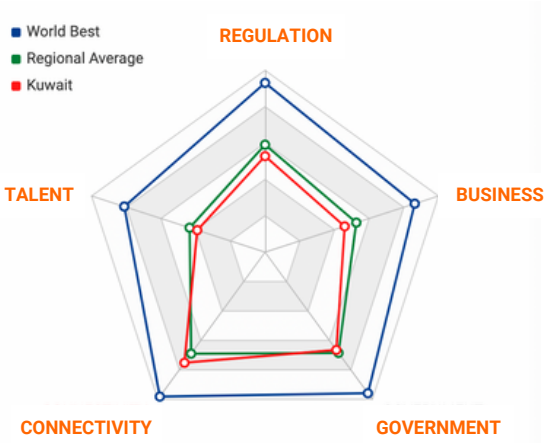
5.13 Product Market
3.03 Innovation Capability
5.61 Business Dynamism

COUNTRY PROFILES

KUWAIT

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	8	5.59

	Rank (out of 15)	Value (0-10)
REGULATION	11	5.28
Cloud Regulation	7	5.75
Regulatory Quality	8	5.49
Green Regulation	15	4.57
Intellectual Property Protection	9	5.18
TALENT	10	3.91
Labor Market	10	5.43
Skills	10	2.76
Growth	10	3.64



CONNECTIVITY	5	7.52
Infrastructure & Access	4	8.77
Penetration	6	7.77
Affordability	7	6.26
GOVERNMENT	9	6.65
E-Participation	7	6.97
Cybersecurity	11	7.51
Future Orientation	10	5.68
BUSINESS	14	4.59
Market	10	5.13
Innovation Capability	15	3.03
Business Dynamism	13	5.61

COUNTRY PROFILES

KUWAIT

Kuwait's 2035 vision, also known as "New Kuwait," aims to transform the country into a financial and trade hub that is attractive to investors, with the private sector leading the economy and creating competition to increase production efficiency. The national development plan will be aligned with the United Nations Sustainable Development Goals (SDGs) 2030 agenda and will be tracked and measured using global indicators, with specific goals and performance targets in place to guide progress towards the vision.[1]

As part of its efforts to achieve the goals of Kuwait Vision 2035, the country is prioritizing the adoption of digital technologies to drive innovation and digital transformation in key sectors. By implementing smart and digital technologies, Kuwait aims to improve the efficiency and performance of its services, stimulate economic growth, and enhance the quality of life for its citizens. Through this focus on digital transformation, Kuwait aims to increase operational efficiency and performance in key sectors.[2]

The Communication & Information Technology Regulatory Authority (CITRA), whose mission is to "create a competitive regulatory environment aimed at the advancement of communication and information technology," released a series of cloud-related regulations, policies, and guidelines in 2021 and 2022, including the Cloud Computing Regulatory Framework, Cloud First Policy, Cloud Migration Guide, Subscribers Guide to Cloud Services, Cloud Service Providers Regulations and Commitments, and Data Classification Policy.[3]

While Kuwait currently does not have a specific personal data protection law, CITRA recently issued the Data Privacy Protection Regulation (Decision No. 42 of 2021), which imposes data protection obligations on telecommunications service providers and certain other industry sectors, including cloud computing service providers.[4]

Kuwait could have scored more competitively in the Regulation domain of our index if it weren't for shortcomings in the Green Regulation indicators, specifically in terms of Renewable Energy regulation, where the country scored the lowest in the region. Connectivity proved to be Kuwait's strongest suit, with the highest numbers in the Infrastructure & Access pillar, followed by very competitive showings in the Penetration and Affordability pillars. This suggests that the Kuwaiti connectedness is a welcoming environment for the cloud.

To improve its rankings in our index, Kuwait can focus on the Talent domain and, more specifically, on the indicators comprising the Skills sub-pillar, including Innovation Output, High-value Exports, Software Development, Professionals, Researchers, and Senior Officials and Managers. There is also room for improvement in the country's standing on regional cybersecurity rankings, especially as the region hosts some of the top contenders on a global scale in this department, such as Saudi Arabia.[5]

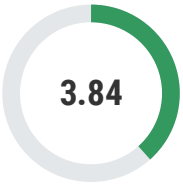
1) https://www.mofa.gov.kw/en/kuwait-state/kuwait-vision-2035/
2) https://digitaltransformationkuwait.com/
3) https://citra.gov.kw/sites/en/Pages/regulations.aspx
4) https://www.dlapiperdataprotection.com/index.html?c=KW&c2=&go-button=GO&t=law
5) https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-GCI.01-2021-PDF-E.pdf

COUNTRY PROFILES

EGYPT

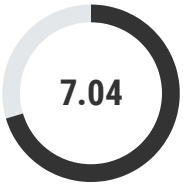
OVERALL

REGULATION

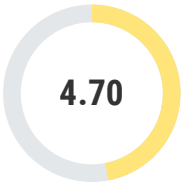


TALENT

CONNECTIVITY



GOVERNMENT

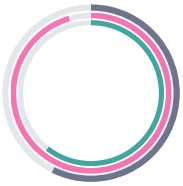


BUSINESS

5.50 Cloud Regulation
5.03 Regulatory Quality
6.65 Green Regulation
4.75 Intellectual Property Protection

5.55 Labor Market
3.00 Skills
3.09 Growth

7.68 Energy
5.58 Quality
6.86 Affordability



5.73 E-Participation
9.55 Cybersecurity
6.06 Future Orientation

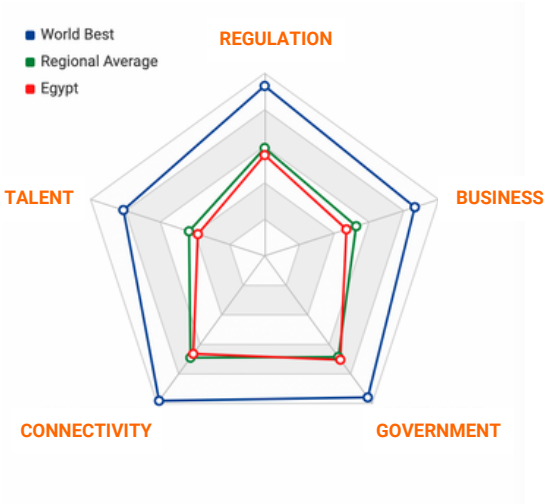
4.53 Product Market
3.96 Innovation Capability
5.61 Business Dynamism

COUNTRY PROFILES

EGYPT

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	9	5.55

	Rank (out of 15)	Value (0-10)
REGULATION	8	5.52
Cloud Regulation	8	5.50
Regulatory Quality	10	5.03
Green Regulation	6	6.65
Intellectual Property Protection	13	4.75
TALENT	11	3.84
Labor Market	8	5.55
Skills	7	3.00
Growth	12	3.09



	Rank (out of 15)	Value (0-10)
CONNECTIVITY	10	6.64
Infrastructure & Access	11	7.68
Penetration	12	5.58
Affordability	5	6.86
GOVERNMENT	8	7.04
E-Participation	11	5.73
Cybersecurity	5	9.55
Future Orientation	8	6.06
BUSINESS	12	4.70
Market	13	4.53
Innovation Capability	7	3.96
Business Dynamism	12	5.61

COUNTRY PROFILES

EGYPT

By 2030, Egypt aims to undergo a comprehensive renaissance, leveraging its strategic location and distinct national identity and drawing on its history as it works towards sustainable development and a higher standard of living for all Egyptians. The country will focus on using science, knowledge, and innovation to create a diversified and competitive economy and a social system characterized by participation, solidarity, and justice. In addition, Egypt will strive to maintain a healthy ecosystem that preserves its natural and human resources.[1]

Egypt's ICT 2030 strategy clearly recognizes the development of Cloud Computing as an important program. In 2020, the country published Personal Data Protection Law No.151 and introduced a Personal Data Protection Centre as the authority. Although the Egyptian Government Cloud Strategy (EG-Cloud) was introduced in 2014 and included a Government Cloud-first policy, we have yet to see such a policy formally introduced.

Subject to a number of exceptions, the PDPL Law contains a general prohibition on the cross-border transfer of personal data unless a license has been obtained from the Personal Data Protection Centre and where the level of protection is not less than that provided under the Law. However, there is no list of "adequate regimes," which makes it unclear how that level of protection is to be assessed. [2]

While the introduction of a Personal Data Protection Law has significantly elevated Egypt's position in the Regulation domain of our index, uncertainty around international data transfers and a yet-to-be-released cloud first policy have adversely impacted the country's score.

