# Embracing Digitalization to Accelerate Oman's Economic Transformation

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#### **IMF Selected Issues Paper**

Middle East and Central Asia Department

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**ABSTRACT:** Motivated by Oman's economic transformation agenda, this paper: (i) takes stock of the state of digitalization in Oman; (ii) provides an illustration of potential gains from enhanced digitalization; and (iii) highlights policy priorities that can support the authorities endeavors in advancing their digitalization agenda. The findings suggest that while Oman has progressed well on some aspects of digitalization, it still needs to deploy additional investments and efforts to match its GCC peers on several other aspects and accelerate its economic transformation.

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#### **SELECTED ISSUES PAPERS**

# Embracing Digitalization to Accelerate Oman's Economic Transformation

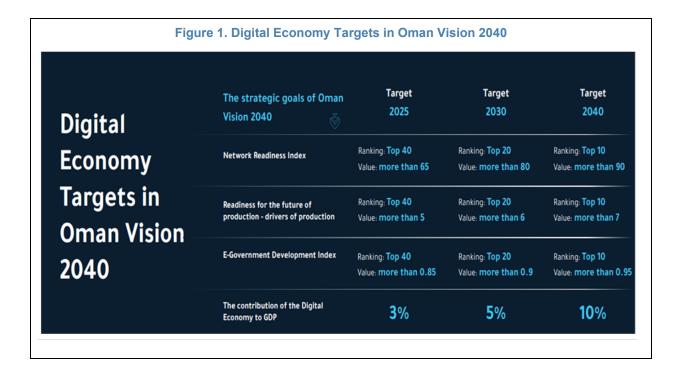
Oman

Prepared by Mohamed Belkhir

Oman has set digitalization as a key pillar of its economic transformation agenda—Oman Vision 2040 —, with various strategic initiatives being deployed to achieve the overarching goal of increasing the contribution of the digital economy to overall gross domestic product from its current level of about 2 percent to 10 percent by 2040. This paper: (i) takes stock of the state of digitalization in Oman, with a view of identifying areas of strength, but also pointing to gaps, notably relative to regional peers; (ii) provides an illustration of potential gains from enhanced digitalization; and (iii) highlights policy priorities that can support the authorities endeavors in advancing their digitalization agenda. The findings suggest that while Oman has progressed well on some aspects of digitalization, such as internet penetration and 4G and 5G population coverage, it still needs to deploy additional investments and efforts to match its GCC peers on several other aspects. Further efforts are particularly needed to raise internet connection speed, increase the prevalence of advanced ICT skills among the population, usher in digital innovation, and promote e-commerce. The analyses indicate that enhanced digitalization, can, in turn, engender substantial gains. Going forward, policy priorities to entrench the digital transformation and achieve its targets include further upgrading the digital infrastructure, increasing R&D spending, and expanding funding opportunities for digital start-ups and SMEs.

#### A. Context

- 1. Rapid adoption of digitalization is transforming societies and economies across the globe. Digitalization, which broadly refers to the process of utilizing digital technologies to transform traditional processes, systems, or businesses into digital formats, is marking a profound shift in how individuals, businesses, and governments operate. Recent years have seen a remarkable increase in the importance of digitalization, driven by advancements in technology and the ubiquitous penetration of the internet as well as global events such as the COVID-19 pandemic, with profound and far-reaching effects on productivity, employment, economic growth, financial inclusion, and governments' effectiveness in delivering services, managing resources, and engaging with citizens.
- 2. Digitalization stands as a key pillar of Oman's economic transformation agenda. Underpinned by its Vision 2040, Oman has embarked on an ambitious reform agenda aiming at reducing its reliance on hydrocarbons and creating a more sustainable, more inclusive, and knowledge-based economy. Among other transformative means and goals, Oman seeks to scale up digitalization, harness digital technologies, and develop local capabilities in innovation and creativity. In this context, the government has recently launched the "National Digital Economy Program", which aims to provide a strategic direction for the development of the digital economy and increase its contribution to Oman's Gross Domestic Product (GDP) from its current level estimated at 2 percent to 10 percent by 2040. In addition, this program aims to advance Oman's global ranking in various digital economy indicators identified in Oman Vision 2040, such as the e-government development index and the network readiness index (Figure 1).

