FOSTERING PRODUCTIVE ENTREPRENEURSHIP COMMUNITIES

KEY LESSONS ON GENERATING JOBS, ECONOMIC GROWTH, AND INNOVATION

endeavor
INSIGHT

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BILL & MELINDA GATES *foundation*

ABOUT ENDEAVOR INSIGHT:
Endeavor Insight is the research division of Endeavor, a non-profit organization that supports high impact entrepreneurs across the world.

Its work seeks to answer three questions:

1. How do entrepreneurs reach scale at their companies?

2. How do entrepreneurs reach scale in local networks or ecosystems?

3. What can policymakers, philanthropic leaders, investors, support organizations, and other stakeholders do to empower more entrepreneurs to reach scale in their communities?

The methodology utilized in this study builds on previous Endeavor Insight research supported by the Omidyar Network, the Kauffman Foundation, the Inter-American Development Bank, the Heron Foundation, and the Ralph Wilson Foundation, as well as partners in the Global Entrepreneurship Research Network.

GLOBAL ENTREPRENEURSHIP RESEARCH NETWORK

THE IMPORTANCE OF PRODUCTIVE ENTREPRENEURSHIP COMMUNITIES

Entrepreneurs play a critical role in cities and nations as they create new jobs, generate economic growth, and spread the development of new innovations. When local entrepreneurship communities are productive, their cities and regions are more likely to thrive, but when entrepreneurship communities struggle, cities and regions can become trapped in decline.*

In recent years, many decision makers have recognized the importance of entrepreneurship communities. Policymakers, leaders of philanthropic organizations, corporate executives, and others have begun to search for ways to increase the productivity of local founders. The actions of individuals like these have the potential to dramatically reshape the environment and support networks in which entrepreneurs operate.

So how can decision makers like these empower local entrepreneurship communities to become more productive? Endeavor Insight recently conducted an 18-month research project funded by the Bill & Melinda Gates Foundation to answer this question. This project is one of the largest studies ever conducted on entrepreneurship communities.

The findings summarized in this report are based on interviews with more than 2,000 technology entrepreneurs in six cities, as well as secondary data on over 5,000 tech founders and their companies.† Data was also gathered on more than 500 investment firms and local entrepreneurship support organizations. Participating entrepreneurs and executives contributed a total of more than six months of time to this research.

Though the project utilizes data from major cities in emerging markets, its findings are corroborated by similar research conducted in more developed metropolitan areas, such as New York City.

In addition, the lessons drawn from these technology companies are consistent with Endeavor's experience supporting more than 1,500 fast-growing entrepreneurs in a wide range of global industries and operating one of the most active venture capital funds outside of Silicon Valley.

This study is also one of the first research projects to use network analyses to assess the collective impact of founders, investors, and other actors in entrepreneurship communities. These analyses revealed findings that are likely to surprise many people working in the entrepreneurship field.

▶ First, the bad news. It seems that a number of popular support initiatives may actually be harming entrepreneurs' productivity. Data suggests that this is due to predictable mistakes. These initiatives often elevate unqualified leaders and waste efforts on very low-potential businesses.

▶ Network analyses also indicate that decision makers can play positive roles by empowering leaders with unique entrepreneurship experience to influence others in specific ways. This strategy, referred to as "Entrepreneur-Led Economic Development," utilizes existing local strengths to increase the productivity of businesses in the community.

The following pages will share five critical lessons on entrepreneurship communities and productivity. They will also offer practical recommendations that decision makers can use to implement Entrepreneur-Led Economic Development in cities across the world.

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* Endeavor Insight defines an entrepreneurship community as the collection of stakeholders whose primary activities involve operating, supporting, or investing in entrepreneurial companies within a single metropolitan area or region, and a single industry or group of highly related industries.

† For the purposes of this research, "entrepreneurial companies" are defined as businesses that are started by individuals who possess ownership and control of the firm. This excludes businesses that began as either government entities or subsidiaries of larger companies. "Software companies" are defined as firms where the primary business activity is either software development, fintech, or e-commerce. To avoid excess repetition, the terms "software company" and "tech company" are used synonymously in this document. Companies in this study are considered "local" if they were founded or are currently headquartered in a metropolitan area. The six cities included in this study are Bangalore, India; Dar es Salaam, Tanzania; Dhaka, Bangladesh; Kampala, Uganda; Lagos, Nigeria; and Nairobi, Kenya. An overview of the specific findings in each of these cities is located in the appendix document published alongside this report.

ENTREPRENEURSHIP COMMUNITIES ARE NOT PREDESTINED TO FOLLOW A SINGLE DEVELOPMENT PATH.

The next sections will highlight the most important lessons on productivity in entrepreneurship communities that emerged from this research. Many of these lessons can be best illustrated by examining two specific communities included in the study: Bangalore and Nairobi. These cities highlight the results of different approaches used by decision makers working to support entrepreneurs.

BANGALORE: THE BIRTH OF A GLOBAL TECH CENTER

Bangalore's founders have produced some of the most successful software companies in the world. The local e-commerce firm Flipkart was sold for US$16 billion in May of 2018.[1] Several other local tech companies, such as Redbus, Myntra, and TaxiforSure, have also been purchased for more than US$100 million each in recent years. Infosys and Wipro, two publicly traded tech firms in the city, are each valued at more than US$20 billion.[2]

Dozens of other large companies like Ola, BigBasket, and NestAway also employ hundreds or thousands of people.[3] Tech firms in the city have generated so many jobs that government leaders project that Bangalore will soon have more residents working in information technology than Silicon Valley.[4]

Entrepreneurs at large firms in Bangalore are also responsible for disseminating new innovations that have improved the lives of millions of Indian citizens. For example, Redbus has increased the efficiency and predictability of mass transportation. Cleartax helps small businesses reduce bureaucratic challenges with filing taxes, and Novopay enables individuals to send remittances to family members, pay bills, and withdraw funds using only their thumbprint at thousands of retail stores across the country.

Bangalore's entrepreneurial success can be traced back to a conversation almost 40 years ago, between Azim Premji, the CEO of Wipro, and a potential new employee.[5] The job applicant, Narayana Murthy, remembers the day well, "Azim took me to Willington Club in Mumbai for a discussion. He was very courteous and very easy to transact with. Apparently, I did not come up to his satisfaction and I did not get the job."

Wipro's loss was Bangalore's gain. Murthy went on to launch Infosys in 1981 with six other engineers. The company grew rapidly. By the end of the 1990s, it had offices in seven countries and was listed on the NASDAQ.[6] During the 2000s, its annual revenues climbed to US$4 billion and reached more than US$10 billion by 2016. Even more importantly, Infosys also became an entrepreneurial engine for the city.[7] Close to 200 Bangalore-based tech firms have been started by former employees of the firm. Infosys' founders have also mentored and invested in many other local entrepreneurs. The company even launched a US$250 million investment fund in 2015 for India-based businesses.

Similar stories can be found among the entrepreneurs behind Wipro, Flipkart, Redbus, and other notable local firms. **Tech founders who succeed at building large companies in Bangalore often reinvest their resources back into the community by supporting former employees who launch their own firms, and by acting as mentors and investors.**

BANGALORE: NETWORK MAP
Examples of Local Tech Firms
Started by Former Employees
of Infosys

Former employees of Infosys have started nearly 200 local tech companies, including those listed in this map.