Egypt's performance in the Green Regulation domain is very competitive, particularly in terms of Renewable Energy regulation, where the country ranks 32nd globally according to the World Economic Forum.[3]

However, there is room for improvement in the country's overall regulatory quality, especially in terms of public sector performance indicators. Gains in the IP Protection score would help elevate Egypt's position in the Regulation domain of our index.

Another significant score for Egypt is in the cybersecurity domain, where it ranks 4th among the Arab states.[4] In 2021, the country was responsible for 15% of all transactions and 11% of all capital deployed in the Middle East and Africa,[5] demonstrating a vibrant startup ecosystem. Improvements in Entrepreneurial Culture indicators, such as Attitude Towards Entrepreneurial Risk and Delegation of Authority, could significantly boost Egypt's ranking in the Business domain of our index.

Although Egypt is, for the first time, among a few African nations offering 20-21 services online,[6] the country could move up in the Government domain by focusing on E-Participation indicators, specifically in terms of the provisioning of online services.

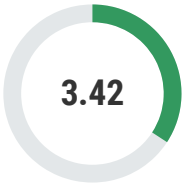
1) https://www.presidency.eg/en/
2) MENA Cloud Alliance Roadshow 2021 - Egypt Edition
3) https://www.weforum.org/reports/the-global-competitiveness-report-2020/
4) https://www.itu.int/dms_pub/itu-d/opb/str/D-STR-GCI.01-2021-PDF-E.pdf
5) https://magnitt.com/research/egypt-2022-venture-investment-report-50800
6) https://desapublications.un.org/sites/default/files/publications/2022-09/Web%20version%20E-Government%202022.pdf

COUNTRY PROFILES

TUNISIA

OVERALL

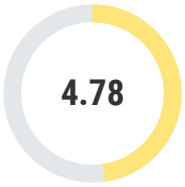
REGULATION



TALENT

CONNECTIVITY

GOVERNMENT



BUSINESS

5.50 Cloud Regulation
4.18 Regulatory Quality
7.30 Green Regulation
4.50 Intellectual Property Protection

4.64 Labor Market
2.68 Skills
3.05 Growth

7.15 Infrastructure & Access
6.65 Penetration
6.90 Affordability

6.03 E-Participation
8.62 Cybersecurity
4.78 Future Orientation

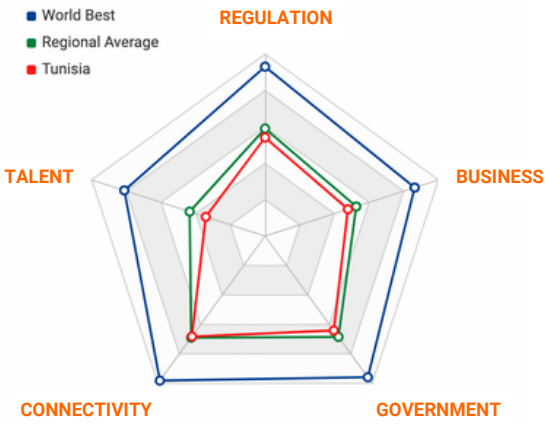
5.18 Market
3.27 Innovation Capability
5.90 Business Dynamism

COUNTRY PROFILES

TUNISIA

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	**10**	**5.37**

	Rank (out of 15)	Value (0-10)
REGULATION	**10**	**5.42**
Cloud Regulation	10	5.50
Regulatory Quality	13	4.18
Green Regulation	2	7.30
Intellectual Property Protection	14	4.50
TALENT	**13**	**3.42**
Labor Market	15	4.64
Skills	11	2.68
Growth	13	3.05



CONNECTIVITY	**9**	**6.83**
Infrastructure & Access	12	7.15
Penetration	9	6.65
Affordability	4	6.90
GOVERNMENT	**10**	**6.41**
E-Participation	10	6.03
Cybersecurity	8	8.62
Future Orientation	13	4.78
BUSINESS	**10**	**4.78**
Market	9	5.18
Innovation Capability	14	3.27
Business Dynamism	8	5.90

COUNTRY PROFILES

TUNISIA

The "Tunisia Digital 2020" National Strategic Plan has been developed to position Tunisia as an international reference for digital development as a major lever for socio-economic development and to provide the country with technology infrastructure in line with a modern economy.[1]

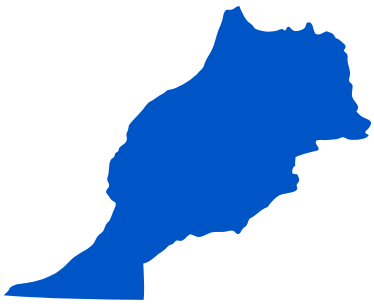
The Tunisian government is working to develop its own cloud for sovereign data, such as citizen registration data, which must be hosted locally due to confidentiality concerns. Under the Tunisie Digitale program of the PNS (Programme National de la Stratégie), the CNI (Centre National Informatique) is looking to improve e-government functions and establish an inter-ministry network to share digital information between government departments while protecting data confidentiality and citizens' right to privacy.[2]

The widespread deployment of a nationwide fiber-optic network and access to international submarine cables has contributed to the rapid growth of the internet industry in Tunisia. In 2020, nearly 9 million mobile broadband subscriptions were recorded.[3] The country also has some of the most affordable connectivity numbers in our index.

The Labor Market is a weak point for Tunisia's Talent domain. Improvements in indicators such as Hiring and Firing Practices, Cooperation in Labour-Employee Relations, Flexibility of Wage Determination, Ease of Hiring Foreign Labour, and Pay and Productivity can certainly help the country's ranking in this domain. Tunisia also has the highest number of Highly-Educated Unemployment in the region, which also contributes to its current ranking. Another important indicator that requires attention is the Government Long-term Vision, where Tunisia currently ranks the lowest in the region.

In the Business domain, Tunisia can improve its position by focusing on Innovation Capability indicators, particularly in terms of Diversity of Workforce, State of Cluster Development, Multi-Stakeholder Collaboration, Patent Application, and Buyer Sophistication. Although the country has made progress in its growing entrepreneurial scene, for example by introducing the Start-up Act,[4] Entrepreneurial Culture indicators such as Growth of Innovative Companies and Companies Embracing Disruptive Ideas still need significant improvements if Tunisia aims for higher rankings in our index.

1) https://www.mtc.gov.tn/
2) https://oxfordbusinessgroup.com/overview/connected-society-national-plans-are-under-way-improve-it-innovation-cloud-storage-platforms-and-e
3) https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx
4) https://www.gsma.com/mobilefordevelopment/blog/exploring-the-rising-tunisian-start-up-ecosystem/

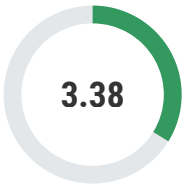


COUNTRY PROFILES

MOROCCO

OVERALL

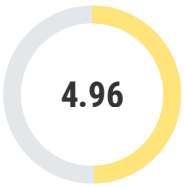
REGULATION



TALENT

CONNECTIVITY

GOVERNMENT



BUSINESS

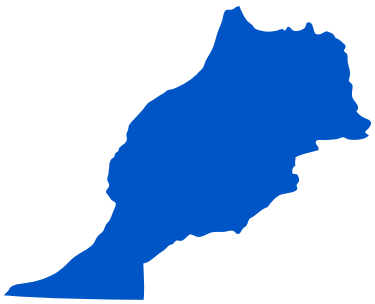
5.50 Cloud Regulation
5.41 Regulatory Quality
6.79 Green Regulation
6.54 Intellectual Property Protection

5.15 Labor Market
2.19 Skills
2.89 Growth

8.15 Infrastructure & Access
6.68 Penetration
4.34 Affordability

4.72 E-Participation
8.24 Cybersecurity
5.64 Future Orientation

5.40 Market
3.51 Innovation Capability
5.98 Business Dynamism

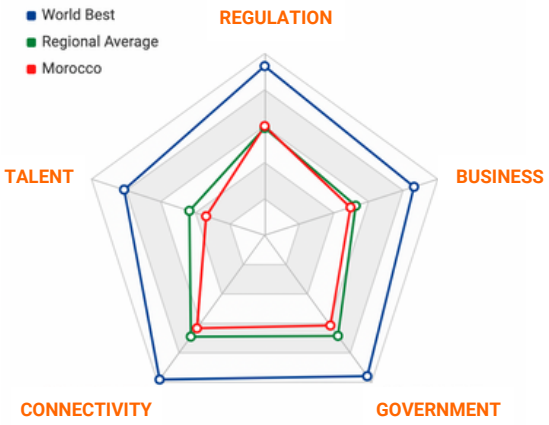


COUNTRY PROFILES

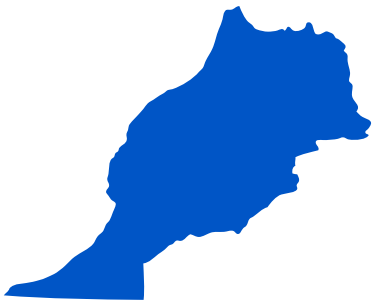
MOROCCO

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	11	5.36

	Rank (out of 15)	Value (0-10)
REGULATION	7	6.01
Cloud Regulation	9	5.50
Regulatory Quality	9	5.41
Green Regulation	5	6.79
Intellectual Property Protection	7	6.54
TALENT	14	3.38
Labor Market	12	5.15
Skills	13	2.19
Growth	14	2.89



