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# An Initial Look at the App Economy Across North and Sub-Saharan Africa

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## INTRODUCTION

One of the triumphs of the Information Revolution is the ability to connect countries, consumers, and businesses around the world. Africa, in particular, is moving into a new stage of connectedness. The 2Africa underwater fiber cable, the world's largest subsea cable system,[1] is scheduled to be completed in 2024, connecting 30 or so North African and Sub-Saharan African countries with Europe and Asia, and doubling data capacity.[2]

At the same time, data consumption and smartphone penetration have soared. For example, in Nigeria, data consumption rose by 38% in 2023, according to the Nigerian Communications Commission.[3]

One of the biggest beneficiaries of the new data capacity will be Africa's "App Economy." The rapidly growing number of smartphone users will be able to more easily use mobile applications to download information and entertainment both domestically and globally.

More important, for Africa, the evolving App Economy is a potent source of future well-paying jobs. The App Economy includes those workers engaged with developing, updating, maintaining, and securing mobile apps, as well as the workers supporting the app developers. As the Progressive Policy Institute (PPI) has shown in previous research, the App Economy is booming in many countries at various stages of economic development.[4]

Now it's Africa's turn. Nigeria already has 45,000 App Economy jobs, according to PPI's new estimate (presented in this paper). Egypt, South Africa, and Morocco have 51,000, 15,000, and 9,000 App Economy jobs, respectively. Much more growth is possible with the right policies.

None of these jobs existed 15 years ago, when Apple first opened the App Store on July 10, 2008, in the middle of the global financial crisis.[5] Android Market (which later became Google Play) was announced by Google shortly after.[6] These app stores created a new route through which software developers in any country could write programs for smartphones. These mobile applications — called "apps" — could then be distributed to the rapidly growing number of smartphone users around the world.

The jobs generated by the app stores became an important part of the global economic expansion. Originally, apps were associated with games and social networks, but over the years, apps became critical to every area of the economy: Retail, travel, education, banking, health care, agriculture, and government.

More than that, app development and app stores became a key route by which young people can develop tech skills, either by building their own apps or helping develop apps for global markets. App development is a stepping-stone, if you will, to other aspects of the global digital economy.

In this pioneering paper, we estimate the number of App Economy jobs for two North Africa countries and two sub-Saharan countries where we have sufficient data to make reasonable estimates. We calculate the size of the iOS and Android ecosystems for these countries and compare them to peers adjusting for size. Finally, we also give some examples of App Economy jobs for these four countries, and touch on some policy implications for growth.

## METHODOLOGY AND RESULTS

For more than a decade, PPI has done a series of reports on the App Economy around the world. For this report, a worker is in the App Economy if he or she is in:

- An IT-related job that uses App Economy skills — the ability to develop, maintain, or support mobile applications. We will call this a "core" app economy job. Core app economy jobs include app developers; software engineers whose work requires knowledge of mobile applications; security engineers who help keep mobile apps safe from being hacked; and help desk workers who support the use of mobile apps.

- A non-IT job (such as sales, marketing, finance, human resources, or administrative staff) that supports core app economy jobs in the same enterprise. We will call this an "indirect" app economy job.

- A job in the local economy that is supported either by the goods and services purchased by the enterprise, or by the income flowing to core and indirect app economy workers. These "spillover" jobs include local professional services such as bank tellers, law offices, and building managers; telecom, electric, and cable installers and maintainers; education, recreation, lodging, and restaurant jobs; and all the other necessary services.

To estimate the number of core App Economy jobs in each country, we combine multiple sources of information in a systematic process. We use data from the International Labour Organization, combined with other sources, to construct a consistent set of estimates of the number of information and communications technology (ICT) professionals in each country.[7]

We combine that number with data on current public help-wanted postings for jobs that use App Economy skills to estimate the number of core App Economy jobs.[8] Then, we use a conservative multiplier of indirect and spillover jobs to estimate overall App Economy jobs.[9] (A more detailed description of the basic methodology is found in "The App Economy in Europe: Leading Countries and Cities, 2017" and "The App Economy in India.")[10]

Table 1 presents, for each of the four countries, the total number of App Economy jobs in that country as of May 2024. Egypt has 51,000 App Economy jobs, Nigeria has 45,000 App Economy jobs, followed by South Africa with 15,000 App Economy jobs and Morocco with 9,000 App Economy jobs. We would expect these numbers to grow over time, as these countries develop deeper digital economies which are better connected to the rest of the world.