INFOSYS

| 1981-2000 | 2001-2010 | 2011-2016 | YEAR FOUNDED |

RARE MILE TECHNOLOGIES
EDUREKA
NOVOPAY
10I COMMERCE
URBAN LADDER
FOCALOID
TARENTO TECHNOLOGIES
VIRTUAL LOGIC SYSTEM
CARTISAN
AVEKSHAA TECHNOLOGIES
THRILLOPHILIA
DREAMORBIT
MOVEINSYNC
TRAVELYAARI
CERRID SOLUTIONS
TRICON INFOTECH
SENSEFORTH
BIGBASKET
MOONRAFT
CUSTOMERXPS
CL INFOTECH
TECHJINI
SIMPL
SAHAS SOFTWARE
APORV
PATHPARTNER TECHNOLOGY
DAILY HUNT
ONMOBILE
TECHCHEFS SOFTWARE
REDSTONE LEARNING
WIT INNOVATION TECHNOLOGIES
SAYFIX
ZIPGO
SPORTSKEEDA
SURYA SOFTWARE SYSTEMS
INGOVERN
BRISA TECHNOLOGIES
INDEGENE
PINKBLUE
BLOWHORN
SKILLSIGN
SIMPLILEARN
LOGISYS SOLUTIONS
CARTISAN
ENPARADIGM
VITAMAP
FLIPCLASS
VITAMAP
CARVENICHE TECHNOLOGIES
BARYONS SOFTWARE
BLUBIRCH
PETOO
TAXIFORSURE
DRIVEU
FURDO
RENTSHER

LEGEND:

Size of circle reflects the number of spinoff firms originating from each company.

→ Former employee launching a spinoff company

Source: Endeavor Insight.

Other local stakeholders have also worked to support software-focused entrepreneurship in Bangalore. The national government helped to establish a competitive environment for tech firms by easing tax restrictions on international sales and allowing IPO prices to be set without government control.[8] The entrepreneurs who built the largest local companies also worked together to launch important trade groups that now reach thousands of tech founders in the city through events, training programs, and public policy initiatives.[9]

The collective impact of the actions of leading local entrepreneurs has produced a number of unique traits in Bangalore. For example, the local software community includes a large number of "boomerang entrepreneurs" who left India to work or study, and have since returned to the country and started technology companies in the region.[10] Unlike many other cities outside the U.S., Bangalore also has a number of top-tier global venture capital firms like Accel, Sequoia, and Tiger Global, that are actively investing in local tech companies.[11]

The collective impact of the actions of leading local entrepreneurs has produced a number of unique traits in Bangalore.

> Donors began to fund tech-oriented entrepreneurship initiatives, which led local organizations offering personal microfinance loans and educational services to refashion themselves and launch entrepreneurship support programs.

NAIROBI: A DECADE-LONG EXPERIMENT IN ENTREPRENEURSHIP SUPPORT

Bangalore is not the only interesting example of tech entrepreneurship included in this study. Nairobi's software sector has also attracted a great deal of attention using a different approach during the last 10 years. During that time, international donors and government organizations have invested millions of dollars into entrepreneurship programs in the city.

The story of tech entrepreneurship in Nairobi is often linked to the development of MPESA, a mobile-phone-based banking service launched in 2007.[12] MPESA was not an independent company, but a product developed through a partnership facilitated by the U.K.'s Department for International Development (DFID). The partnership brought together Safaricom, Kenya's recently privatized telephone utility, and Vodafone, a British telecommunications corporation.[13]

The MPESA product was specifically designed for the needs of Kenyan mobile phone users and it grew to reach more than 10 million customers in just a few years.[14] This expansion increased local access to financial services and supported development goals promoted by DFID. A study published in the journal *Science* estimated that the product has "lifted 194,000 households, or 2 percent of Kenyan households, out of poverty."[15]

The story of MPESA drew the attention of aid organizations and international foundations that hoped to replicate DFID's success by utilizing technology and working with businesses in Nairobi. Donors began to fund tech-oriented entrepreneurship initiatives, which led local organizations offering personal microfinance loans and educational services to refashion themselves and launch entrepreneurship support programs.

Almost all of these programs target startups — companies that are three years old or younger — with a typical focus on early stage firms that do not yet have many employees or outside investors. Most were either open-ended initiatives, often referred to as "incubators," or fixed-length programs, usually called "accelerators."*

Alongside these local programs, a number of international early stage incubator and accelerator organizations also received donor funding to open affiliates in Nairobi.[16]

These efforts were supported by other stakeholders in the city. Government leaders paid for the construction of an undersea fiber-optic cable that provided broadband internet access to the country in the late-2000s. More recently, policymakers and local corporations like Safaricom have also funded accelerators, business plan competitions, and other programs for software-focused startups.

The actions of donors, government leaders, and local corporations have reshaped Nairobi's entrepreneurship community. At the time MPESA was launched, there were no incubators, accelerators, or similar programs focusing on local tech entrepreneurs. **In just a single decade, more than 20 of these organizations have opened in the city, making Nairobi's software sector one of the most heavily supported entrepreneurship communities in the world.**[17] By 2016, there was one incubator, accelerator, or similar organization launched for every 32 software companies in Nairobi.[†]

These support organizations in Nairobi are very similar to those that decision makers will find in other cities. This is the main reason why the city's entrepreneurship community is such a useful case study. The donors funding these organizations have effectively transformed Nairobi into a real-world experiment in early stage entrepreneurship support that other communities can observe.
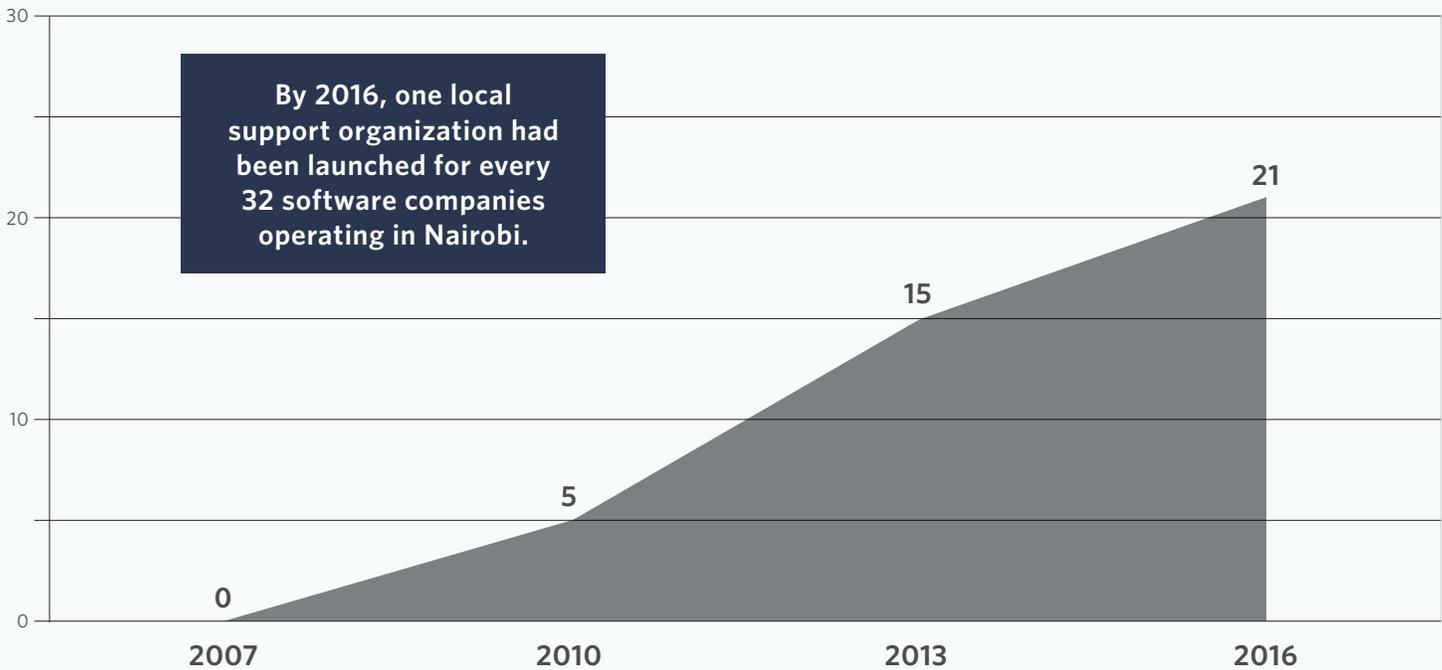
The collective impact of these organizations has already led the local tech sector to develop a number of distinct traits. Nairobi's software community includes a large proportion of entrepreneurs from outside of Kenya, typically from the U.S. and Europe. These founders are colloquially referred to as "expat entrepreneurs." There is also a large amount of grant funding for local founders. These grants usually come from local support organizations. Both of these attributes are rarely found in other tech-entrepreneurship communities.[18]

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* For the purposes of this research, incubators are defined as support programs for entrepreneurs with rolling admissions and indeterminant length; accelerators are defined as cohort-based, time-bound support programs with specific start and end dates, typically between one to twelve months.
† This calculation does not include trade associations, venture capital firms, or for-profit consulting firms.