	Rank (out of 15)	Value (0-10)
CONNECTIVITY	11	6.33
Infrastructure & Access	8	8.15
Penetration	8	6.68
Affordability	13	4.34
GOVERNMENT	12	6.14
E-Participation	13	4.72
Cybersecurity	9	8.24
Future Orientation	11	5.46
BUSINESS	9	4.96
Market	8	5.40
Innovation Capability	12	3.51
Business Dynamism	7	5.98



COUNTRY PROFILES

MOROCCO

Morocco is working on a New Model of Development (NMD) to improve the lives of its citizens and increase the country's visibility to the world. The NMD aims to increase wealth and improve the skills and capabilities of both citizens and the country as a whole, with the goal of strengthening the economy and achieving its goals by 2035.

Digital technology has been identified as a powerful tool for change and development, and is given priority by the government as a means of achieving significant and lasting transformations. There is even mention of a potential partnership between Morocco and the European Union around a data Schengen.[1] Currently, there is no unified regulation for cloud services in Morocco. However, for the public sector, there are several laws that pertain to the adoption of cloud services, facilitate their use, and place limitations on how they can be utilized. These laws apply to any decisions to transition to cloud services, such as the Best Practice Guide for the Digitization of Public Services.[2]

The Data Protection Law in Morocco is Law No. 09-08, which was enacted on February 18, 2009 and regulates the protection of personal data. Its implementing decree is Decree No. 2-09-165, which was issued on May 21, 2009, and the relevant authority is the Data Protection National Commission (Commission Nationale de Protection des Données Personnelles).[3]

Morocco has a strong showing in the Green Regulation category, particularly in the indicator for Environment-related Treaties in Force. In the Talent domain, while the country has a relatively low overall score, it stands out in certain areas such as the Prevalence of Training in Firms, which is likely due to the high demand for highly-educated workers in the country, particularly from the European Union.[4]

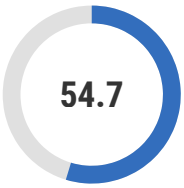
The country's Government domain score is negatively affected by low online service index scores, as well as low scores for Legal Framework Adaptability to Digital Business Models and Government Long-term Vision. Morocco has strong scores in the Infrastructure and Access pillar of the Connectivity domain, but its overall performance in this area is hindered by relatively high connectivity costs. Morocco has made significant progress in innovation, and could improve its ranking in the Business domain by further strengthening indicators related to Interaction and Diversity within the Innovation Capability category.[5]

1) https://www.csmd.ma/documents/CSMD_Report_EN.pdf
2) https://www.add.gov.ma/guide-de-bonnes-pratiques-de-digitalisation-des-services-publics
3) https://www.dlapiperdataprotection.com/
4) https://www.mapnews.ma/en/actualites/economy/eu-seeks-talent-partnership-morocco-end-2022
5) https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2022-section1-en-gii-2022-at-a-glance-global-innovation-index-2022-15th-edition.pdf

COUNTRY PROFILES

JORDAN

OVERALL



REGULATION

TALENT

CONNECTIVITY

GOVERNMENT

BUSINESS

3.00 Cloud Regulation
5.69 Regulatory Quality
7.43 Green Regulation
6.43 Intellectual Property Protection

5.77 Labor Market
2.67 Skills
3.80 Growth

6.89 Energy
4.68 Quality
4.22 Affordability

6.59 E-Participation
7.10 Cybersecurity
5.75 Future Orientation

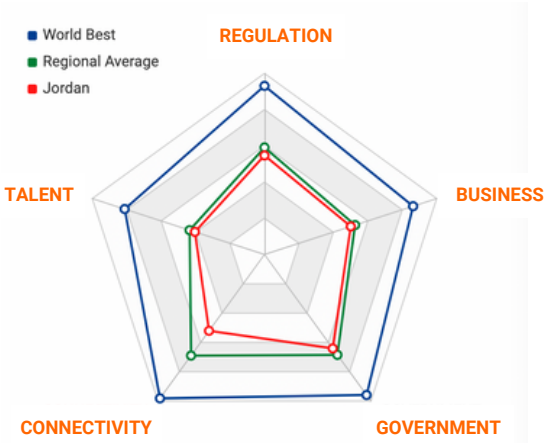
5.48 Product Market
3.88 Innovation Capability
5.66 Business Dynamism

COUNTRY PROFILES

JORDAN

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	12	5.23

	Rank (out of 15)	Value (0-10)
REGULATION	9	5.47
Cloud Regulation	14	3.00
Regulatory Quality	7	5.69
Green Regulation	1	7.43
Intellectual Property Protection	8	6.43
TALENT	9	4.04
Labor Market	5	5.77
Skills	12	2.67
Growth	8	3.80



CONNECTIVITY	14	5.21
Infrastructure & Access	14	6.89
Penetration	14	4.68
Affordability	14	4.22
GOVERNMENT	10	6.41
E-Participation	8	6.59
Cybersecurity	12	7.10
Future Orientation	9	5.75
BUSINESS	8	5.01
Market	7	5.48
Innovation Capability	9	3.88
Business Dynamism	10	5.66

COUNTRY PROFILES

JORDAN

Jordan has a digital transformation strategy in place that was released by the Ministry of Digital Economy & Entrepreneurship (MoDEE) in 2020. The strategy recognizes cloud computing as an important enabler in Jordan's digitization journey.[1]

In 2014, a draft bill for personal data protection was introduced by the Ministry of Information and Communications Technology, but it is uncertain when the bill will become law.[2]

MoDEE also released the Jordan Cloud Policy 2020, which aims to build and develop an integrated ecosystem for the Jordanian cloud to contribute to the growth of the digital economy. It is also intended to serve as a reference document for government agencies and other sectors that use cloud services and are involved in digital transformation in the country.[3]

Additionally, the Artificial Intelligence policy 2020 states that the government aims to motivate the public and private sectors and entrepreneurs to benefit from cloud platforms in developing services and applications in accordance with relevant government legislation.

Jordan's regulation score in our index is negatively affected by the delay in introducing a data protection law, which means there is no effective supervision or enforcement of data protection principles in the country. There is also currently no regulation dealing with the transfer of data outside of Jordan, and no precedent has been set by any data transfer agreements approved by national authorities.

However, Jordan's Cloud Policy 2020, which acts as a cloud first policy, has contributed to its overall score.

The country's performance in our Green Regulation pillar is one of the strongest in the region. In addition to Jordan's National Green Growth Plan, policies such as the Climate Change Policy for a Resilient Water Sector, Master Strategy in the Energy Sector, and the policies based on the 2012 Renewable Energy and Energy Efficiency Law contribute to its competitive Green regulation score.

Connectivity is where the country scores the lowest among our measurements. Improvements in almost all underlying indicators, including Infrastructure & Access, Penetration, and Affordability, are needed to improve the country's position in our index. There is also room for improvement in indicators comprising the Future Orientation of the Jordanian government, such as Government Ensuring Policy Stability and Government Long-term Vision.

Talent-wise, Jordan has the least competitive scores for High-skill Senior Officials & Managers and for Youth Inclusion. With a focus on these variables, Jordan's position can be significantly improved in our Skills & Growth pillars.

