



The App Economy in Thailand

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INTRODUCTION

When Apple introduced the iPhone in 2007, that initiated a profound and transformative new economic innovation. While central bankers and national leaders struggled with a deep financial crisis and stagnation, the fervent demand for iPhones, and the wave of smartphones that followed, was a rare force for growth.

Today, there are 5 billion mobile broadband subscriptions, an unprecedented rate of adoption for a new technology.¹ Use of mobile data is rising at 65 percent per year, a stunning number that shows its revolutionary impact.²

More than just hardware, the smartphone also inaugurated a new era for software developers around the world. Apple's opening up of the App Store in 2008, followed by Android Market (now Google Play) and other app stores, created a way for iOS and Android developers to write mobile applications that could run on smartphones anywhere.

The iPhone and the App Store were the beginnings of a global App Economy: an army of app developers writing mobile applications for billions of users.³ For the most part, these developers are not hobbyists writing games in their basements. Instead, as more and more people are linked to the Internet through their smartphone and mobile data connections, mobile apps have become an essential way for businesses, nonprofits, and governments to

interact with their customers, members, and citizens. (Indeed data shows that people spend most of their Internet time interacting with apps).

Moreover, the long-term growth prospects of the App Economy are still strong. Yes, the great surge of new game, media, and e-commerce apps is probably close to its peak. However, the rise of the Internet of Things (IoT) means more and more objects and physical processes will be connected to the Internet.

Increasingly, individuals will be using mobile apps as their interface to their home, their travel, their entertainment, their car, their schools, their health providers, and their state and local governments. Employees in many enterprises are using mobile apps to monitor or control work processes. These apps will be highly functional and sophisticated, serving an essential role in interacting with our environment.

THIS PAPER

This report on Thailand's App Economy employment builds on previous estimates of App Economy jobs around the world, starting with our February 2012 report "Where the Jobs Are: The App Economy."⁴

As of December 2017, we estimate that the Thailand App Economy totals roughly 23,000 jobs. Additionally, we provide an overall breakdown of App Economy employment by operating system, comparing the number of jobs in the iOS ecosystem with the number of jobs in the Android ecosystem.

CONTEXT

In this paper we focus on App Economy employment in Thailand. However, this paper is part of a larger research project examining App Economy employment in different countries and

regions, including the broader United States, the European Union, Japan, Australia, Mexico, Argentina, Colombia, Vietnam, Indonesia, and China.

There are several reasons we have focused on App Economy jobs. First, the invention of the smartphone was one of the two most important technological innovations over the past decade, from the perspective of economic impact, so it's natural to want to know how many jobs it is creating.⁵

Second, there is a broad ongoing debate about the link between technological innovation and jobs. For this reason we see reputable business publications like Fortune and the Wall Street Journal run articles with titles like "Silicon Valley Is Not a Job Creator" and "Wireless Jobs Evaporate Even As Industry Expands."^{6, 7}

Third, government economic statistics are unfortunately much better at tracking the reduction of existing jobs than identifying the growth of new types of jobs. For reasons of both budget limitations and inertia, it takes years for new occupations to get their own categories in the employment statistics, if it ever happens at all. For example, the term "Web developer" was only added to the Standard Occupational Classification in 2010. However, the term was in common use at least as early as 1995, when visitors to the official White House Web page were invited to send emails "to the White House Web developers and maintainers."⁸

This lack of data made it harder to measure the employment impact of the Internet and the New Economy. Equally important, without being able to track new jobs, it's impossible to figure out if policies are succeeding or failing. Without data – specifically, data about the contribution of the App Economy to individual countries –

policymakers in Hanoi, or Berlin, or Washington can't make the right decisions.

MEASURING THE APP ECONOMY

We have chosen to use employment as our preferred metric for measuring the economic impact of the App Economy. Our methodology (described in the Methodology section) is based on analyzing databases of online job postings. These job postings typically contain information about the skills required for the job and the location of the job. We are then able to search for jobs that require App Economy-related skills, such as knowledge of iOS or Android. In this way we can develop an estimate of App Economy jobs by country and region.

Our methodology for using online job postings to estimate the size of the App Economy was originally introduced in 2012, in a widely-quoted paper that reported the first estimate of U.S. App Economy jobs.⁹ In December 2015 we extended and standardized the original methodology so it could be applied to a wide variety of countries, languages, and economic environments. Our goal was to produce a set of globally-consistent and credible estimates for App Economy employment by individual countries, broad geographical regions, and, where possible, by the largest cities.