NAIROBI: LOCAL PROGRAMS LAUNCHED TO SUPPORT SOFTWARE ENTREPRENEURS
Cumulative Number of Local Incubators, Accelerators, Business Plan Competitions, and Related Programs

> **By 2016, one local support organization had been launched for every 32 software companies operating in Nairobi.**

Chart values by year:
- 2007: 0
- 2010: 5
- 2013: 15
- 2016: 21

Note: The programs represented in the graph do not include trade associations, venture capital firms, or for-profit consulting firms.
Source: Endeavor Insight.

LESSONS FOR OTHER CITIES

The stories of Bangalore and Nairobi contain a number of lessons for decision makers around the world. One of the most important principles they demonstrate is something that can be seen in Silicon Valley, London, Singapore, and many other cities: **entrepreneurship communities are not predestined to follow a single development path.**

Bangalore and Nairobi represent very different models of entrepreneurship community development. Though it may be appealing to view Nairobi's tech community as a younger or less-mature version of Bangalore's, this does not seem to be the case. When Bangalore tech community was similar to Nairobi's current size, it already exhibited many of the characteristics that make it distinct and did not include any of the unique traits highlighted in Nairobi.[19] (Even today, Bangalore's software community has a relatively small number of support organizations for early stage startups, few expat founders, and very little grant funding.)

It is important to note that the models of development in these two cities have led to very different results. While both communities have demonstrated the potential to generate productive tech businesses and products, one of them has realized much more of its potential than the other, as the next section will demonstrate.

> The donors funding these organizations have effectively transformed Nairobi into a real-world experiment in early stage entrepreneurship support that other communities can observe.

ENTREPRENEURSHIP COMMUNITIES BECOME PRODUCTIVE BY GENERATING A RELATIVELY SMALL NUMBER OF COMPANIES THAT REACH SCALE.

Before investigating the collective impact of local actors on productivity, it is important to understand how productivity is created in entrepreneurship communities. Some entrepreneurship communities are much more productive than others. These differences translate to thousands of more jobs, millions of more dollars in economic growth, and a dramatically greater distribution of new innovations.

For the purposes of this study, entrepreneurial productivity was measured primarily by comparing job creation at each company. This metric was selected because it allows for comparisons to be made across different industries and geographies. Employment was also the measure that founders were consistently willing to share during interviews.

Analyses from other studies indicates that job creation correlates strongly with other productivity metrics. This is especially true when comparing companies that operate in the same industry and city.* The entrepreneurs who hire the most employees also tend to raise more capital and generate more sales than less productive local peers.

Data from the thousands of firms analyzed in this study suggests that four major productivity trends guide the development of entrepreneurship communities. These trends can be observed within the cities included in this project, as well as a wide range of other communities and industries studied by the World Bank, the World Economic Forum, the OECD, as well as other organizations.[†][20]
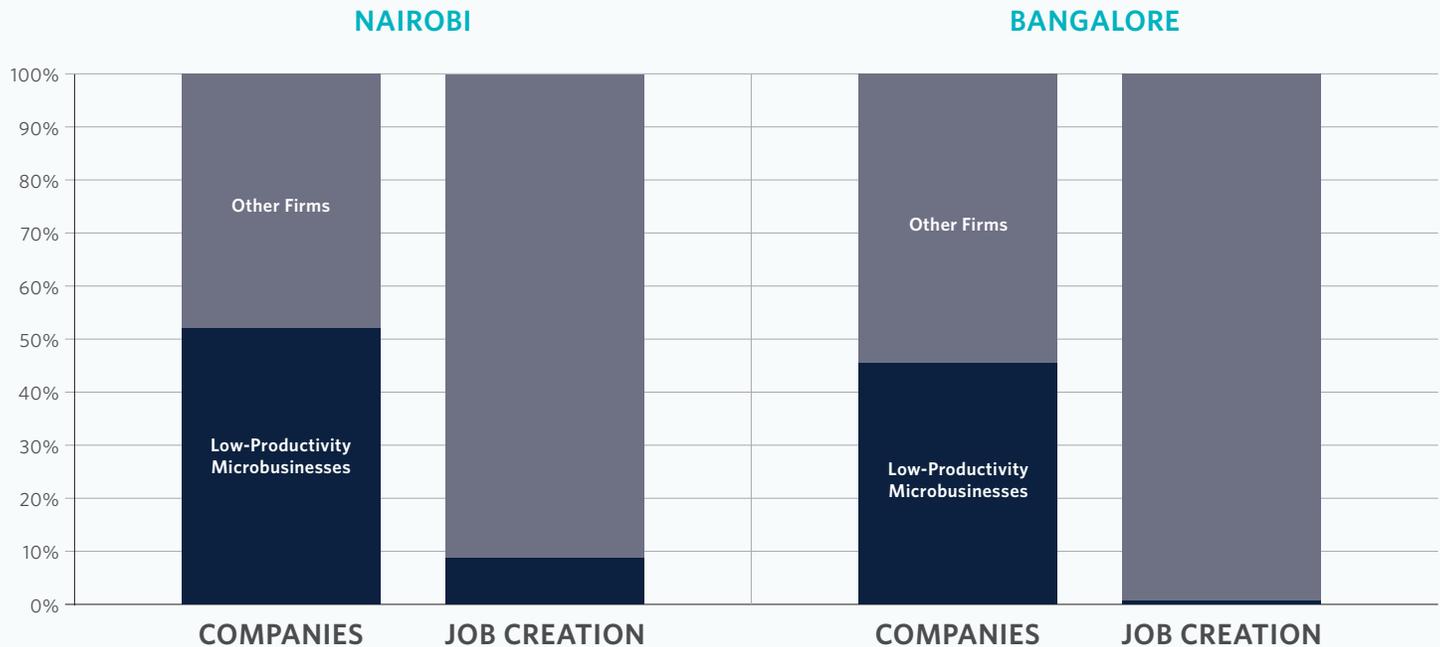
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* Examples of these correlations can be found in Supporting Analysis 1 on page 31.
† Examples of national data highlighting similar patterns can be found in Supporting Analysis 2 on page 32.

PRODUCTIVITY AMONG ENTREPRENEURIAL SOFTWARE FIRMS
Low-Productivity Microbusinesses vs. Other Firms

A large percentage of entrepreneurial companies in Nairobi, Bangalore, and other cities are low-productivity microbusinesses.

NAIROBI
BANGALORE

Chart: Nairobi — COMPANIES, JOB CREATION; Bangalore — COMPANIES, JOB CREATION. Y-axis 0% to 100%. Categories: Other Firms and Low-Productivity Microbusinesses.