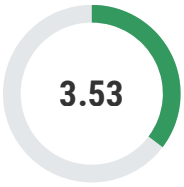
1) MENA Cloud Alliance Roadshow Series 2022 - Jordan Edition
2) https://modee.gov.jo/Ar/NewsDetails/
3) https://www.modee.gov.jo/ebv4.0/root_storage/en/eb_list_page/cloudpolicy-2020-english.pdf

COUNTRY PROFILES

PAKISTAN

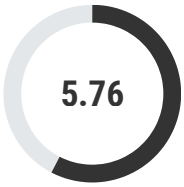
OVERALL

REGULATION

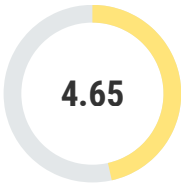


TALENT

CONNECTIVITY



GOVERNMENT



BUSINESS

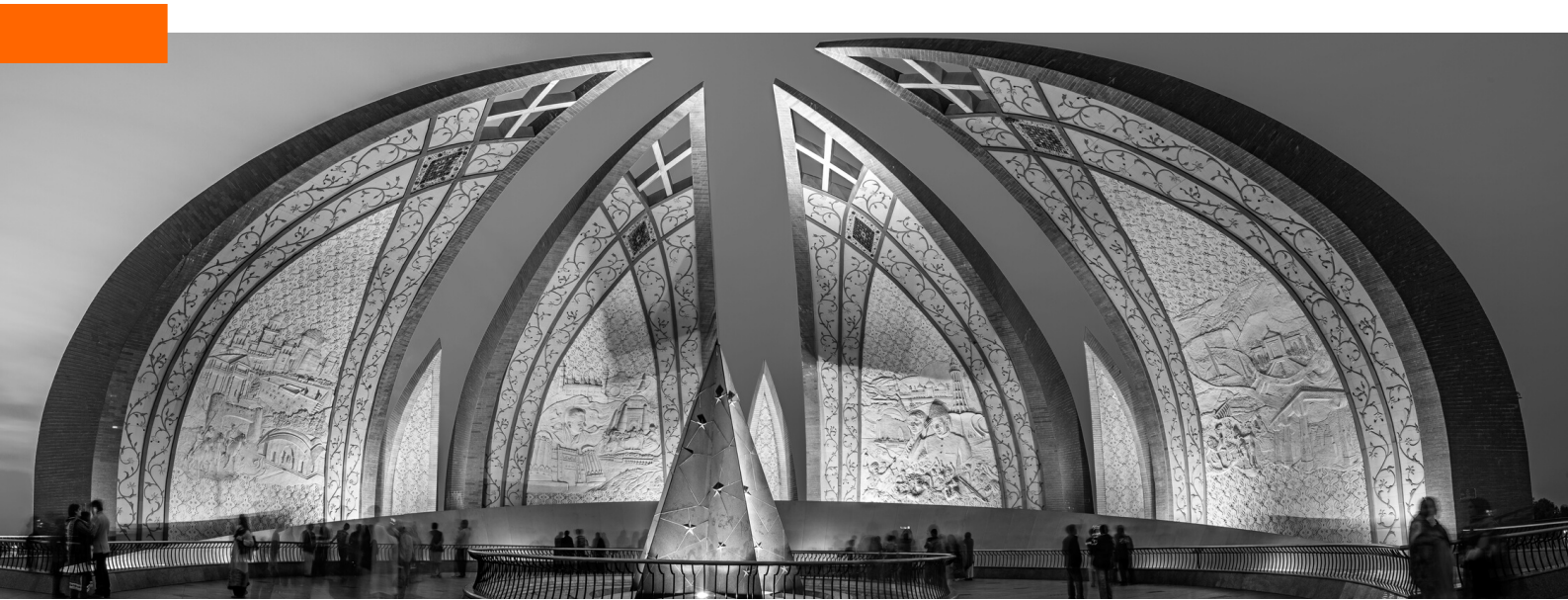
4.25 Cloud Regulation
4.72 Regulatory Quality
5.13 Green Regulation
5.03 Intellectual Property Protection

5.13 Labor Market
2.12 Skills
3.44 Growth

5.56 Infrastructure & Access
3.12 Penetration
5.07 Affordability

5.65 E-Participation
6.49 Cybersecurity
5.31 Future Orientation

4.05 Market
3.58 Innovation Capability
6.33 Business Dynamism

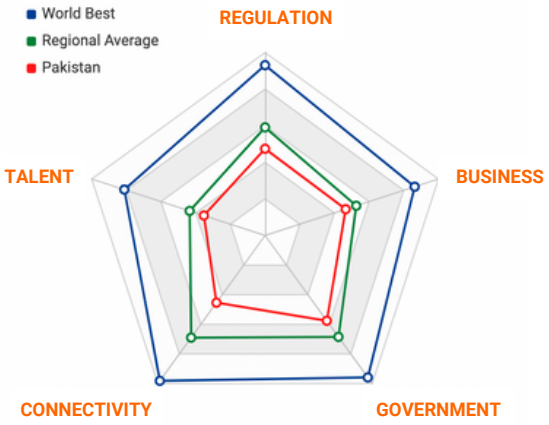


COUNTRY PROFILES

PAKISTAN

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	13	4.64

	Rank (out of 15)	Value (0-10)
REGULATION	12	4.74
Cloud Regulation	11	4.25
Regulatory Quality	11	4.72
Green Regulation	13	5.13
Intellectual Property Protection	10	5.03
TALENT	12	3.53
Labor Market	12	5.13
Skills	14	2.12
Growth	11	3.44



	Rank (out of 15)	Value (0-10)
CONNECTIVITY	15	4.54
Infrastructure & Access	15	5.56
Penetration	15	3.12
Affordability	11	5.07
GOVERNMENT	13	5.76
E-Participation	12	5.65
Cybersecurity	13	6.49
Future Orientation	12	5.31
BUSINESS	13	4.65
Market	15	4.05
Innovation Capability	11	3.58
Business Dynamism	5	6.33

COUNTRY PROFILES

PAKISTAN

Pakistan's Vision 2025 aims to transform the country's information and communication technology (ICT) sector through the rollout of 3G and 4G/LTE networks and the promotion of e-education, e-commerce, e-health, and e-government.[1]

The vision also includes a strategy to foster skills, innovation, and entrepreneurship and protect data and intellectual property rights. The Ministry of Information Technology and Telecommunications (MOITT) introduced Pakistan's Cloud First Policy in February 2022, with the goal of digitally transforming the country through the use of ICT and cloud technologies, improving governance and collaboration among government agencies, and increasing transparency and accountability.[2]

Pakistan currently does not have a specific data protection law like those in other countries. However, the Prevention of Electronic Crimes Act 2016 (PECA 2016) serves a similar purpose to some extent. A draft of the Personal Data Protection Bill 2020 (PDPB) has been proposed by the Ministry of Information Technology and Telecommunications, and is being considered for adoption after public consultation and approval by the Parliament and the President of Pakistan.[3]

Improvements on indicators relating to Regulatory Quality and Green Regulation can greatly enhance the country's standing in our Regulation domain. That being said, the country's score in Environment-related Treaties in Force is relatively competitive in the region.

Pakistan's position in the Talent domain of our index is adversely impacted by poor scores in such indicators as Skills Matching, Scientific Journal Articles, Ratio of Wage and Salaried Female Workers to Male Workers, and Access to Growth Opportunities sub-pillar.

As far as Connectivity, the country scores rather poorly among the economies we gauged recording the least numbers in all three pillars i.e. Infrastructure & Access, Penetration, and Affordability.

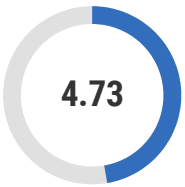
Pakistan can elevate its position in our Government domain through the provisioning of more online services to its citizens as well as fuelling its Future Orientation, especially with regards to Government Ensuring Policy Stability and Government's Responsiveness to Change.
Pakistan records a dynamic business environment on a regional scale. However, Market-related variables, specifically Domestic Competition and Trade Openness, seem to have dragged down its overall standing in our Business domain.