We also can analyze the number of iOS ecosystem and Android ecosystem jobs in each country, also shown in Table 2. We note two things about these results. First, iOS and Android ecosystem jobs add up to more than the total, because many jobs are in both ecosystems. Second, the apparent equality of iOS and Android ecosystems in these countries should be viewed as an approximation, driven by changes in the data reported by Indeed.com as of 2024.

Table 2 compares countries using a measure of "app intensity", which is the number of app economy jobs as a share of total employment in the country. Egypt has an app intensity of 0.2%, compared to 0.1% for Nigeria, South Africa and Morocco (all results are rounded). In all cases, these measures are significantly lower than the app intensity for Turkey, Italy and Brazil.

**TABLE 1: SELECTED NORTH AFRICAN AND SUB-SAHARAN COUNTRIES, APP ECONOMY JOBS, MAY 2024 (THOUSANDS)**

| | TOTAL APP ECONOMY | IOS ECOSYSTEM | ANDROID ECOSYSTEM |
|---|---|---|---|
| EGYPT | 51 | 41 | 41 |
| NIGERIA | 45 | 36 | 36 |
| SOUTH AFRICA | 15 | 11 | 11 |
| MOROCCO | 9 | 7 | 7 |

*Data: PPI, Indeed, ILO*

**TABLE 2: SELECTED NORTH AFRICAN AND SUB-SAHARAN COUNTRIES, APP INTENSITY, MAY 2024 (THOUSANDS)**

|  | TOTAL APP ECONOMY | APP INTENSITY* |
|---|---|---|
| **EGYPT** | 51 | 0.2% |
| **NIGERIA** | 45 | 0.1% |
| **SOUTH AFRICA** | 15 | 0.1% |
| **MOROCCO** | 9 | 0.1% |
| **TURKEY** | 112 | 0.4% |
| **ITALY** | 144 | 0.6% |
| **BRAZIL** | 428 | 0.4% |

Data: Data: PPI, Indeed, ILO
*App Intensity is the number of App Economy jobs divided by total employment

## EXAMPLES

In this section we present examples of App Economy jobs in the four countries.

### Nigeria

- As of early 2024, The Fatherland Foundation, a non-profit organization supported by the Nigerian Capital Development Fund promoting African culture and initiatives worldwide, was seeking a mobile application developer in Lagos to support their iOS and Android apps.

- HelloMe, a U.K.-based platform that allows users to send and receive payments from their phone, is seeking an app developer with Flutter skills in Lagos to support and maintain the company's iOS and Android mobile applications.

- LibTech, a leading provider of library technology solutions in Nigeria such as self-checkout systems and database management products, was looking for a developer familiar with React Native to support development on their iOS and Android platforms.

- Zercom, a company developing software including corporate learning management systems, was seeking an app developer in Lagos to support development for their eLearning iOS and Android apps.

# Egypt

- As of early 2024, Careem, a Dubai-based super-app that includes food and grocery delivery, payment processing, and transportation services, was seeking an experienced software engineer in Egypt to assist in backend Android app development.

- Instabug, an Egypt- and San Francisco-based company that specializes in bug and crash tracking technology for mobile applications, was seeking an Android developer in Cairo, responsible for overseeing and implementing Instabug's Android SDK

- Seoudi Supermarket, one of Egypt's largest supermarket chains, was seeking an iOS app developer in Giza with 3-5 years of experience.

# South Africa

- As of early 2024, HearX, a digital hearing technology company, was seeking a mobile development lead in Pretoria to develop and maintain hearing health platforms on Android, supporting their audiology and health technology development.

- Flash, a South African Fintech providing payment processing services, was seeking a mobile developer in Western Cape to support their mobile devices and integrations with third party apps.

- Blue Label Telecoms was seeking a Senior Mobile Developer in Johannesburg to support their development of technologies focused on people who do not have easy access to accounts, including bill payment, prepaid utility and data service, mobile payments, and ticketing.

- Property24, a Cape Town real estate marketplace platform, was seeking an intermediate/senior mobile developer to support their mobile app, allowing customers to view real estate prices and photos on their phones.

- Lula, a fintech based in Cape Town was hiring a mobile applications QA engineer to support their mobile application suite, which includes various banking and payment processing apps.

### Morocco

- As of early 2024, Indatacore, a user authentication software company, was seeking an iOS mobile developer in Casablanca to contribute to its mobile team.

- Majjane, a Rabat-based web agency, was looking for an iOS/Android mobile app developer.