Note: All figures reflect year-end totals for 2016. Low-productivity microbusinesses are defined as companies with three or fewer employees that have raised no venture capital or other forms of private equity. "Entrepreneurial software companies" are defined as businesses started and led by individuals who possess ownership and control, where the primary activity is either software development, fintech, or e-commerce. Source: Endeavor Insight.

TREND 1:
A LARGE PROPORTION OF ENTREPRENEURIAL COMPANIES ARE LOW-PRODUCTIVITY MICROBUSINESSES.

The majority of founders and companies make little-to-no individual impact on local job creation, economic growth, and other measures of productivity. In Nairobi, for example, 661 entrepreneurial software companies were identified for this project.* About 350 of these companies are low-productivity microbusinesses — defined in this report as firms with three or fewer employees

that have raised no venture capital investment and would be expected to generate little to no revenues. The chart above highlights the relatively small contribution these companies make to overall productivity in Nairobi.

The contribution of these low-productivity microbusinesses is likely to shrink even further, as most are young firms that will probably fail in the next several years. Even in highly developed economies like the U.S., the majority of startups cease operations before reaching five years old.[21]

Nairobi is not unique in this respect. The presence of a large number of low-productivity microbusinesses can be found in the software sector of Bangalore, as well as many other cities and nations analyzed in other research studies.[†]
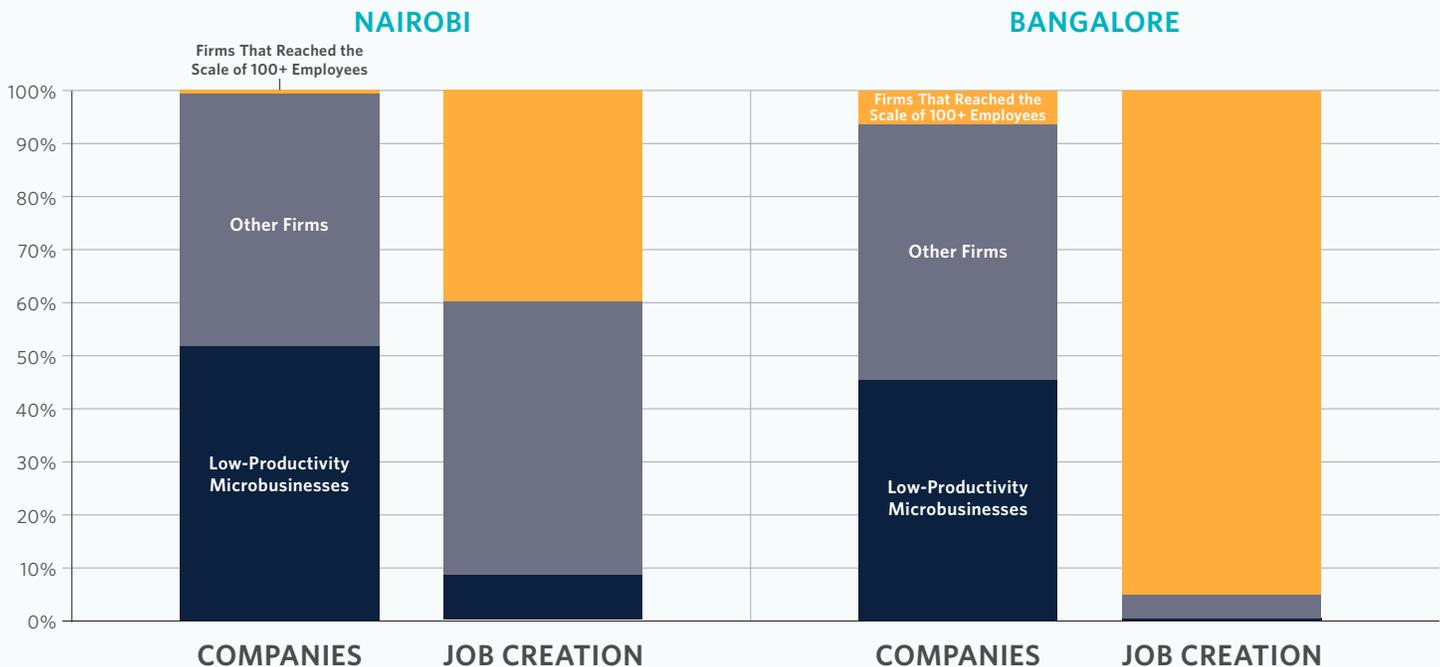
* Unless otherwise noted, all figures reflect year-end totals for 2016.
† Examples of national data highlighting similar patterns can be found in Supporting Analysis 2 on page 32.

PRODUCTIVITY AMONG ENTREPRENEURIAL SOFTWARE FIRMS
Companies at Scale vs. Low-Productivity Microbusinesses and Other Firms

NAIROBI

Firms That Reached the Scale of 100+ Employees

Other Firms

Low-Productivity Microbusinesses

COMPANIES   JOB CREATION

BANGALORE

Firms That Reached the Scale of 100+ Employees

Other Firms

Low-Productivity Microbusinesses

COMPANIES   JOB CREATION

Note: All figures reflect year-end totals for 2016. Low-productivity microbusinesses are defined as companies with three or fewer employees that have raised no venture capital or other forms of private equity. "Entrepreneurial software companies" are defined as businesses started and led by individuals who possess ownership and control, where the primary activity is either software development, fintech, or e-commerce. Source: Endeavor Insight.

TREND 2:
A SMALL NUMBER OF COMPANIES THAT REACH SIGNIFICANT SCALE GENERATE A VERY LARGE SHARE OF PRODUCTIVITY.

The analysis of microbusinesses indicates that a large number of entrepreneurial companies make a very small impact on productivity. The opposite is also true.

A very small number of companies that reach significant scale — defined as having 100 or more employees — are responsible for a disproportionate amount of the productivity in entrepreneurship communities.* In Nairobi, only eight software companies have grown to

reach this level of scale. These eight firms make up just 1 percent of the entrepreneurial software companies in the city. However, they have produced 40 percent of the job creation and raised more than twice as much funding from venture capital firms as the other 653 local tech companies combined.[†]

Bangalore has generated a much greater number of companies that have reached this level of scale and these firms are responsible for a much larger amount of local productivity. There were 3,050 entrepreneurial tech companies identified for this project in the city. Over 180 of these firms have reached the scale of 100 or

more employees. These companies at scale represent approximately 6 percent of the businesses in Bangalore's entrepreneurship community and they have generated more than 90 percent of its jobs and most of its venture funding.