1) https://www.pc.gov.pk/uploads/vision2025/Pakistan-Vision-2025.pdf
2) https://moitt.gov.pk/SiteImage/Misc/files/Pakistan%20Cloud%20First%20Policy-Final-25-02-2022.pdf
3) https://moitt.gov.pk/SiteImage/Misc/files/25821%20DPA%20Bill%20Consultation%20Draft(1).pdf

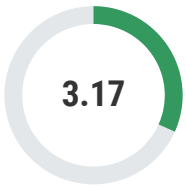
COUNTRY PROFILES

ALGERIA

OVERALL



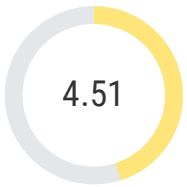
REGULATION



TALENT

CONNECTIVITY

GOVERNMENT



BUSINESS

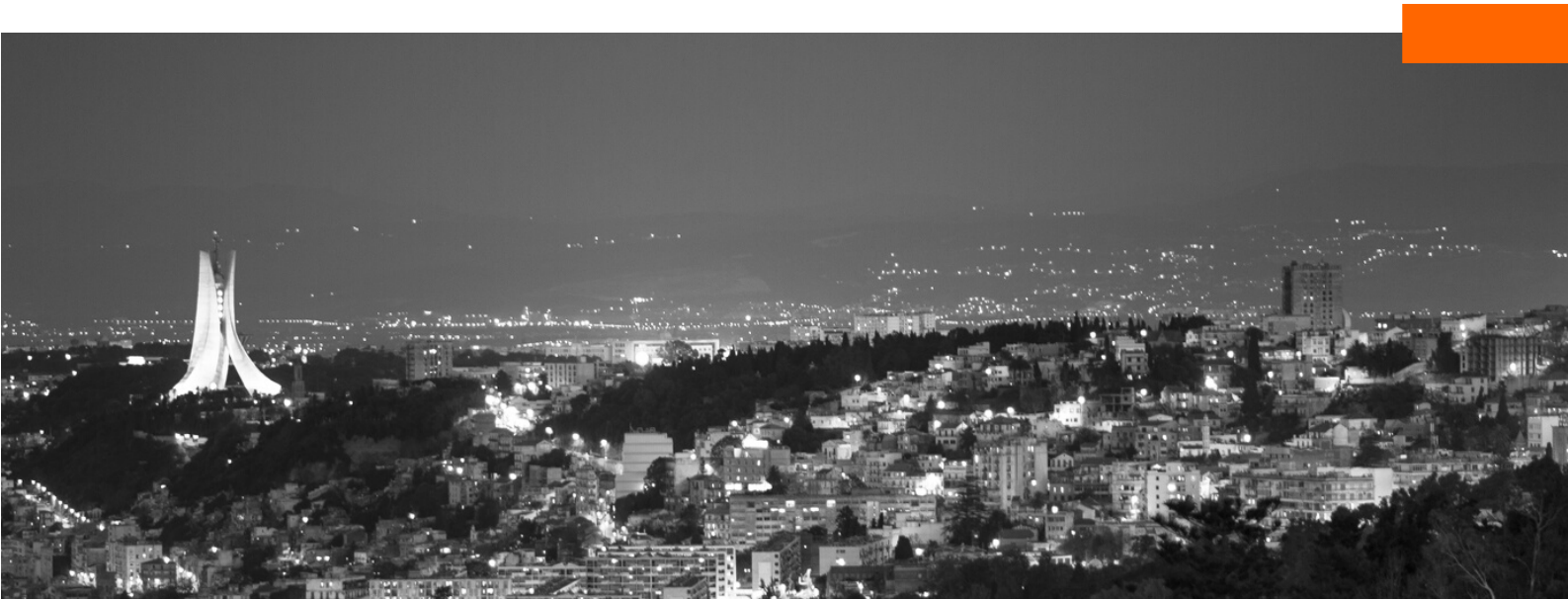
4.00 Cloud Regulation
4.48 Regulatory Quality
5.65 Green Regulation
4.99 Intellectual Property Protection

4.71 Labor Market
2.04 Skills
2.85 Growth

7.08 Infrastructure & Access
6.13 Penetration
4.04 Affordability

3.74 E-Participation
3.40 Cybersecurity
4.03 Future Orientation

4.48 Market
3.44 Innovation Capability
5.62 Business Dynamism

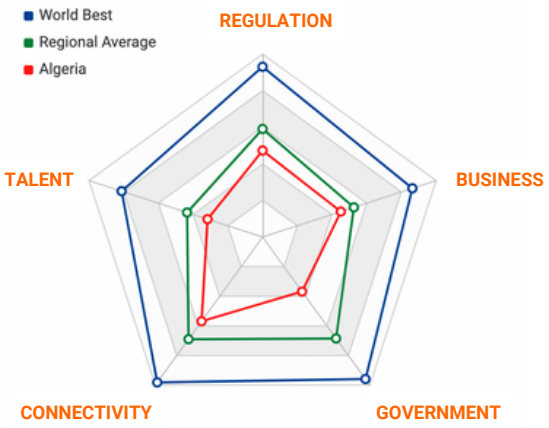


COUNTRY PROFILES

ALGERIA

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	**14**	**4.36**

	Rank (out of 15)	Value (0-10)
REGULATION	**13**	**4.73**
Cloud Regulation	12	4.00
Regulatory Quality	12	4.48
Green Regulation	11	5.65
Intellectual Property Protection	11	4.99
TALENT	**15**	**3.17**
Labor Market	14	4.71
Skills	15	2.04
Growth	15	2.85



CONNECTIVITY	**12**	**5.69**
Infrastructure & Access	13	7.08
Penetration	11	6.13
Affordability	15	4.04
GOVERNMENT	**14**	**3.68**
E-Participation	15	3.74
Cybersecurity	14	3.40
Future Orientation	14	4.03
BUSINESS	**15**	**4.51**
Market	14	4.48
Innovation Capability	13	3.44
Business Dynamism	11	5.62

COUNTRY PROFILES

ALGERIA

Algeria's vision is to transform its economy into a knowledge-based one, improve governance through structural reforms, increase human capital through education reforms, enhance the quality of life through health reforms, and achieve national growth and equality by 2030.[1]

The Law on the Protection of Private Persons in the Processing of Personal Data (No. 18-07) was introduced on June 10, 2018. However, its implementation is contingent on the establishment of the authority responsible for protecting personal data, which has not yet been established.

The Algerian government has also worked on strengthening the legal framework for the digital sector, including the adoption of the Electronic Transactions and Commerce Act and the Cybercrime Prevention Act.

Algeria's score in our Talent domain is related to the country's rankings in Meritocracy & Incentivization-related indicators, particularly Reliance on Professional Management & Labor Tax Rate, where the lowest regional numbers were recorded. Similarly, Talent Impact & Employability indicators such as Innovation Output, High-value Exports, Software Development, and Ease of Finding Skilled Employees registered rather poor scores region-wide. Another indicator that could improve Algeria's current ranking in our Talent domain is Delegation of Authority, where it ranked 15th.

In the Connectivity domain, improvements in International Internet Bandwidth and Affordability indicators would result in a better standing for Algeria in our index.

Although Algeria has gained significant E-Government Development Index values compared to its previous numbers,[2] the country has the lowest score in the Online Service Index as part of the E-Participation pillar in our Government domain.

Algeria scores both the highest and the lowest values in Trade Openness indicators - Complexity of Tariffs and Border Clearance Efficiency, respectively. The country could also improve its position in our Business domain by strengthening its Innovation Capability indicators, such as International co-inventions and Patent applications.

1) https://andp.unescwa.org/sites/default/files/2020-09/Establishment%20of%20Algeria%27s%20National%20Vision%202030.pdf
2) https://desapublications.un.org/sites/default/files/publications/2022-09/Web%20version%20E-Government%202022.pdf

COUNTRY PROFILES

LEBANON

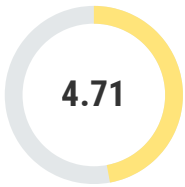
OVERALL

REGULATION

TALENT

CONNECTIVITY

GOVERNMENT



BUSINESS

1.25 Cloud Regulation
3.38 Regulatory Quality
5.98 Green Regulation
3.85 Intellectual Property Protection

5.44 Labor Market
3.80 Skills
3.74 Growth

7.69 Infrastructure & Access
4.91 Penetration
4.48 Affordability

4.25 E-Participation
3.04 Cybersecurity
3.19 Future Orientation

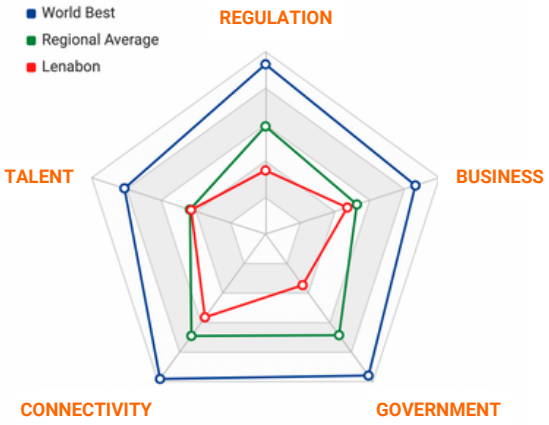
4.98 Market
3.85 Innovation Capability
5.30 Business Dynamism

COUNTRY PROFILES

LEBANON

	Rank (out of 15)	Value (0-10)
Cloud Competitiveness Index	15	4.31

	Rank (out of 15)	Value (0-10)
REGULATION	15	3.49
Cloud Regulation	15	1.25
Regulatory Quality	15	3.38
Green Regulation	9	5.98
Intellectual Property Protection	15	3.85
TALENT	6	4.28
Labor Market	9	5.44
Skills	5	3.80
Growth	9	3.74



	Rank (out of 15)	Value (0-10)
CONNECTIVITY	13	5.64
Infrastructure & Access	10	7.69
Penetration	13	4.91
Affordability	12	4.48
GOVERNMENT	15	3.46
E-Participation	14	4.25
Cybersecurity	15	3.04
Future Orientation	15	3.19
BUSINESS	11	4.71
Market	11	4.98
Innovation Capability	10	3.85
Business Dynamism	15	5.30

COUNTRY PROFILES

LEBANON

The "Lebanon Digital Transformation Strategy 2020-2030" aims to modernize and reform the public sector by adopting the principles and practices of the digital age. This initiative is focused on improving the efficiency and effectiveness of the public sector, as well as implementing an anti-corruption strategy. The goal is to revitalize the public sector and better meet the needs of citizens through the successful implementation and sustainability of this digital transformation effort.