- E@sy Solutions is a Moroccan company that designs software for the agriculture industry. It was seeking an Android Developer to maintain its mobile apps.

## CONCLUSION AND POLICY IMPLICATIONS

As far as we know, this is the first paper to estimate App Economy employment in key African countries. This source of jobs will become increasingly important as smartphone penetration rises, and as mobile app developers in cities such as Cairo, Lagos, Casablanca, and Pretoria prosper.

Africa has a talented and creative young population, who can take advantage of the domestic and global markets provided by the App Economy. However, there are still many challenges to surmount. It's essential to focus on the growth of the digital economy by emphasizing skill development; providing financing for startups and mid-size enterprises; and providing technical and administrative support from government. At the same time, regulators and lawmakers should be wary of excess regulation that could choke off growth in this sector.

## ABOUT THE AUTHOR

**Dr. Michael Mandel** is Vice President and Chief Economist of the Progressive Policy Institute.

# References

1   Winston Qiu, "Vodafone Lands 2Africa Cable in UK," Submarine Cable Networks, June 9, 2024, https://www.submarinenetworks.com/en/systems/asia-europe-africa/2africa/vodafone-lands-2africa-cable-in-uk.

2   Jack Haddon, "Vodafone Lands 2Africa in UK," Capacity Media, June 10, 2024, https://www.capacitymedia.com/article/2dckjr0d1prsdfkoywnb4/news/vodafone-lands-2africa-in-uk.

3   Temitayo Jaiyeola, "Nigeria's Internet Usage up 38% on Smartphone Uptake," Businessday NG, March 19, 2024, https://businessday.ng/technology/article/nigerias-internet-usage-up-38-on-smartphone-uptake/.

4   We have published App Economy job estimates for countries including the United States, the countries of the European Union, the United Kingdom, Canada, Mexico, Argentina, Brazil, Chile, Japan, Korea, Australia, Vietnam, Thailand, Turkey, Indonesia, and India. We have analyzed China's App Economy but not published it because of data issues.

5   "The App Store Turns 10," Apple Newsroom, July 5, 2018, https://www.apple.com/newsroom/2018/07/app-store-turns-10.

6   "Google Play," Wikipedia, accessed July 2024, https://en.wikipedia.org/wiki/Google_Play#.

7   In addition to ILO data on ICT professionals and national statistical agencies, we use data from Github (https://octoverse.github.com/) and Stack Overflow (https://stackoverflow.blog/developer-survey/).

8   For Nigeria, South Africa, Egypt, and Morocco, we use the corresponding public database from Indeed.com, found at ng.indeed.com, za.indeed.com, eg.indeed.com, and ma.indeed.com, respectively. Indeed, which bills itself as "the #1 job site in the world," offers a searchable continually updated database of job postings for more than 60 countries. Because of its global scope, it makes it easier to compare countries. It should be noted that as of 2024, Indeed is reporting rounded data rather than exact numbers. This affects our final results, but the basic patterns stay the same.

9   Based on government data, we make the reasonable assumption that each core App Economy job corresponds to one indirect App Economy job in the same organization. Next, we make the very conservative assumption that each core or indirect App Economy job generates 0.5 spillover jobs in the relevant geographic area.

10  Michael Mandel and Elliott Long, "The App Economy in Europe: Leading Countries and Cities, 2017," Progressive Policy Institute, October 2017, https://www.progressivepolicy.org/wp-content/uploads/2017/10/PPI_EuropeAppEconomy_2017_.pdf. Some pandemic-related updates to the European methodology can be found here.

11  https://www.progressivepolicy.org/blogs/europe-app-economy-update-2021/. Our 2019 report in "The App Economy in India" adds further methodological details https://www.progressivepolicy.org/wp-content/uploads/2019/09/PPI_IndianAppEconomy_V3-1.pdf

# ppi

The Progressive Policy Institute is a catalyst for policy innovation and political reform based in Washington, D.C. Its mission is to create radically pragmatic ideas for moving America beyond ideological and partisan deadlock.

Founded in 1989, PPI started as the intellectual home of the New Democrats and earned a reputation as President Bill Clinton's "idea mill." Many of its mold-breaking ideas have been translated into public policy and law and have influenced international efforts to modernize progressive politics.

Today, PPI is developing fresh proposals for stimulating U.S. economic innovation and growth; equipping all Americans with the skills and assets that social mobility in the knowledge economy requires; modernizing an overly bureaucratic and centralized public sector; and defending liberal democracy in a dangerous world.