Reaching scale is also critical for entrepreneurs to spread new innovations. Since the technologies developed at for-profit companies are designed to be shared through product sales, entrepreneurs must grow their businesses for their innovations to reach large numbers of people.
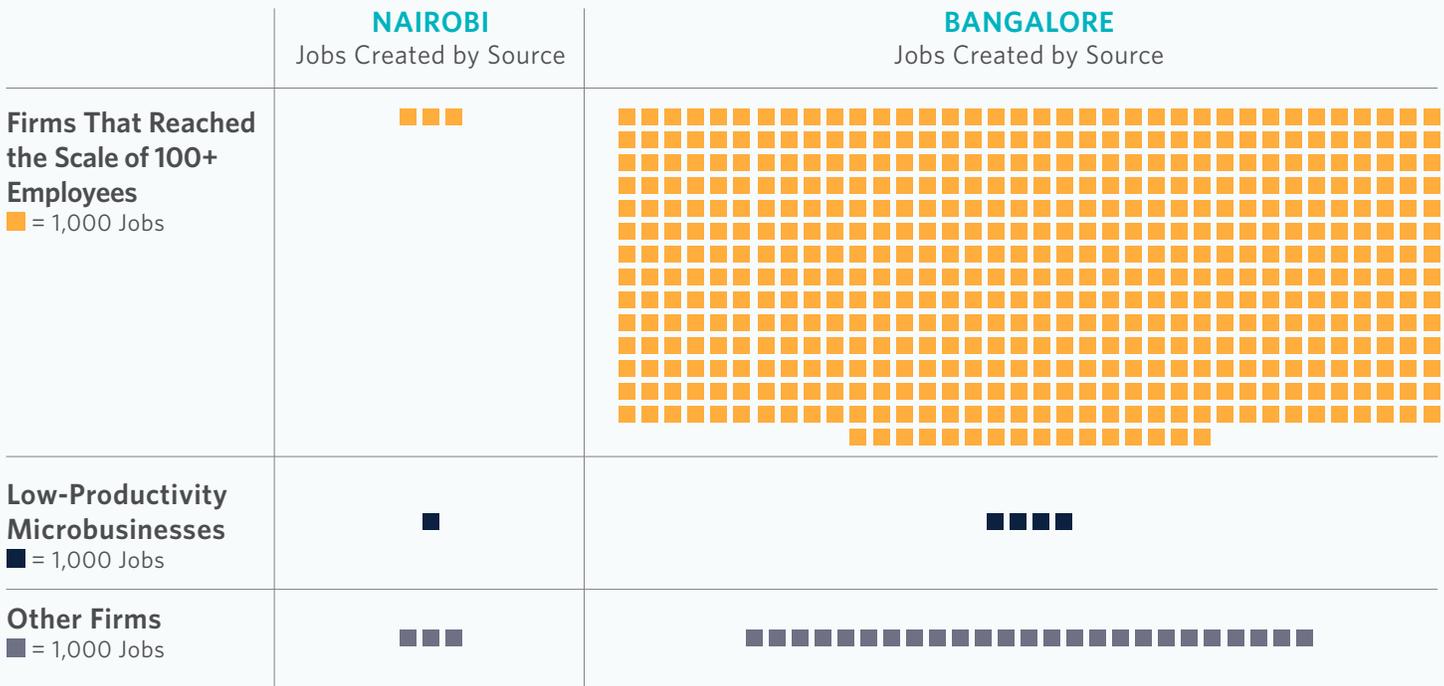
* The threshold used for "significant scale" in these analyses was set at 100 employees in order to compare the data in this project to that found in other studies. Results similar to those seen above could be observed if the threshold for "significant scale" was set to levels such as 50, 75, or 90 employees so that there was still clear differentiation between scaled firms and the average companies in each community.
† Unless otherwise noted, all figures shared in this report are for year-end 2016.

PRODUCTIVITY AMONG ENTREPRENEURIAL SOFTWARE FIRMS
Companies at Scale vs. Low-Productivity Microbusinesses and Other Firms

	NAIROBI Jobs Created by Source	BANGALORE Jobs Created by Source
Firms That Reached the Scale of 100+ Employees ■ = 1,000 Jobs		
Low-Productivity Microbusinesses ■ = 1,000 Jobs		
Other Firms ■ = 1,000 Jobs		

Note: All figures reflect year-end totals for 2016. Low-productivity microbusinesses are defined as companies with three or fewer employees that have raised no venture capital or other forms of private equity. "Entrepreneurial software companies" are defined as businesses started and led by individuals who possess ownership and control, where the primary activity is either software development, fintech, or e-commerce. Source: Endeavor Insight.

TREND 3:
MORE PRODUCTIVE ENTREPRENEURSHIP COMMUNITIES OUTPERFORM OTHERS BY GENERATING MORE FIRMS THAT REACH SCALE.

The comparison between Bangalore and Nairobi highlights another important finding. Companies that reach significant scale are the key element that separates more productive entrepreneurship communities from less productive ones.

Bangalore's tech sector is much more productive than Nairobi's. The city's 3,050 entrepreneurial software firms have generated almost 550,000 jobs, while the 661 software firms in Nairobi have created about 7,400 jobs.*

Though Bangalore has nearly five times more software companies than Nairobi, its community has produced over 70 times more jobs.

As the graphic above illustrates, Bangalore's superior performance is due to the productivity of firms that reached the scale of 100 or more employees in the city. Bangalore has over 180 firms that reached the scale of 100 or more employees. These firms have generated approximately 520,000 jobs. Nairobi has produced only eight companies at the same level of scale, which have produced around 3,400 jobs.

A similar trend holds true for venture capital investments. The firms that reached scale in Bangalore were responsible for the vast majority of the community's investment funding, both overall and in terms of its performance over Nairobi.
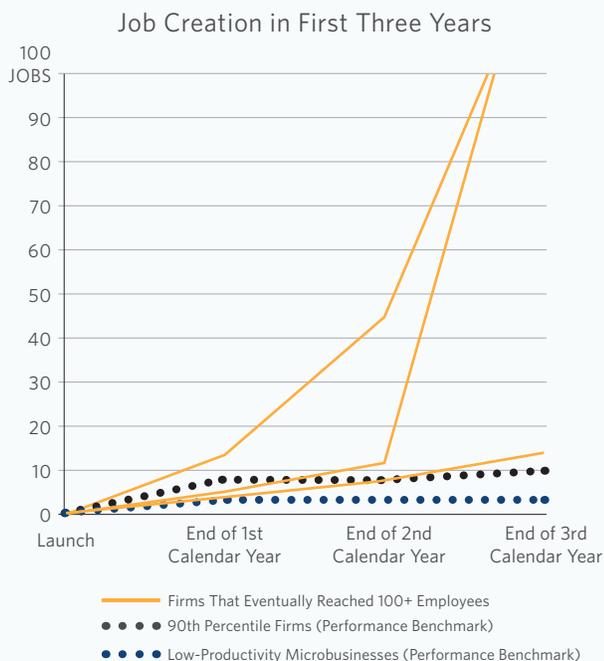
* Unless otherwise noted, all figures shared in this report are for year-end 2016.
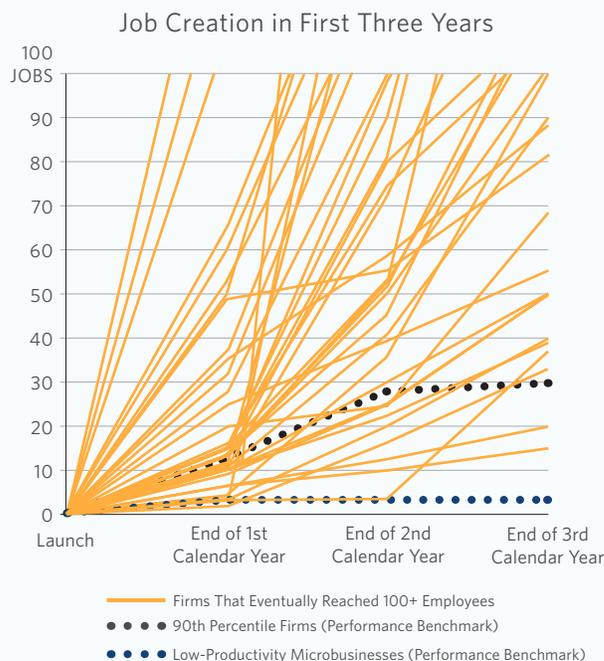
PRODUCTIVITY AMONG ENTREPRENEURIAL SOFTWARE FIRMS
Job Creation during First Three Calendar Years

Firms that eventually reach significant scale tend to quickly outgrow other startups in their first years of operation.