For this study, 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 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. We use a conservative estimate of the indirect and spillover effects, as discussed in the Methodology.

RESULTS

Table 1 provides the number of App Economy jobs in Thailand. As of December 2017, we estimate that the Thailand App Economy includes 23,000 jobs. This includes core App

Economy jobs, indirect App Economy jobs, and a conservative estimate of spillover jobs.

TABLE 1: Thailand App Economy Employment

	THOUSANDS OF JOBS (DECEMBER 2017)
Thailand	23

Data: Progressive Policy Institute, Indeed

Obviously, Thailand’s App Economy employment falls far short of Japan, which had 579,000 App Economy jobs in April 2016. However, Thailand’s App Economy compares favorably to smaller European countries such as Belgium (25,000 App Economy jobs in January 2017) and Ireland (15,000 App Economy jobs).¹⁰

Operating System

The two major smartphone operating systems today are iOS and Android. Employers looking for app developers often specify in which operating

system or systems they want their hires to have expertise. This enables us to assign jobs to either the iOS ecosystem or the Android ecosystem – or both.

Table 2 shows the distribution of App Economy jobs in Thailand by mobile operating system. The numbers sum to more than 100 percent because some jobs specify more than one operating system – say, both iOS and Android skills.

TABLE 2: Thailand App Economy Jobs by Operating System

	THOUSANDS OF JOBS (DECEMBER 2017)	SHARE OF ALL APP ECONOMY JOBS
iOS ecosystem	17.0	74%
Android ecosystem	18.1	79%

Data: Progressive Policy Institute, Indeed

EXAMPLES

A variety of sectors can be found in Thailand’s App Economy. Of course, the tech sector is hiring software developers. As of December 2017, mobile and website designer Dreamhatch

was hiring an iOS Programmer in Bangkok. IT company Yip In Tsoi was hiring a Mobile Application Developer with iOS experience in Bangkok. AddLink was hiring a Mobile

Application Developer with the ability to write iOS applications in Ubon Ratchathani. IT company Infosys Asia was hiring a Mobile Developer with iOS experience in Bangkok.

The Thailand App Economy has also spilled over into the education sector. As of December 2017, education company LearnBalance was hiring an iOS Mobile Application Developer in Bangkok. Nonprofit Baan Dek Foundation was hiring a Mobile App Developer with iOS experience in Chiang Mai to develop an e-curriculum that teaches children essential knowledge and skills. As of November 2017, e-learning company SkillLane was hiring an iOS Developer in Bangkok.

Thailand's finance and insurance firms are hiring App Economy workers too. As of December 2017, fintech company InvestorZ was hiring Senior iOS Developers in Bangkok. As of November 2017, electronic payment service provider FSMART was hiring a Mobile Developer with iOS experience in Bangkok. Thai Fintech was hiring an iOS Application Developer in Bangkok. Auto insurance claims company Anywhere 2 Go was hiring an iOS Mobile Developer in Bangkok.

And here are some examples from other sectors: as of December 2017, online fashion company Pomelo was hiring an iOS Developer in Chiang Mai to develop its mobile application. Eyewear manufacturer OWNDAYS was hiring an iOS Developer in Pathumwan. Lunch Actually, a dating service, was hiring an iOS Developer in Bangkok. As of November 2017, Thailand YellowPages was hiring an iOS Developer in Bangkok. Asia Sermkij Leasing Public Company Limited was hiring a Mobile Application Programmer with iOS experience in Bangkok.

Toyota Motor Thailand was hiring an iOS Developer in Bangkok.

As of November 2017, air conditioner manufacturer and distributor Saigon International was hiring an iOS Developer in Bangkok. 1577 Home Shopping, a home shopping service, was hiring an iOS Developer in Bangkok. ALPHA, which provides express delivery services for e-commerce businesses, was hiring an iOS Developer in Bangkok. Media and entertainment company GMM Channel Company Limited was hiring an iOS Mobile Developer in Bangkok.

