

Telecom Advisory Services

THE CONTRIBUTION OF CLOUD TO ECONOMIC GROWTH **FOCUS ON TURKEY**



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Telecom Advisory Services LLC (URL: www.teleadv.com) is a consulting firm registered in the state of New York (United States) with physical presence in New York, Madrid, Mexico City, Buenos Aires, Bogota, and Quito. Founded in 2006, the firm provides advisory and consulting services internationally, specializing in the development of business and public policy strategies in the telecommunications and digital sectors. Its clients include telecommunications operators, electronic equipment manufacturers, Internet platforms, software developers, as well as the governments and regulators of United Arab Emirates, Saudi Arabia, Argentina, Colombia, Ecuador, Costa Rica, Mexico, and Peru. The firm has also conducted numerous economic impact and planning studies of digital technologies for the GSMA, NCTA (USA), Giga Europe, CTIA (USA), the Dynamic Spectrum Alliance, and the Wi-Fi Alliance. Among international organizations, the firm has worked for the International Telecommunication Union, the World Bank, the Inter-American Development Bank, the UN Economic Commission for Latin America and the Caribbean, CAF Latin American Development Bank, and the World Economic Forum.

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Impact of Public Cloud Adoption in Turkey

Organization level

Efficiency gains: increased outputs with the same inputs for organizations adopting cloud.



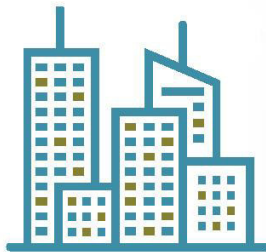
Increased agility



Faster innovation

Country level

Spillover effects: economic growth resulting from the aggregate efficiency gains of all organizations adopting public cloud.



Cost savings

Spillover effects

Most of the economic impact of cloud adoption is driven by spillover effects. The **remainder (6%)** is driven by organizations spending in cloud services.

94%

GDP growth impact of 1% adoption of cloud



Impact of Public Cloud Adoption in Turkey



Enabling Policies and Regulations

Promote adoption of cloud in public and private sectors.



24%

Cloud Adoption

24% of organizations in Turkey adopt cloud services vs 49% in Western Europe and North America.



Impact on Turkey Economy



\$6.1b

2021: 0.74% of the GDP
USD 6.1 billion economic value

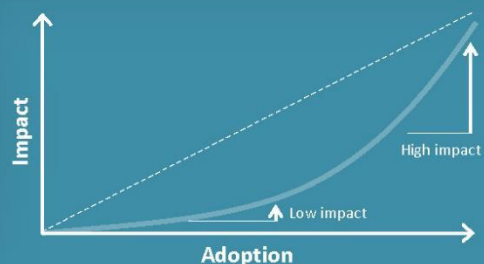


\$128b

By 2033: 0.83% of the cumulative GDP
USD 128 billion economic value

Increasing returns to scale

An increase in cloud adoption results in a more than proportional impact on GDP.



This brief study highlights the contribution of cloud adoption to economic growth in Turkey. The paper draws from broader research from Telecom Advisory Services on the impact of cloud adoption in the Middle East and North Africa and Turkey (MENAT) Region.

We define cloud computing as the on-demand delivery of IT resources via the internet with pay-as-you-go pricing. This means that, instead of buying, owning, and maintaining their own data centers and servers on premise, organizations remotely access computing power, storage, databases, and other services on an as-needed basis.

Economic research provides vast evidence of the efficiency gains cloud enables at the firm-level through increased agility, cost savings, and faster innovation. Some studies extrapolate efficiency gains at firm or industry level to estimate the aggregate impact of cloud on national productivity. However, no research thus far quantifies the causal relationship between cloud adoption and economic growth, as measured by the Gross Domestic Product (GDP). In other terms, how much GDP growth does 1% of cloud adoption yield?

To answer this question, we developed a macro-economic model using a state-of-the-art econometric approach and the latest publicly available data. Our model estimates GDP growth based on public cloud adoption in a worldwide sample of countries over 2014-2021. We calculate cloud impact as the sum of cloud spending of organizations and the efficiency gains enabled by cloud adoption throughout the entire economy, or so-called “spillover effects”. Our model does not account for the construction effect of cloud infrastructure, i.e., the ripple effect of investment across sectors of the economy to build cloud infrastructure. We model the impact of access to cloud, regardless of whether cloud infrastructure is present in country or not.

We estimate that in 2021 alone, cloud adoption in Turkey added 0.74% to the GDP, amounting to USD 6.1 billion of economic value. More than 94% of this impact comes from spillover effects on the economy, while the remainder (6%) is driven by cloud spending from Turkish public and private organizations.

In terms of spillovers, we find that an increase of 1% in cloud adoption by Turkish organizations will yield an average GDP increase of 0.07%, in line with the MENA average. In comparison, 1% increase in cloud adoption yields 0.21% in the United Arab Emirates (UAE), the country where cloud yields the most GDP increase in MENAT.

Our research confirms that the economic impact of cloud is guided by a “return to scale” effect: cloud economic impact grows with the penetration of cloud. When cloud penetration is low, the economic impact of 1% cloud penetration is minimal. When cloud penetration reaches a critical level, cloud starts having proportionally more impact on the economy. The return to scale for cloud impact is consistent with prior research on the economic impact of digitization and broadband.

Twenty-four percent of organizations in Turkey adopted cloud computing in 2021, versus 49% in Western Europe and North America. Turkey therefore has the potential to improve cloud penetration. By doing so, the country will benefit from increasing returns to scale and unlock USD 128 billion of additional economic value over the next decade (2023-2033), representing 0.83% of Turkey’s cumulative GDP. Turkey has ambitious plans to diversify its economy through digitization. However, unlocking the potential of cloud will require aggressive policy reforms to make public cloud available for all.