NAIROBI

Job Creation in First Three Years

Firms That Eventually Reached 100+ Employees
● ● ● ● 90th Percentile Firms (Performance Benchmark)
● ● ● ● Low-Productivity Microbusinesses (Performance Benchmark)

BANGALORE

Job Creation in First Three Years

Firms That Eventually Reached 100+ Employees
● ● ● ● 90th Percentile Firms (Performance Benchmark)
● ● ● ● Low-Productivity Microbusinesses (Performance Benchmark)

Note: Data is illustrated for firms launched between 2006 and 2015 where employment data was available for one or more of its first three years. Additional employment data was extrapolated for each firm. Estimates for 90th percentile performance are based on figures from local age cohorts in 2016. "Entrepreneurial software companies" are defined as businesses started and led by individuals who possess ownership and control, where the primary activity is either software development, fintech, or e-commerce. Source: Endeavor Insight.

TREND 4:
FIRMS THAT REACH SCALE TEND TO GROW MUCH FASTER THAN PEERS IN THEIR STARTUP YEARS.

Firms that reach significant scale are the greatest contributors to entrepreneurial productivity and the key factor that separates more productive communities from less productive ones. Since these firms are so critical, it is important to understand how to identify them in entrepreneurship communities. Data indicates that these companies usually differentiate themselves from their peers in their startup years, as seen in the charts above.

Very few of the companies in Nairobi and Bangalore that reached scale remained the size of low-productivity microbusinesses at the end of their first calendar year. By the end of their third year, almost all of these fast-growing companies were larger than the 90th percentile of peer firms in their communities.

Entrepreneurial productivity follows a distinct pattern. Investors often state that a small fraction of companies generates the majority of financial returns in a venture capital investment portfolio.

(This distribution is sometimes referred to as the "one-in-ten rule" or "the power law effect.")[22] In the same way, a small fraction of fast-growing companies generates the majority of productivity in an entrepreneurship community.

PRODUCTIVITY & ENTREPRENEURSHIP SUPPORT ORGANIZATIONS

The productivity trends outlined on the previous pages have important implications for decision makers in other communities. Most of the entrepreneurship support programs operating across the world target early stage startups that greatly resemble low-productivity microbusinesses. For example, the largest international review of entrepreneurship accelerator programs, the Global Accelerator Learning Initiative (GALI), found that about half of companies entering accelerators had no revenues in the prior year and nearly 40 percent had no employees.* [23]

While programs targeting early stage startups may generate some growth in the microbusinesses they support, the magnitude of these improvements tends to be extremely small. Data from GALI shows that companies participating in accelerators only grow by an average of 1.3 new employees and US$6,000 in sales after completing these programs. [24]

Accelerators may also have difficulty recognizing when young companies have the potential to reach scale. In 2017, researchers analyzed the fastest-growing entrepreneurial firms that had applied to programs in the GALI study. These were companies that grew by more than US$500,000 in sales or 18 employees in the year after their application. [25] They found that the majority of these businesses were **rejected** from the accelerators they applied to.

These analyses suggest that while the typical accelerator can help low-productivity startup businesses make very slight improvements, many are unequipped to identify or assist entrepreneurial firms with the potential to scale and increase local productivity.

Decision makers should know that accelerators are not alone. Interviews with stakeholders in a wide range of communities across the world suggest that most of the companies participating in incubators and business plan competitions also remain very small businesses. Few stakeholders could name a single company that participated in one of these programs that experienced significant growth or fundraising after participating — e.g., reaching 50 or more employees or raising at least US$1 million in venture capital.

This was true in Bangalore, despite the fact that the local software entrepreneurship community is one of the most successful in the world. It was also even more apparent in Nairobi. The large quantity of local incubators, accelerators, and business plan competitions launched between 2007 and 2016 has not generated many firms with significant growth. In fact, none of the eight local firms that have reached the scale of 100 or more employees participated in any of these programs.

Though few early stage entrepreneurship support programs have records of helping startups grow significantly, this has not prevented many of them from borrowing the vocabulary of scale. It is quite common to find support programs presenting themselves using terms like "scaling," "scaleup," and "acceleration" with no related real-world results. Decision makers would do well to be skeptical of vague claims like these among organizations that target early stage startups. It is far easier for these programs to appropriate the language of scale than it is to help entrepreneurs achieve significant growth.

The lack of scale found among many companies participating in incubators, accelerators, and other related programs is likely due, at least in part, to these programs' leadership. Data collected in this project indicates that it can be difficult to find support organizations that are run by people with the most valuable types of entrepreneurship experience, as later sections of this report will demonstrate.

While programs targeting early stage startups may generate some growth in the microbusinesses they support, the magnitude of these improvements tends to be extremely small.

ENTREPRENEURS AT THE FASTEST-GROWING COMPANIES ARE MUCH MORE LIKELY TO HAVE RECEIVED EXPERIENCE, SUPPORT, AND INVESTMENT FROM LEADERS OF COMPANIES THAT REACHED SCALE.

How are the entrepreneurs who lead the most productive companies different from other founders? Endeavor Insight gathered data on more than 100 different variables to conduct analyses that answer this question. These variables were identified through interviews with local community members, decision makers across the world, and staff at the Bill & Melinda Gates Foundation.*

In this analysis, two types of software entrepreneurs were studied: 1) founders who reached significant scale at their firms, i.e., 100 or more employees, and 2) top performers who built fast-growing companies that were larger than 90 percent of peer firms at the same age.[†] The findings among both groups were consistent.

The first thing that was apparent in this analysis was that founders who spent more years working before launching their companies tended to build companies that grew faster. Specifically, when a company's founder or cofounders had worked for a combined total of 20 years or more, their company was significantly more likely to be a top performer in its community.

Founders who worked longer before starting their firms often used that extra time to do something uniquely valuable. These founders frequently built relationships with established entrepreneurs who had led companies that reached the scale of 100 or more employees.

These connections came in three forms: experience via previous employment, support through mentorship, or early stage investment. Each relationship seems to be quite powerful, as the chart on the following page illustrates. **Receiving experience, mentorship, or investment from an entrepreneur who has led a company to scale was associated with approximately two times greater prevalence of top performance.**[‡]

Interviews with top-performing local founders offer context for interpreting the meaning of this association. These relationships are usually longstanding — typically predating a firm's current performance by several years or more. In addition, the entrepreneurs receiving these connections often credited them with providing knowledge and skills that were critical to the growth of their businesses.