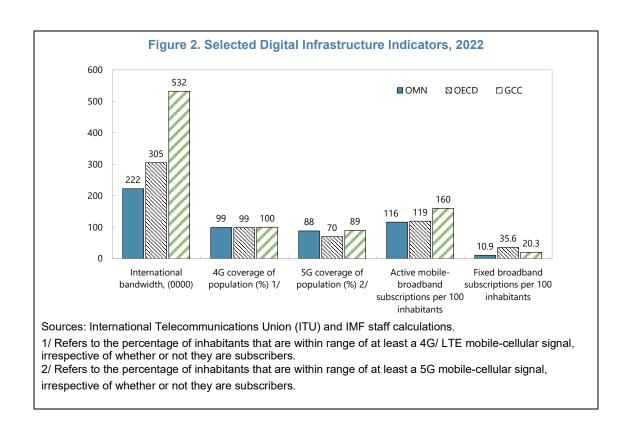


- 3. Oman's digitalization agenda covers a broad range of areas. To achieve the targets of the National Digital Economy Program, the authorities have designed a set of medium-term programs aimed at fostering the adoption and localization of digitalization in various areas. These programs include the: (i) Digital Government Program; (ii) Digital Infrastructure Program; (iii) Digital Industry Program; (iv) E-commerce Program; (v) Artificial Intelligence and Advanced technologies Program; (vi) Space Program; and (vii) Fintech. Each of these programs has specific targets to be achieved within a certain time horizon. For example, the Artificial Intelligence (AI) and Advanced technologies Program aims to increase the number of startups specialized in AI technologies' development and SMEs providing AI-related services by 20 percent annually, while the Digital Industry Program aims to attract 5 global tech companies to establish operational units in Oman by 2025 and the Fintech program targets the licensing of 500 fintech operators by 2040.
- 4. This paper provides an overview of Oman's progress on digitalization, quantifies potential gains from enhanced digitalization, and highlights policy priorities going forward. The paper first sheds light on Oman's progress in recent years on various dimensions of digitalization, including digital infrastructure, skills, innovation, e-government, fintech, and e-commerce, while also pointing to gaps relative to regional and international peers, and highlighting potential for improvement going forward. It then provides an illustration of the gains that Oman could reap from enhanced digitalization; specifically, we use empirical analyses to quantify gains from enhanced digitalization in terms of government effectiveness and GDP per capita. Finally, the paper lays out a set of policy recommendations intended to support the authorities' endeavors in accelerating digitalization and maximizing the benefits thereof, while also minimizing potential risks.

#### B. Digitalization Trends: Where Does Oman Stand?

#### **Digital Infrastructure**

**5.** Oman continues to upgrade its digital infrastructure. Securing high quality digital infrastructure is key to improving coverage, quality, and affordability of digital connectivity and the overall development of telecommunications and internet markets. The latest available data suggest that while Oman matches GCC and international peers on some digital infrastructure indicators, it still needs to catch up on several others (Figure 2). Oman has achieved about 100 percent 4G coverage, while along with other GCC peers, it is ahead of the average OECD country on 5G coverage—88 percent of the population versus 70 percent. Gaps relative to the GCC average, however, remain on international internet bandwidth capacity and mobile and fixed broadband subscriptions, suggesting that additional investments and upgrades to regulatory frameworks are needed for Oman to bring its digital infrastructure up to levels reached by its immediate neighbors.



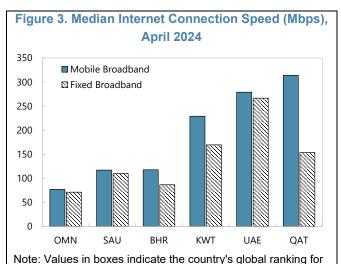
#### 6. Internet penetration in Oman is among the highest in the world, while further efforts are needed to increase connection speed. Data suggests that as of early 2024, about 98 percent of Oman's

population used the internet, making internet penetration rate one of the highest in the world. During the same period, active cellular mobile connections amounted to the equivalent of 151 percent of the total population. With median mobile (fixed) internet connection speed at 77 (71) Mbps in April 2024, however, Oman ranks 38th globally and stands way behind its GCC peers, three of which are the world's medalists, suggesting that further upgrades to the digital infrastructure and additional regulatory and policy measures are needed to increase internet connection speed (Figure 3).