The Strategy includes a G-Cloud action plan and recognizes Cloud Computing as an opportunity. The document also emphasizes the importance of adopting a Cloud First Policy, which can result in cost savings, scalability, reduction of human errors, rapid recovery ability, and a higher return on investment by unifying data centers, devices, operational and application programs, while taking into account security and continuity of work and operation.[1]

However, a Cloud First Policy has not yet been implemented in Lebanon. Additionally, Lebanon does not have a specific agency or authority responsible for enforcing data protection laws. Instead, individuals who feel that their rights to access and rectify their personal data have been violated can file a legal claim in local courts to seek recourse and ensure that relevant laws are being followed, as outlined in Article 102 of the relevant legislation.[2]

Lebanon has the lowest regional score in terms of Regulatory Quality indicators, including the Burden of Government Regulation and the Efficiency of the Legal Framework in both Settling Disputes and Challenging Regulations. It ranks 15th in the latter. Intellectual Property Protection is another area where the country has the poorest value in the index.

While Lebanon has the highest score in the Ease of Finding Skilled Employees in the index, its Active Labour Market Policy and Employee Development numbers have hurt its overall standing in the Talent domain.
In the Connectivity domain, Lebanon has the weakest regional values for International Internet Bandwidth and Mobile Tariffs.

The Government domain is perhaps the most important area of focus for the Lebanese cloud ecosystem. Our measurements show the least competitive scores in almost all indicators including the E-Participation, Cybersecurity, and Future Orientation pillars, resulting in a rank of 15th for the country.

To improve its standing in the Business domain of the index, Lebanon could focus on improving indicators such as the Distortive Effect of Taxes and Subsidies on Competition and the Prevalence of Non-tariff Barriers.

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METHODOLOGY

TECHNICAL NOTES

Computation, Weightings, & Indicators

This section explains our detailed methodology and the structure behind the Cloud Competitiveness Index 2023. Scores were derived from publicly available and well-recognized data sources, which have been referenced and credited in this report.

Computation and Composition of the CCI2023

The latest iteration of our Cloud Competitiveness Index was computed based on successive aggregations of scores, from the indicator level, up to the pillar & domain level, and ultimately to the overall CCI score. The overall CCI2023 score is the average of the five domains - each consisting of underlying pillars weighed based on impact as shown below. For individual indicators, prior to aggregation, original values were transformed into a progress score ranging from 0 to 10, with 10 being the ideal state.

The following section indicates the description of each pillar and the sources from which the original values were derived.

An interactive tool has been designed to facilitate the consumption of our data and can be accessed at www.menacloud.org/cloud-index-2023. We encourage our users to refer to the original sources for additional information on the nature of underlying indicators used to build the Index.

METHODOLOGY

OVERALL SCORE

Weight (%) within respective domain

REGULATION..... 20%

- Cloud Regulation
- Regulatory Quality
- Green Regulation
- Intellectual Property Protection

TALENT..... 20%

- Labor Market
- Skills
- Growth

CONNECTIVITY..... 20%

- Infrastructure & Access
- Penetration
- Affordability

GOVERNMENT..... 20%

- E-Participation
- Cybersecurity
- Future Orientation

BUSINESS..... 20%

- Market
- Innovation Capability
- Business Dynamism

Most updated data available was used at the time of the release of our report. In case of an update or revision, we will make official announcements through our website and social media channels.

METHODOLOGY

REGULATION

Cloud Regulation

Measures the answers to the following questions: 1. Is there a cloud first policy in place? 2. Are cross-border personal data transfers free of restrictions? 3. Is there a data protection law on a national level? 4. Is there a regulatory body responsible for National Data Protection?
Responses could include Yes, N* (partial yes), and No. Corresponding values were then summed up according to weightings to arrive at an overall score. For the complete list of questions and answers please refer to Appendix II at the end of this report.

Source: MENACA Intelligence / DLA Piper / Clyde & Co / Publications by National Authorities

Regulatory Quality

Measures the quality of the regulatory environment in a country and includes the following indicators: judicial independence,
efficiency of legal framework in challenging regulations, burden of Government regulation, efficiency of legal framework in settling disputes.

Source: World Economic Forum Global Competitiveness report 2020

Green Regulation

Measures the extent to which a country is committed to formulating regulatory frameworks around sustainability and includes the following indicators: energy efficiency regulation, renewable energy regulation, and environment-related treaties in force.

Source: World Bank RISE 2022

Intellectual Property Protection

Measures the extent to which IP is protected within an economy and consists of responses to the survey question "In your country, to what extent is intellectual property protected?" [1 = not at all; 7 = to a great extent]

Source: World Economic Forum Global Competitiveness report 2020

METHODOLOGY

TALENT

Labor Market

Measures the capacity of a market to accommodate the workforce and includes the following indicators: cooperation in labor-employer relations, flexibility of wage determination, hiring and firing practices, redundancy cost, active Labour policies, workers' rights, ease of hiring foreign labor, internal labor mobility, effect of taxation on incentives to work, pay and productivity, reliance on professional management, female participation in the labor force, labour tax rate

Source: WEF - Global Competitiveness Report 2020

Skills

Measures the quality of skillsets in the market, especially those that relate mostly to new technology. The underlying categories and indicators are:

talent Impact: Innovation output, high-value exports, software development, new business density, scientific journal articles - Employability: ease of finding skilled employees, relevance of education system to the economy, skills matching, highly educated unemployment

Source: Global Talent Competitiveness Index 2022

Growth

Measures the extent to which talent is nurtured in an economy and includes the following indicators: lifelong learning: business masters education, prevalence of training in firms, employee development, formal and non-formal studies - access to growth opportunities: delegation of authority, youth inclusion, use of virtual social networks, use of virtual professional networks

Source: Global Talent Competitiveness Index 2022

CONNECTIVITY

Infrastructure & Access

Measures a nation's standing when it comes to the availability & coverage of the internet and international connectedness and includes the following indicators: percentage of households with internet access, percentage of population covered by mobile networks (3G), percentage of population covered by mobile networks (LTE-WiMAX), international internet bandwidth (bit/s) per internet user

Source: World Telecommunication/ICT Indicators Database 2021 (as of 30 July 2021)

Penetration

Measures the utilization rate of broadband connections and includes the following indicators: mobile-cellular telephone subscriptions, fixed broadband Internet subscriptions, active mobile-broadband subscriptions per 100 inhabitants, internet users

Source: World Telecommunication/ICT Indicators Database 2021 (as of 30 July 2021)

Affordability

Measures the broadband cost in a country and includes the following indicators: mobile tariffs, handset prices

Source: World Telecommunication/ICT Indicators Database 2021 (as of 30 July 2021)

METHODOLOGY

GOVERNMENT

E-Participation

Measures the Online Service Index (OSI) section of the overall E-Participation index. The OSI is a tool to measure the availability and accessibility of online government services. The assessment questions have been organized into five thematic areas, forming five subindices: institutional framework, services provision, content provision, technology, and e-participation. The overall OSI was then calculated based on the normalized values for each subindex.

Source: E-Government Survey 2022

Cybersecurity

Measures the level of commitment to cybersecurity from a country perspective. It helps countries understand their commitments to cybersecurity, identify any gaps, promote the implementation of good practices, and offer insights for improving their overall cybersecurity posture. The Index maps 82 questions on cybersecurity commitments across five pillars: legal measures; technical measures; organizational measures; capacity development measures; cooperation measures.