LONG-TERM POTENTIAL AND OBSTACLES

Thailand has taken important steps in recent years to foster technological innovation in its digital economy. Thailand 4.0, a national plan aimed at freeing the country from several economic challenges and laying the foundation for future generations of industry, places an emphasis on leveraging innovation, technology, and creativity to drive economic growth. The goal is to increase R&D expenditures to 4 percent of GDP, increase economic growth by 5 to 6 percent within five years, and to nearly triple national income per capita to \$15,000 by 2032.¹¹

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As part of Thailand 4.0, priority has been placed on developing 10 future industries. These include next-generation cars; smart electronics; affluent, medical and wellness

tourism; agriculture and biotechnology; food; robotics; logistics and aviation; biofuels and biochemicals; digital; and medical services.¹² The government also aims to develop five smart cities within 10 years using digital technology as the foundation.¹³ Thailand has also launched various projects to facilitate technological integration, including high-speed Internet access for all villages, setting up data centers, and enabling e-commerce.^{14,15} These industries and projects will enable a new generation of app development, as the IoT comes online and businesses and consumers increasingly interface with apps to complete everyday business and tasks.

Still, more can be done to improve the regulatory climate for tech. The National Broadcasting and Telecommunications Commission is currently drafting a regulatory framework for over-the-top (OTT).¹⁶ OTT services are those that deliver film and TV content via the Internet, without requiring users to subscribe to a traditional cable or satellite service. The framework may require OTT providers to register with the government and establish a local office, subjecting them to the corporate income tax.¹⁷ OTT services are a staple of the App Economy, as individuals consume videos on YouTube or watch movies on Netflix. Regulations like these tend to stifle investment and slow growth, as businesses gravitate to more attractive opportunities. The better way to raise revenue, if that is the goal, is to support long-term job creation and economic growth.

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The Thai government should also make digital skills a priority. While Thailand has taken important steps to grow its economy by harnessing tech, a skills gap has emerged.^{18,19} Thailand ranked 70th on the International Telecommunication Union's Information Communication Technology Development Skills Sub-Index.²⁰ By comparison, the high-income and tech-savvy economy of Singapore ranked 37th.

Thailand ranked 70th on the International Telecommunication Union's Information Communication Technology Development Skills Sub-Index.

CONCLUSION

Since its invention in 2007, the iPhone has supplied an important source of jobs and economic growth for Thailand. We estimate Thailand's App Economy employment to total 23,000 as of December 2017. This includes core App Economy jobs, indirect App Economy jobs, and a conservative estimate of spillover jobs. App Economy jobs span sectors across the economy, ranging from tech and education to finance and others.

Thailand has made significant strides in embracing tech and growing its digital economy. For example, Thailand 4.0 aims to develop 10 new industries, make five cities "smart cities," and provide high-speed Internet access throughout the country. However, more steps can be taken to enable the next generation of app development, such as ensuring a light-touch regulatory framework on OTT content providers and teaching digital skills to close the skills gap.

Appendix

METHODOLOGY

Our methodology consists of six distinct steps:

1. Identification of App Economy job postings

Using summary statistics generated by searches on indeed.com, we identified job postings for App Economy jobs containing one of the following keywords: iOS, Android, and Thai equivalents for related phrases such as “mobile application” and “mobile engineer.”

2. Validation

Invariably, some job postings identified in Step 1 will not fit the criteria of an App Economy worker (e.g. a job posting for a truck driver using an app). We therefore validated the sample by manually examining a sample of the job postings from Step 1 to eliminate those that do not fit our criteria of an App Economy worker. This allows us to estimate a validation ratio that we applied to the results of Step 1.

3. Identification of IT job postings in Thailand, and estimation of the ratio of job postings to employment for overall IT occupations

We constructed a keyword list to identify job postings for IT occupations in Thailand. This included a core list of Thai and English words and phrases commonly found in job postings for IT occupations.

We then validated the outcome using the same methodology as Step 2, manually examining a sample of job postings to assess which actually correspond to IT occupations. Then the resulting number was used to estimate the ratio of job postings to employment for overall IT occupations.

4. Estimation of App Economy core jobs for Thailand

We multiplied the ratio generated in Step 3 and the validated number of App Economy job postings generated in Step 2. The result gave us the estimate of core App Economy jobs for Thailand in December 2017.

5. Estimation of total App Economy employment for Thailand

Using the same multipliers as in our previous work, we estimated the total number of App Economy jobs in Thailand. We assumed that each core App Economy job is supported by one job-equivalent at the same company (e.g., managers, human resources, accounting). Then we assume that each company job generates one job in the rest of the economy. This is a very conservative assumption for spillovers.

6. Estimation of the total employment in the iOS and Android ecosystems in Thailand

Out of the set of job postings containing the terms “iOS” or “Android,” we identified the share that contain terms belonging to the iOS ecosystem (Apple, iPad, iPhone, iOS) and the share belonging to the Android ecosystem (Android, Google). Then those shares were applied to all Thailand App Economy employment.

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