#### **ICT skills and Digital Innovation**

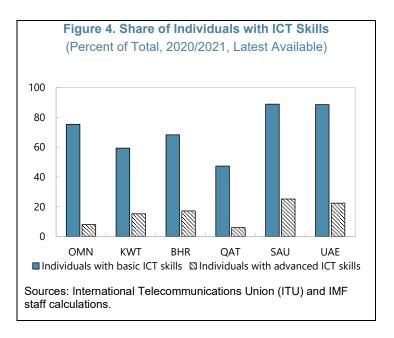
#### 7. More remains to be done on upskilling the labor force in information and communication technologies (ICT).

The proportion of youth and adults with ICT skills is one of the indicators commonly used to monitor countries' progress on Sustainable Development Goals (SDG target 4.4.1). With 75 percent of individuals possessing basic ICT skills in 2020-21, Oman exceeded by far the average for advanced economies (AEs), but has further room for improvement if compared to GCC frontrunners (Saudi Arabi and the United Arab Emirates). As of 2020-21, the proportion of individuals with advanced ICT skills, which are most critical for the emergence of a sizable digital economy,



the mobile broadband internet connection speed.

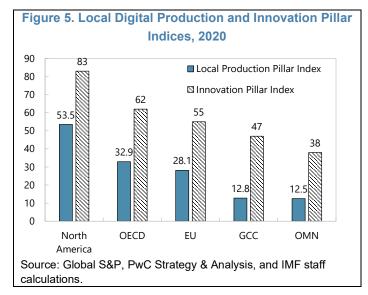
Source: Speedtest Global Index and IMF staff calculations.



stands, however, at 8 percent, below levels seen in most GCC countries, indicating that further efforts are needed to increase the prevalence of advanced ICT skills among the nationals and to attract foreigners equipped with such skills (Figure 4).

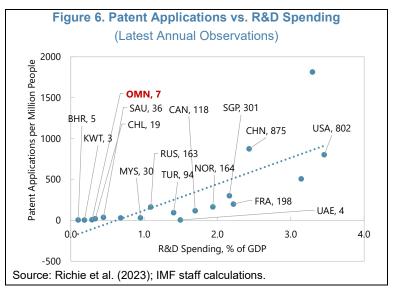
### 8. Oman needs to step up efforts and resources to boost innovation capacity and support the local production of digital goods and services. Oman made laudable progress over the past few years on

its ranking in the Global Innovation Index compiled by the World Intellectual Property Organization, rising from 80<sup>th</sup> in 2019 to 69<sup>th</sup> in 2023 among about 130 countries. Despite recent progress, Oman's score on the Innovation Pillar Index suggests that it still needs to take bold policy actions to elevate its innovation capacity to higher levels, including increasing R&D investments, developing digital talent on a larger scale, and providing support to domestic digital entrepreneurs. Such actions are also likely to bolster the country's digital goods and services' production, which remains subdued when benchmarked against such global leaders as North America and the European Union; with a local

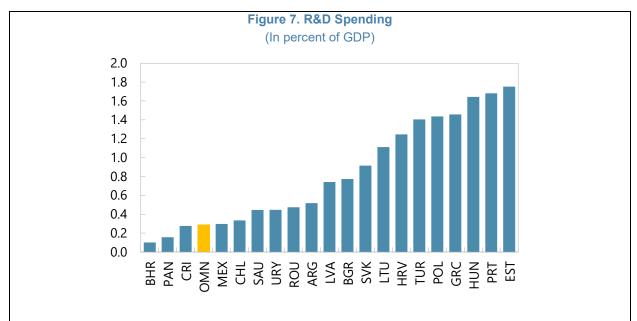


production index of 12.5, Oman is also slightly below the GCC average (Figure 5).