Global Cybersecurity Index 2020 (ITU)

Future Orientation

Measures the extent to which a country is prepared for the future and includes responses to such questions as 1) “In your country, how fast is the legal framework in adapting to digital business models (e.g. e-commerce, sharing economy, fintech, etc.)? ‘’In your country, to what extent does the government ensure a stable policy environment for doing business?”, “In your country, to what extent does the government respond effectively to change (e.g. technological changes, societal and demographic trends, security and economic challenges)?”; and,“In your country, to what extent does the government

have a long-term vision in place?''

Source: WEF - Global Competitiveness Report 2020

BUSINESS

Market

Measures the size of a country's public cloud market as well as the strength of a country’s product market and includes the following indicators: distortive effect of taxes and subsidies on competition, extent of market dominance, Competition in services, prevalence of non-tariff barriers, trade tariffs, complexity of tariffs, efficiency of the clearance process, Service trade openness

Source: WEF - Global Competitiveness Report 2023 / Public Cloud - Worldwide 2022 Statistia (https://www.statista.com/outlook/tmo/public-cloud/worldwide)

Innovation Capability

Measures the extent to which an economy is capable of innovation and includes the following indicators: diversity of workforce, state of cluster development, international co-inventions, multistakeholder collaboration, scientific publications, patent applications, R&D expenditure, research institute prominence, buyer sophistication, trademark applications

Source: WEF - Global Competitiveness Report 2020

Business Dynamism

Measures the dynamic nature of a country’s business environment and includes the following indicators: cost of starting a business, time to start a business,

insolvency recovery rate, insolvency regulatory framework, attitudes toward entrepreneurial risk, willingness to delegate authority, growth of innovative companies, companies embracing disruptive ideas

Source: WEF - Global Competitiveness Report 2020 / Doing Business 2020

NORMALIZATION & BENCHMARKING

As parameters used in the index had different units and scales, any parameter that did not use a 10-point scale was normalized to make the values comparable. For example, Intellectual Property Protection, from the WEF Global Competitiveness Report, had a rating of 1 to 7 for each country and was thus normalized applying the following formula:

$$x' = \frac{x - \min(x)}{\max(x) - \min(x)} \times 10$$

It is important to see the scores of the Index not as stand-alone metrics, but measurements in context. Average scores for all domains and the best scores from the data points were presented for comparison purposes.

CONCLUSION

The Middle East and North Africa (MENA) region was already making progress in its transition from being solely dependent on oil to embracing new technologies and fostering sustainable innovation before the pandemic. However, the COVID-19 pandemic has accelerated the adoption of cloud technologies in the region. This adoption rate is driven by the need to be agile and adopt emerging technologies, rather than simply to reduce operational costs. Cloud products that are tailored to specific industries are also becoming more popular, as customers seek solutions that understand and meet their specific business needs. The market for cloud technology in the MENA region is also seeing an increase in acquisitions and partnerships, indicating a focus on expanding the market rather than individual companies trying to get a larger share.

Many stakeholders in the regional cloud ecosystem are also looking beyond the adoption of cloud technology and are exploring artificial intelligence and machine learning applications to create value for customers. However, there are still challenges to overcome, including the development of a regulatory environment for the production, delivery, and consumption of cloud services, the need for sufficient intellectual capital to meet the demand for skilled professionals in the field, and the issue of expensive connectivity options in the region hindering the rollout of many cloud projects.

The MENA Cloud Alliance invites stakeholders from all parts of the region to join the platform and engage in collaboration and dialogue about the cloud ecosystem.

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Last but not the least, we thank our member organizations for their valuable contributions to this report.

APPENDICES

APPENDIX I

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APPENDIX II

Data Protection Questions, Answers, and Weightings

# QUESTIONS	W	DZA	BHR	EGY	ISR	JOR	KSA	KWT	LBN	MAR	OMN	PAK	QAT	TUN	TUR	UAE
1. Is there a cloud first policy in place? Y Yes (full score) / N* No but relevant policies exist (half score) / N No (no score)	0.3	N	Y	N	Y	Y	Y	Y	N	N	Y	N	Y	N	N	N*
2. Are cross-border personal data transfers free of restrictions? Y Yes free int'l data flows with adequate locations (Full score) , N* No adequacy arrangements but some cross-border data flows allowed (half score), N no cross-border data flows allowed or no policy defined (no score)	0.3	N*	N*	N*	N*	N	N*	N*	N	N*	N*	N	Y	N*	N	N*
3. Is there a data protection law on a national level? Y Yes (full score)/ N* No but relevant laws exist (half score) / N No (no score)	0.25	Y	Y	Y	Y	N	Y	N*	N*	Y	Y	N*	Y	Y	Y	Y
4. Is there a regulatory body responsible for the National Data Protection? Y Yes (full score) / N* No but industry-specific regulators exist / temporary authority exists / an authority exists but is not independent (half score) / N No (no score)	0.15	Y	Y	Y	Y	N	Y	N	N	Y	N*	N	Y	Y	Y	Y
Weighted score on Q. 1		0	0.3	0	0.3	0.3	0.3	0.3	0	0	0.3	0	0.3	0	0	0.15
Weighted score on Q. 2		0.15	0.15	0.15	0.15	0	0.15	0.15	0	0.15	0.15	0	0.3	0.15	0	0.15
Weighted score on Q. 3		0.25	0.25	0.25	0.25	0	0.25	0.12	0.12	0.25	0.25	0.12	0.25	0.25	0.25	0.25
Weighted score on Q. 4		0.15	0.15	0.15	0.15	0	0.15	0	0	0.15	0.075	0	0.15	0.15	0.15	0.25
Total weighted score		0.55	0.85	0.55	0.85	0.3	0.85	0.57	0.125	0.55	0.775	0.12	1	0.55	0.7	0.8
Normalized Total Score (out of 10)		**5.5**	**8.5**	**5.5**	**8.5**	**3**	**8.5**	**5.7**	**1.25**	**5.5**	**7.75**	**1.25**	**10**	**5.5**	**4**	**8**