* A partial list of the variables tested in this analyses can be found in the methodology section on page 30.
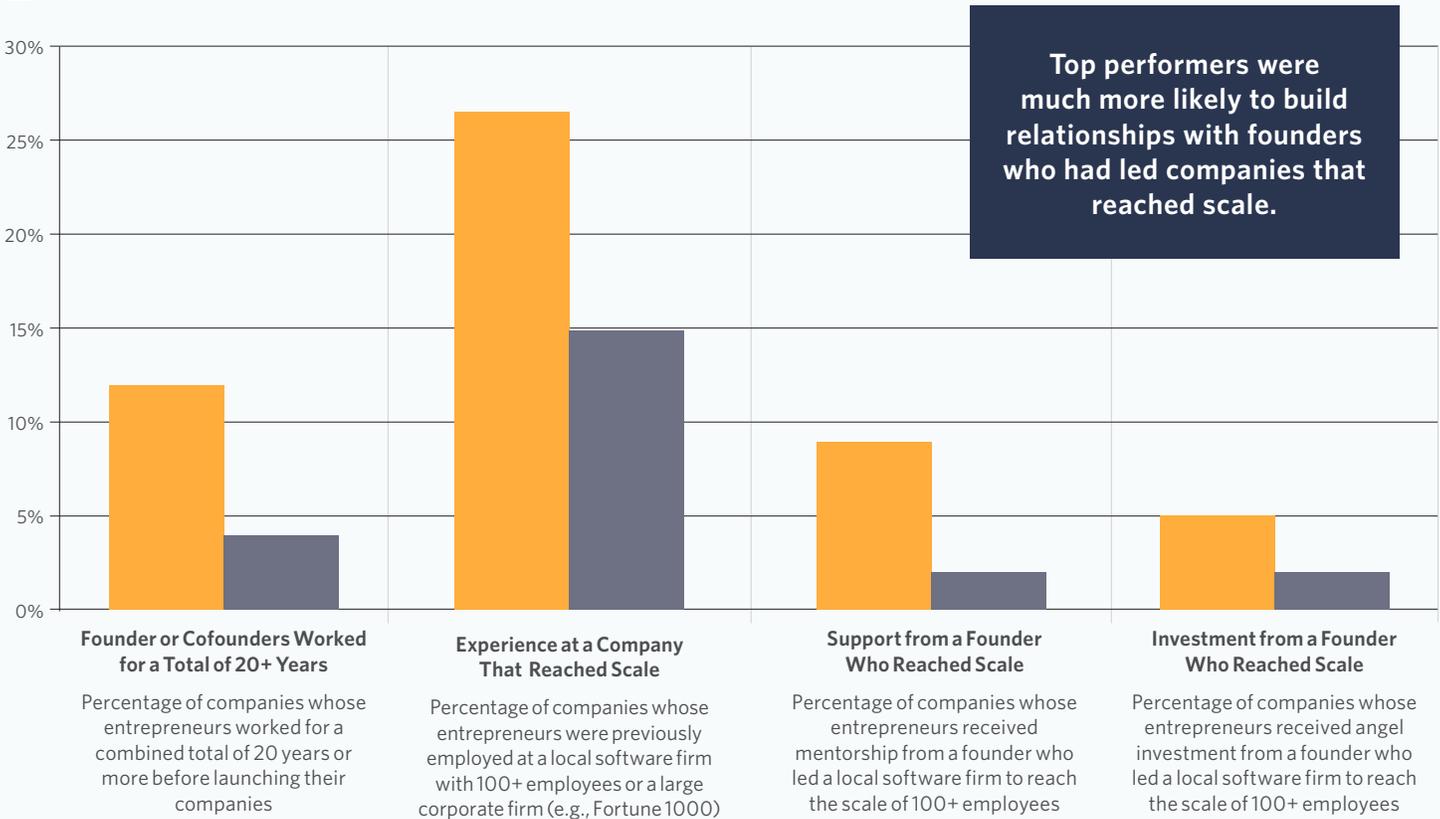† In Bangalore, the analysis tested both types of entrepreneurs. In Dhaka, Lagos, and Nairobi, the analysis tested only the second type of entrepreneurs, due to the sample sizes in each community. No performance analysis could be conducted in the final two cities due to sample size constraints. Peer firms are defined as companies founded in the same year, or age-cohort, and operating in the same city and industry.
‡ These results are significant at the 5 percent level (p < .05). This means that there is a less than five percent chance that the data analyzed would show results of the observed magnitude or greater if the variable tested had no actual effect.

PREVALENCE OF KEY ATTRIBUTES AMONG THE FASTEST-GROWING SOFTWARE FIRMS
Average across the Largest Communities Studied

■ TOP-PERFORMING FIRMS (AT OR ABOVE THE 90TH PERCENTILE)
■ LOWER-PERFORMING FIRMS (BELOW THE 90TH PERCENTILE)

> **Top performers were much more likely to build relationships with founders who had led companies that reached scale.**

	Founder or Cofounders Worked for a Total of 20+ Years	Experience at a Company That Reached Scale	Support from a Founder Who Reached Scale	Investment from a Founder Who Reached Scale

Founder or Cofounders Worked for a Total of 20+ Years
Percentage of companies whose entrepreneurs worked for a combined total of 20 years or more before launching their companies

Experience at a Company That Reached Scale
Percentage of companies whose entrepreneurs were previously employed at a local software firm with 100+ employees or a large corporate firm (e.g., Fortune 1000)

Support from a Founder Who Reached Scale
Percentage of companies whose entrepreneurs received mentorship from a founder who led a local software firm to reach the scale of 100+ employees

Investment from a Founder Who Reached Scale
Percentage of companies whose entrepreneurs received angel investment from a founder who led a local software firm to reach the scale of 100+ employees

Note: The results reported above are significant at the 5 percent level ($p < .05$). This means that there is a less than five percent chance that the data analyzed would show results of the observed magnitude or greater if the variable tested had no actual effect. Percentile performance is evaluated by comparing employment at each firm to peer firms founded in the same year, and operating in the same city and industry. Data above represents the average prevalence across Nairobi, Bangalore, Lagos, and Dhaka. All work experience calculations are based on companies of founders for whom LinkedIn data was available. All support and investment calculations are based on companies of founders who were interviewed or surveyed.
Source: Endeavor Insight.

Examples of these connections can be found in the stories of the entrepreneurs at the successful companies highlighted in the first section of this report. Though Narayana Murthy was not hired at Wipro, he spent several years working at a large software firm outside of Bangalore before launching Infosys.[26] Infosys itself has produced a number of entrepreneurial former employees, including the founders of fast-growing upcoming companies like OnMobile, BigBasket, and Urban Ladder.

The entrepreneurs at Flipkart and Redbus also worked for large tech companies, like Amazon and IBM, before starting their firms in Bangalore. The entrepreneurs at these firms have gone on to become mentors and angel investors for upcoming founders at local fast-growing companies.[27]

These types of connections can also be found among successful founders around the world. In Silicon Valley, Mark Zuckerberg, cofounder and CEO of Facebook, has credited Steve Jobs

of Apple as a critical mentor and received early investments from a number of other entrepreneurs who led companies to reach scale, including Reid Hoffman of LinkedIn.[28] Previous Endeavor Insight research on entrepreneurial tech companies in New York also found that similar relationships of experience, support, and investment between top founders and upcoming entrepreneurs were associated with better performance.[29]

PATTERNS OF INFLUENCE SHAPE THE DEVELOPMENT OF ENTREPRENEURSHIP COMMUNITIES.

The previous lesson demonstrated that connections with founders who have led firms to reach scale can shape the outcomes of an individual company. It is also possible to examine how the connections among all entrepreneurs, companies, investors, and support organizations can shape an entire entrepreneurship community.

Network analyses offer useful tools for evaluating the collective impact of these relationships. These analyses make it possible to track the movement of people, knowledge, and capital within an entrepreneurship community and assess how these factors are associated with increases or decreases in productivity.

Networks influence almost every aspect of human life from emotional well-being to educational achievement to physical health.[30] They have also been shown to have an especially strong impact on economic activities. Networks shape people's ability to find a new job, decisions individuals make about banking services, and even the likelihood that a business survives.[31]

The communities included in this project all have large numbers of connections among the members of their entrepreneurship networks.[*] Though, in terms of variance, there did not seem to be a relationship between the quantity of network connectivity and productivity.[†]

While the quantity of connectivity did not differentiate entrepreneurship communities, analysis of the patterns of influence within each network was quite revealing. This can be seen by returning to the two cities highlighted in previous examples.

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[*] Entrepreneurship network members were defined as actors in the local community whose primary activities involve operating, supporting, or investing in entrepreneurial companies.

[†] Examples of data on the quantity of network connections can be found in Supporting Analysis 3 on page 33. This methodology was based on initial research conducted by Endeavor Insight that was expanded in partnership with members of the Global Entrepreneurship Research Network, including the Kauffman Foundation, MaRS, Nesta, and the World Bank.