9. Scaling up R&D spending would support innovation in Oman, including in digital activities. Digital innovation on a large scale by domestic companies is essential for driving economies to the technological frontier, enhancing productivity, and fostering the development of a knowledge-based economy. This, however, requires a high level of R&D spending. Oman's number of patent applications is comparatively low, including relative to other resource-rich countries such as Chile, Malaysia, Norway, and Russia, suggesting limited capacity to innovate (Figure 6). Oman's R&D spending stands currently at



about 0.3 percent of GDP, which is one of the lowest among countries with comparable income, indicating that there is scope for increasing it (Figure 7). Boosting R&D spending, particularly in digital sectors, has the potential of fostering a thriving innovation ecosystem that supports the creation and production of digital goods and services on a scale that can help in achieving Oman's digital economy targets.



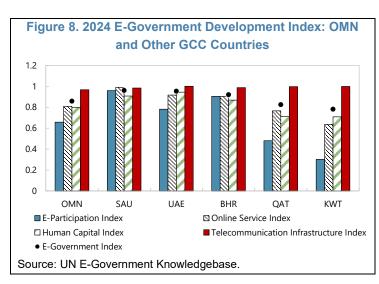
Note. The chart represents R&D spending (in percent of GDP) in Oman and in the 20 countries with the closest GDP per capita to Oman in 2023, those immediately below (10 countries) and above (10 countries) Oman's per capita income. Sources: Richie et al. (2023), IMF WEO data, and IMF staff calculations.

#### **Government Digitalization**

**10.** Oman has recently made notable progress in digitizing its government services. Digitalization of government services will support enhancing the quality of public services provided to citizens, streamlining government processes, and fostering efficiency and transparency. Boosted by the Government Digital Transformation Program launched in 2022 by the Ministry of Transport, Technology and Information Technology—set to run until 2025 with an estimated investment of \$442 million—Oman now ranks 41<sup>st</sup> on the United Nations' E-Government Index, up from 50<sup>th</sup> in 2022 (Figure 8). With this important leap, Oman stands at only one place short of its 2025 target (40<sup>th</sup> globally). Notwithstanding this progress, Oman has still scope for improving its e-government performance, including to catch up with GCC top performers (Bahrain, Saudi Arabia, and United Arab Emirates). A similar assessment can be made based on the GovTech Maturity Index (Figure 9). A closer look at its components indicates that additional efforts are especially needed to enhance digitalization aspects related to public participation platforms, citizen feedback mechanisms, open data, and open government portals.

¹ The GovTech Maturity Index (GTMI) was developed by the World Bank as part of the GovTech Initiative to introduce a measure of GovTech maturity in four focus areas—supporting core government systems, enhancing service delivery, mainstreaming citizen engagement, and fostering GovTech enablers—and to assist practitioners in the design of new digital transformation projects. Constructed for 198 economies, the GTMI is the most comprehensive measure of digital transformation in the public sector. The 2022 version of the GTMI constructed by the World Bank is a simple average of the normalized scores of four components: (i) CGSI: The Core Government Systems Index (17 indicators) captures the key aspects of a whole-of-government approach, including government cloud, interoperability framework and other platforms, (ii) PSDI: The Public Service Delivery Index (9 indicators) measures the maturity of online public service portals, with a focus on citizen centric design and universal accessibility, (iii) DCEI: The Digital Citizen Engagement Index (6 indicators) measures aspects of public participation platforms, citizen feedback mechanisms, open data, and open government portals, and (iv) GTEI: The GovTech Enablers Index (16 indicators) captures strategy, institutions, laws, and regulations, as well as digital skills, and innovation policies and programs, to foster GovTech. For details, please see GTMI (worldbank.org).

11. Government procurement in Oman has been fully digitized. As part of the government's efforts to embrace digitalization to enhance the transparency and efficiency of its operations, Oman's Tender Board has recently completed the digitalization of all tendering and procurement processes in the government sector. The e-tendering system now makes it possible for government entities to prepare, float, evaluate and award tenders online, while also allowing suppliers and contractors, including SMEs to register, submit bids, and track bids' status electronically.



12. Ongoing efforts and initiatives would provide further impetus to the digital transformation of government services. Recent initiatives to increase data dissemination and citizens engagement, including the launching of the e-Government Services Portal and Oman Open Data Portal, are testimony to the authorities' commitment to accelerating government digitalization and would further boost Oman's regional and global standing on e-government indicators.