APPENDICES

COUNTRIES	APPLICABLE LAWS
ALGERIA	In 2018, Algeria passed Law No. 18-07 which established a legal framework for protecting personal data. The law, which took effect on June 10, 2018, established the "national authority" as an independent administrative body responsible for protecting personal data. This authority is headquartered in Algiers.
BAHRAIN	Bahrain passed the Personal Data Protection Law (PDPL) on July 12, 2018. The PDPL, which came into effect on August 1, 2019, is the main data protection regulation in Bahrain and supersedes any other laws that contradict its provisions. The PDPL prohibits the transfer of personal data out of Bahrain unless the destination country or region provides sufficient protection for personal data. This list of countries must be published in the Official Gazette by the Authority. Data controllers are also allowed to transfer personal data to countries that have not been determined to provide sufficient protection if certain conditions are met. According to Article I of the PDPL, the Ministry of Justice, Islamic Affairs, and Endowments is temporarily serving as the Authority for personal data protection, pending the allocation of funds for the Authority in the general budget of Bahrain and the issuance of a decree establishing the Board of Directors as outlined in Article 39 of the PDPL.
EGYPT	Personal Data Protection Law No. 151 of 2020 was published on July 15, 2020. According to the Law, it is generally prohibited to transfer personal data (including sharing and storing) to a foreign country without obtaining a license from the Personal Data Protection Centre (the "Centre") and ensuring that the level of protection is equal to or greater than that provided by the Law. However, the Law does not provide a list of "adequate regimes" for determining the level of protection for cross-border data transfers. These criteria and policies will be outlined in the Executive Regulations. The Centre is a public economic authority with legal personality and falls under the authority of the Minister of Communications and Information Technology.
ISRAEL	The Privacy Law regulates the collection and use of personal data and sensitive data, defines the responsibilities and obligations of the parties involved in collecting and using the data, including the security measures that must be in place, and establishes the rights of individuals whose data is collected and used. The Privacy Protection Law grants the Privacy Protection Authority (PPA) the authority to enforce its data protection provisions and gives the PPA a range of enforcement tools to do so. The Registrar is responsible for conducting criminal investigations, administrative investigations, and audits. The PPA can impose administrative fines and has the power to halt or suspend the activities of databases by suspending or deleting their registration. On December 11, 2022, the Government of Israel published its cloud strategy as part of the "Nimbus" project. The strategy was developed through a collaboration between the National Digital Agency, the Government Procurement Administration, the National Cyber Agency, the Budget Director at the Ministry of Finance, and the Government and Society Division at the Office of the Prime Minister.
JORDAN	Jordan does not currently have any regulations or laws in place that pertain to the transfer of data outside the country. Data transfer agreements are not governed by any laws or regulations in Jordan, and there are no standard forms or precedent agreements that have been approved by national authorities or Jordanian courts. Additionally, Jordan does not currently have a comprehensive data protection law. In 2016, a committee was formed to discuss the potential law and included representatives from the Ministry of the Interior, the Ministry of Labour, the Ministry of Communications, the Telecommunications Regulatory Commission, the Central Bank, and the Information and Communications Association of Jordan (INTAJ). The draft law also proposes the creation of a Jordanian Privacy Commission, which would be under the direct command of the Minister of ICT. Jordan's Cloud Policy 2020 is a document through which the government mainly seeks to build and develop an integrated ecosystem for the Jordanian cloud in a way that contributes to the growth of the digital economy.
SAUDI ARABIA	The data protection landscape in Saudi Arabia is primarily governed by the Personal Data Protection Law (PDPL) and the Personal Data Protection Interim Regulations (PDPIR) issued by the National Data Management Office (NDMO). The PDPL will come into effect in March 2022 and will establish the Saudi Data and Artificial Intelligence Authority (SDAIA) as the data regulator for at least two years. However, the Saudi Central Bank and the Communications and Information Technology Commission (CITC) also have jurisdiction over data protection within their respective areas of responsibility. According to the PDPL, the transfer of personal data out of Saudi Arabia is strictly controlled and generally prohibited except in certain circumstances, such as when necessary to protect the life or vital interests of the data subject, to prevent or treat a disease, to fulfill an obligation that Saudi Arabia is party to, to serve the interests of Saudi Arabia, or for other purposes as determined by the Executive Regulations (which have yet to be issued). On November 20, 2022, the Saudi SDAIA launched a public consultation on its proposed amendments to the Personal Data Protection Law (PDPL).
KUWAIT	The E-Commerce Law in Kuwait includes a general requirement that prohibits government bodies from transferring any information illegally without the consent of the concerned person or their representative. Kuwait does not have a specific personal data protection law, but the Communications and Telecommunications Regulatory Authority (CITRA) recently issued Decision No. 42 of 2021 on Data Privacy Protection Regulation, which imposes data protection obligations on telecommunications service providers and related industries. There is currently no national data protection authority in Kuwait. The Communication & Information Technology Regulatory Authority (CITRA) released a series of cloud-related regulations, policies, and guidelines in 2021 and 2022, including the Cloud Computing Regulatory Framework, Cloud First Policy, Cloud Migration Guide, Subscribers Guide to Cloud Services, Cloud Service Providers Regulations and Commitments, and Data Classification Policy.

APPENDICES

COUNTRIES	APPLICABLE LAWS
LEBANON	The Electronic Transactions and Personal Data law regulates the protection of personal data. Lebanon does not have a data protection authority.
MOROCCO	Currently, there is no unified regulation for cloud services in Morocco. However, for the public sector, there are several laws that are relevant to the use of cloud services, facilitate the adoption of these services, and place restrictions on how they can be used. Morocco's law on privacy and data protection is Law No. 09-08, dated February 18, 2009, which covers the processing of personal data and its implementation through Decree No. 2-09-165 of May 21, 2009 (collectively known as the DP Law). The Moroccan CNDP serves as the data protection authority.
OMAN	Royal Decree 6/2022 Promulgating Personal Data Protection was published in Official Gazette No 1429 in 2022. Under Article 23, any organization can transfer data collected within Oman outside the country if it follows the directives issued by the Ministry of Communications. However, such transfers are prohibited if there is a chance that the transfer of such data may cause harm to a data subject under this law. Telecom law, banking law & healthcare law exist with different authorities. Cloud Governance Framework clearly states that government agencies should adopt the cloud considering the cloud-first strategy so essentially it serves as Oman's cloud-first policy reference. The Omani Telecommunications Regulatory Authority (TRA) is preparing a draft regulation to regulate the provision of data center and cloud computing services.
PAKISTAN	Pakistan currently does not have specific data protection legislation like many other countries, but the Prevention of Electronic Crimes Act, 2016 (PECA 2016) serves a similar purpose to some extent. The Ministry of Information Technology and Telecommunications has released a consultation draft of the Personal Data Protection Bill 2020 (PDPB) for public review, with the intention of getting it passed into law after obtaining approval from both Houses of Parliament and the President of Pakistan. There is currently no national data protection authority in Pakistan. Pakistan's Cloud First Policy (the Policy) was approved by the Cabinet in February 2022.
QATAR	With its Data Protection Law – adopted in 2016 – Qatar became the first Gulf Cooperation Council (GCC) member state to issue a generally applicable data protection law. The compliance and Data Protection Department (CDP) is the official authority. Data controllers may collect, process and transfer personal data when the data subject consents, unless deemed necessary for realizing a 'lawful purpose' for the controller or for the third party to whom the personal data is sent. The data controller has to demonstrate, when disclosing and transferring personal data to the data processor, that the transfer is for a lawful purpose and that the transfer of data is made pursuant to the provisions of the Data Protection Law. Communications Regulatory Authority (CRA) issued a Cloud Policy Framework in 2022.
TUNISIA	Law No. 2004-63, dated July 27, 2004, on the Protection of Personal Data regulates the handling of personal data in Tunisia. Even before this law was enacted, Tunisia was a leader in the region in terms of personal data protection, starting in 2002. The 2014 Constitution of Tunisia further reinforced the protection of privacy, making it a fundamental right that must be guaranteed in the new Republic. This law was passed in response to this constitutional provision. The National Authority for Protection of Personal Data (the Instance) was created by Decree n° 2007-3003 of November 27th, 2007. The transfer of personal data is regulated in Chapter 5 of the 2004 Act on the Protection of Personal Data (Articles 47 to 52). In general, the transfer of personal data is either prohibited or subject to strict measures, including obtaining prior authorization from the National Authority for Protection of Personal Data and the explicit consent of the individual. The transfer of personal data to a foreign country is not allowed if it poses a threat to public security or the vital interests of Tunisia.
TURKEY	The Law on the Protection of Personal Data No. 6698 (DP Law) is the most significant law in Turkey on the protection of personal data. Enacted in 2016, the DP Law is mostly based on the EU Directive 95/46/EC. The DPL is regulated by the Data Protection Authority, called the KVKK. In general, personal data can be shared with third parties if the data subject has provided explicit consent. When it comes to cross-border personal data transfers, other additional conditions apply. Also, The Personal Data Protection Board is responsible for declaring which countries have an adequate level of protection for personal data. So far, the board has not announced any country as having an adequate level of protection. However, the board has provided examples of the minimum clauses that should be included in the data controllers' written assurances when transferring data to countries without an adequate level of protection.
UAE	The United Arab Emirates has introduced a number of legal reforms, including the Federal Decree-Law No. 45 of 2021 on the Protection of Personal Data Protection ("PDPL"), which was issued on 26 September 2021. The UAE cabinet has established the UAE Data office as Competent Supervisory Authority to ensure federal law enforcement. The Personal Data Protection Law (PDPL) in the United Arab Emirates (UAE) places limits on the international transfer of personal data outside of the UAE. Similar to the concept of "adequate jurisdictions" in the European Union (EU), the Data Office is expected to determine which territories have sufficient measures, controls, and requirements in place to protect the privacy and confidentiality of personal data. Telecommunications and Digital Government Regulatory Authority (TDRA) issued a public consultation on an upcoming "Cloud First Policy Strategy and Guidelines" in 2018. The document is yet to be officially released.

ABOUT MENACA

This work and any opinions expressed in this publication do not purport to reflect the opinions or views of MENACA Member Organizations or the MENACA Secretariat.

About MENA Cloud Alliance (MENACA)

Middle East and North Africa Cloud Alliance is the only home-grown, vendor-agnostic industry association focused on monitoring, identifying and resolving issues around cloud adoption in the MENA region. MENACA strives to give the industry a unique voice and to provide a wide range of stakeholders with unbiased insights into the region's cloud ecosystem. Our founding members include global as well as regional leading technology market-leaders with a vested interest in creating a dialogue around cloud computing and its impact on the MENA's digital economies.

MENA Cloud Alliance

CLOUD COMPETITIVENESS INDEX 2023

The report can be downloaded at http://www.menacloud.org

We would like to hear from you. To know more about the Alliance & to provide feedback please contact us at: info@menacloud.org