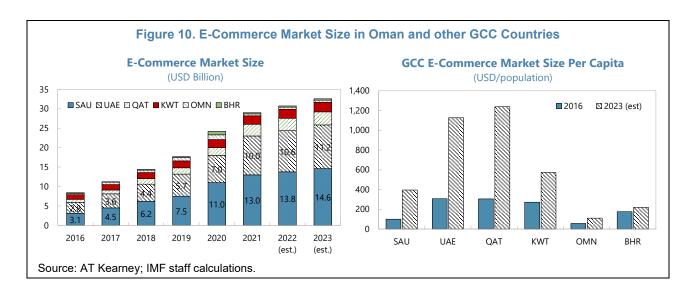
13. The CBO's Fintech Framework and Roadmap launched in 2022 aims to support the creation of a comprehensive and nurturing fintech ecosystem in Oman. It aims to enable fintech startups, SMEs, and banks in developing innovative solutions that can support access to finance and foster economic diversification. Among other initiatives, the Fintech Framework and Roadmap aims to provide a fintechenabling regulatory framework, including through potential revisions to the current Banking Law, and to increase the pool of talent that can nurture the creation of a vibrant fintech sector. The CBO has notably partnered with academic institutions, such as Sultan Qaboos University and the College of Banking and Financial Studies, to develop courses and diploma in financial innovation and technology, but also to leverage their research and development capabilities to advance its fintech agenda. In 2022, the Central Bank of Oman also signed a Memorandum of Understanding (MoU) with Oman Telecommunications Company (Omantel) Innovation Labs to conduct an Accelerator Program aimed at supporting fintech startups. Four Omani startups (which provide Buy-Now-Pay-Later, Microfinance, and Loan-based Crowdfunding) were accepted and accelerated during the first cohort of the six-month program and successfully graduated in September 2023 to join the Fintech Regulatory Sandbox program. In March 2022, the Capital Market Authority approved the licensing of the country's first global crowdfunding platform operator.

#### E-Commerce

14. The e-commerce market in Oman has scope for substantial growth in the years ahead. The e-commerce market in Oman accounts for only 1 percent of total retail sales, with a size estimated at about \$0.66 billion in early 2024, behind all other GCC countries in per capita terms, but has ample opportunities to grow (Figure 10). With a very high internet penetration rate (close to 100 percent) and smartphone use, ongoing efforts to scale up IT infrastructure, growing availability of digital payment means, and steady economic growth, the e-commerce market is poised to grow fast over the coming years. Some estimates point to a doubling of its size by 2029.<sup>2</sup> The authorities' recent efforts to create a legal and regulatory environment that fosters the development of e-commerce and protect consumer data and confidentiality will also likely strengthen this market.<sup>3</sup>

<sup>&</sup>lt;sup>2</sup> E-commerce in Oman is expected to increase from \$0.66 billion in 2024 to \$1.24 billion in 2029 according to a recent report by Modor Intelligence Research agency.

<sup>&</sup>lt;sup>3</sup> In September 2023, the Ministry of Commerce, Industry, and Investment Promotion issued Oman Ministerial Decision No. 499/2023 to regulate the practice of e-commerce activity in the Sultanate of Oman.



#### C. Quantifying Gains from Enhanced Digitalization

- **15.** This section provides an illustration of potential gains that could accrue from higher levels of digitalization in Oman. It builds on methods and results reported in a recent IMF paper, which uses yearly country-level data over the period of 2000-2022 to assess the impact of digitalization in GCC countries ("Digital Transformation in the Gulf Cooperation Council Economies 2024").
- **16.** Oman's government effectiveness could gain from further enhancing digitalization of government services. Government effectiveness is a multifaceted concept that refers to the ability of a government to carry out its functions and responsibilities efficiently and successfully. It encompasses various aspects of governance, including the capacity to formulate and implement policies, deliver public services, enforce laws, maintain stability, and foster economic and social development. Government effectiveness is commonly measured using the World Bank's Government Effectiveness Index, which ranges between -2.5 and 2.5, with higher values attributed to more effective governments. Despite recent progress, Oman still scores well below all its GCC peers on this index, highlighting the need for additional policy actions to improve its government's effectiveness. Among other actions, embracing digital technologies is likely to result in greater efficiency, transparency, and accessibility of government services, ultimately leading to a higher score on the Government Effectiveness Index.

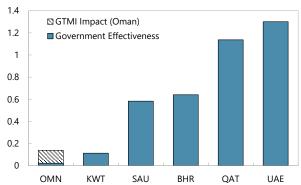
## 17. An increase in the GovTech Maturity Index (GTMI) from its current level to the average level of Saudi Arabia and the United Arab Emirates would raise Oman's Government Effectiveness index by a significant amount (Figure 11). A global sample-based cross-country regression analysis where the Government Effectiveness index is regressed on GTMI and control variables (see more details in IMF, 2024) suggests that a one unit increase in GTMI leads to a gain of 1.03 units in the Government Effectiveness index. Accordingly, an increase in Oman's GTMI from 0.84 (its 2022 level) to 0.97 (Saudi Arabia and UAE's average

2022 level) would increase Oman's Government Effectiveness Index by 0.14 points, a significant improvement, considering its low initial score of 0.02 (2022 level).

### 18. Enhanced digitalization accelerates economic growth.

Digitalization has the potential to accelerate economic growth through different channels, including by fostering innovation, developing human capital, expanding market access, improving financial inclusion, and increasing productivity.





Notes: GTMI: GovTech Maturity Index ranges between 0 and 1, with larger values indicating higher maturity of government digitalization. Government Effectiveness is an indicator that measures the quality and credibility of public services. It ranges between -2.5 and 2.5, with larger values indicating better quality government services. Bars represent 2022 levels. The line pattern portion of the "OMN" bar represents the increase in the Government Effectiveness indicator that Oman would gain from scaling up its government digitalization (as measured by GTMI) from its current level (2022) to the average level of Saudi Arabia and the UAE (the highest among GCC countries).

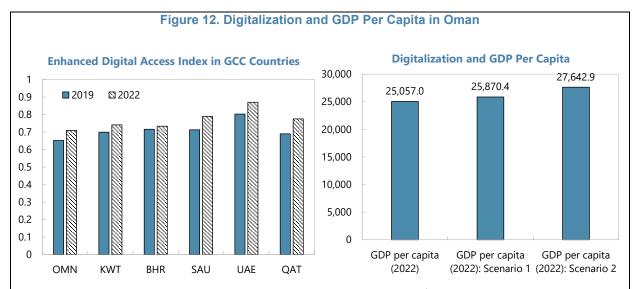
Sources: World Bank and IMF staff estimations.

An increasing body of literature documents evidence of a positive association between measures of digitalization and countries' economic performance. A cross-country regression analysis using a global sample where GDP per capita growth is regressed on the Enhanced Digital Access Index (EDAI) points to a positive association between a nation's digital capabilities and its economic performance. Specifically, estimations indicate that a one unit increase in EDAI accelerates per capita income GDP growth by 0.7 percentage points, ceteris paribus (see IMF, 2024, for more details).

**19.** Upgrading digitalization has the potential to yield important gains in terms of per capita income in Oman (Figure 12). Despite progress made recently, further efforts are still to be deployed for Oman to close the gap with GCC peers on digital infrastructure—as measured by the EDAI—, which could translate into higher national income. Specifically, our estimations suggest that Oman's 2022 GDP per capita could have been about \$813 (\$25,870 – \$25,057) higher had its 2021 score on the EDAI been equal to Saudi

<sup>&</sup>lt;sup>4</sup> The Enhanced Digital Access Index (EDAI) is a composite index that covers five key aspects of a country's digital infrastructure and inclusivity: availability of infrastructure, affordability of access, digital knowledge of the population, quality of ICT services, and internet usage (including access to high-speed internet).

Arabia's (0.75).5 It could have been even higher (by about \$2,586) had its 2021 EDAI score been at the UAE's level (0.85).



Note: GDP per capita (2022) is the actual GDP per capita of Oman in 2022 in US\$. GDP per capita (2022)-scenario (1) is an estimate of Oman's GDP per capita in 2022 had its Enhanced Digital Access Index been equal to Saudi Arabia's a year before. GDP per capita (2022)-scenario (2) is an estimate of Oman's GDP per capita in 2022 had its Enhanced Digital Access Index been equal to the UAE's a year before.

Sources: World Bank and IMF staff calculations.

#### D. Conclusion and Policy Recommendations

- 20. The momentum of digitalization in Oman has accelerated recently. The increasing number of digitalization strategic initiatives being carved out—with some moving to the implementation stage—points to the authorities' commitment to take digitalization in Oman to the next stage and to ensure it is integral to its economic transformation agenda. The announced ambitious digitalization programs cover a wide range of sectors and fields, including infrastructure, government, finance, artificial intelligence, space, and the broader private sector. Tangible progress has been made on various digitalization aspects. Internet penetration along with 4G and 5G population coverage are among the highest in the world. Significant strides have been made to digitalize government services, with government procurement, among others, being fully digitized. Yet, gaps remain, indicating a need for further policies and actions for Oman to elevate its digitalization infrastructure and ecosystem to a level that can foster the emergence of a vibrant digital economy as envisioned in Oman Vision 2040. Our empirical analyses suggest that efforts and investments to enhance digitalization are worthwhile, as they can confer significant benefits to the country.
- 21. Further upgrades to the digital infrastructure remain necessary. While Oman has made progress in improving its internet infrastructure, the international bandwidth is still low compared to the OECD average

<sup>&</sup>lt;sup>5</sup> The EDAI variable is included in the regression equation with a one-year lag (that is, GDP per capita growth in 2022 depends on the 2021 EDAI score).

and significantly low when benchmarked against the GCC average, resulting in relatively slow internet connections. Weak international bandwidth particularly relative to neighboring countries, might weigh on Oman's regional competitiveness by potentially dissuading technology companies and other bandwidth-intensive operators from settling their operations in Oman, resulting in lost jobs, income, and government revenues. A strategy combining regulatory measures and investments, including in extensive fiber optic networks, would enhance bandwidth capabilities, leading to faster internet speed, improved connectivity, and a more robust digital economy. Public-private partnerships can be deployed to support this endeavor, considering the heavy cost of such investments. Expanding a high-speed internet-enabling infrastructure to geographical areas and communities beyond the country's major urban areas will be key to avoid a digital divide and nurture the emergence of an inclusive digital ecosystem.

- 22. Higher spending on R&D and on advanced ICT skills' development would foster innovation and support the emergence of a competitive and job-rich digital economy. Oman's R&D spending is one of the lowest among countries with comparable income, implying that there is scope for scaling it up as part of the economic transformation agenda. While the public sector could initially provide the bulk of additional R&D funding, the private sector should be incentivized to gradually increase its R&D investments. The latter typically involve high costs and risks, particularly related to return uncertainty, but the government can alleviate them by providing private firms with various incentives, including grants and subsidies, intellectual property protections and simplified regulations, encouraging collaboration between private firms and public research institutions (e.g., through PPP), government procurement policies that prioritize innovative products, and immigration policies that facilitate the entry into Oman of talented researchers and scientists. Updating curricula to ensure access to quality STEM programs and align them with emerging technologies, while also promoting digital literacy from an early age and offering continuous professional development opportunities (e.g., coding boot camps) would support the development of advanced ICT skills among a larger share of the population.
- **23.** Expanding funding opportunities for digital start-ups and small and medium-sized enterprises (SMEs) would be key. The development of a vibrant digital start-up and SME ecosystem will be essential to ignite innovation and accelerate digital economic growth. However, this requires easy access to finance, which remains challenging for Omani startups and SMEs operating in the presence of a financial sector whose depth and breadth remain to be developed further. Existing funding schemes, such as the Innovation Development Oman (IDO) and the Oman Technology Fund—both under the Oman ICT Group (ITHCA)—may not be sufficient to cover the demand for growth funding if digital startups and SMEs are to increase in number and size going forward. Recent initiatives to expand funding opportunities, including the launch of Future Fund Oman where 10 percent of the funding envelope will be dedicated to startups and SMEs is a welcome step. Yet, more is needed. Developing an active local venture capital sector that can consistently support the creation and growth of startups and SMEs is paramount. Accelerating progress in developing fintech will also help in expanding fundraising opportunities for innovators.

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