NETWORK MAPS: PATTERNS OF INFLUENCE IN EACH SOFTWARE ENTREPRENEURSHIP COMMUNITY

NAIROBI

The most influential actors are the leaders of accelerators and incubators, represented by the largest gray circles.
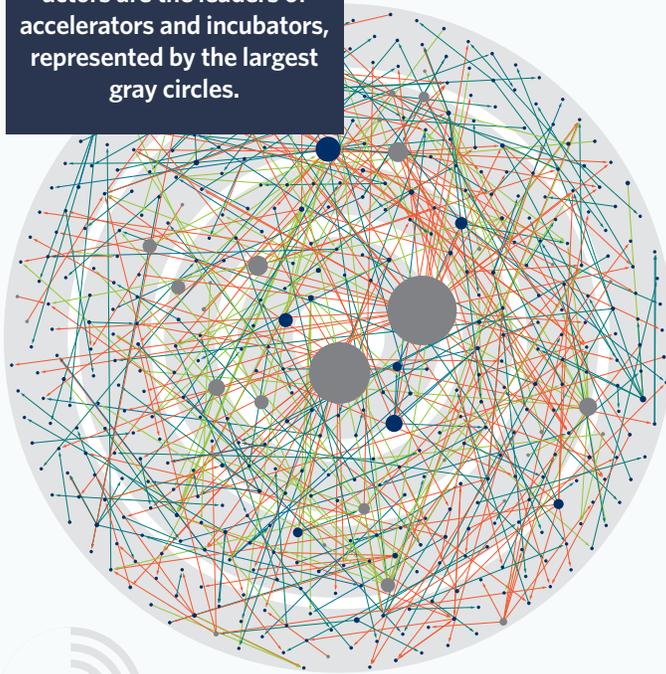
YEAR FOUNDED:
— BEFORE 2006
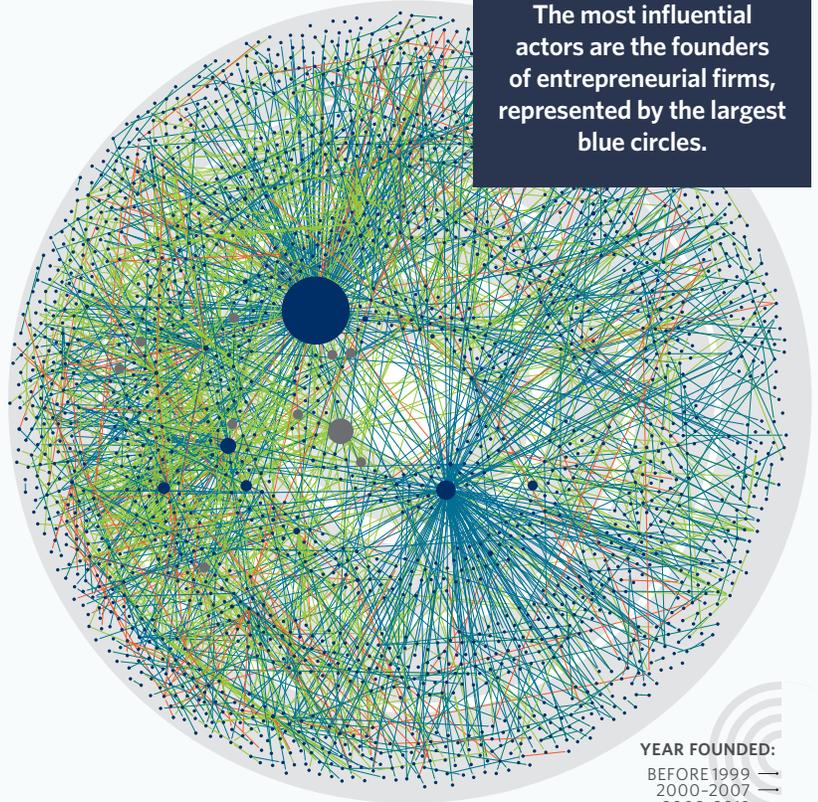— 2007–2010
— 2011–2013
— 2014–2016

ACTORS:

⬤ ENTREPRENEURIAL COMPANIES

⬤ OTHER ORGANIZATIONS (e.g., accelerators, investment firms)

The size of the circle reflects the number of connections originating from the founders of each company or the leaders of each organization. Founders and leaders are represented by their most prominent company or organization.

BANGALORE

The most influential actors are the founders of entrepreneurial firms, represented by the largest blue circles.

YEAR FOUNDED:
BEFORE 1999 —
2000–2007 —
2008–2012 —
2013–2016 —

CONNECTIONS:

→ EXPERIENCE: Former employment or serial entrepreneurship

→ SUPPORT: Mentorship or program participation

→ INVESTMENT: Angel or venture capital

Note: The influence represented by the circle sizes of actors are based on different scales in each city to maximize visibility. Source: Endeavor Insight.

PATTERNS OF INFLUENCE IN ENTREPRENEURSHIP NETWORKS

The network maps above illustrate the patterns of influence found in Bangalore and Nairobi. This influence is made up of connections observed among founders of entrepreneurial companies (represented by blue circles), as well as investors and leaders of support organizations (represented by gray circles). The connections are depicted by arrows that indicate which actor is supporting, providing investment to, or had formerly employed the other.

The total influence of each actor is represented by the size of their circle in the network maps. The larger the circle, the greater the influence the actor has on their entrepreneurship community.

In Bangalore, the most influential actors tend to be entrepreneurs at large, established companies, like Infosys and Wipro. These companies are represented by the largest blue circles near the map center. In Nairobi, the most influential actors lead organizations that are not entrepreneurial companies. These organizations are the ones operating accelerators, incubators, and business plan competitions for local, early stage startups. They are represented by the larger gray circles in the city's map.
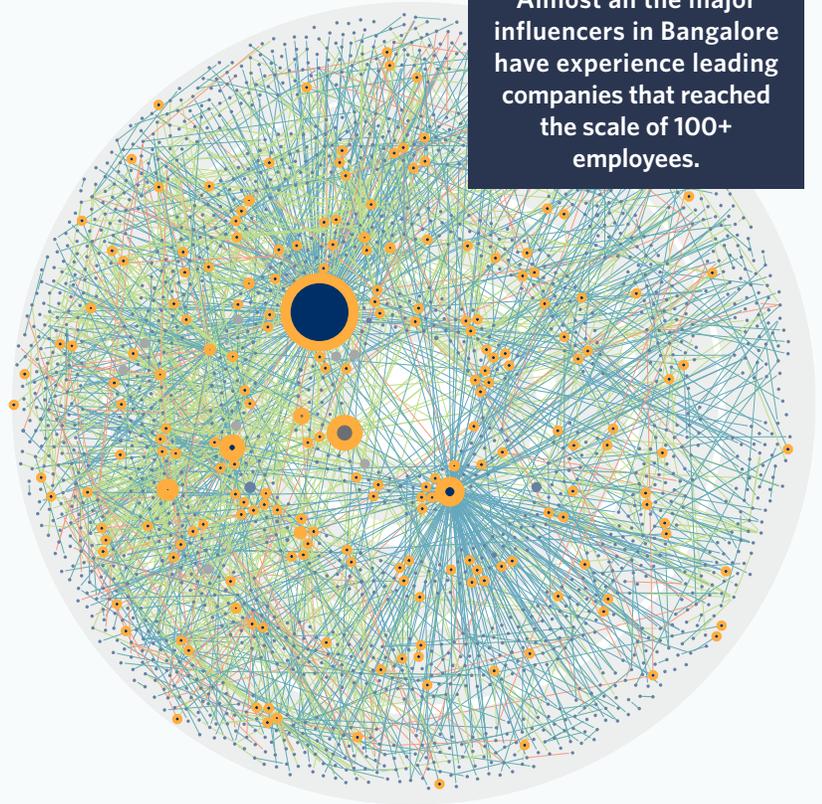
NAIROBI

Only a few influencers in Nairobi have experience leading companies that reached the scale of 100+ employees.
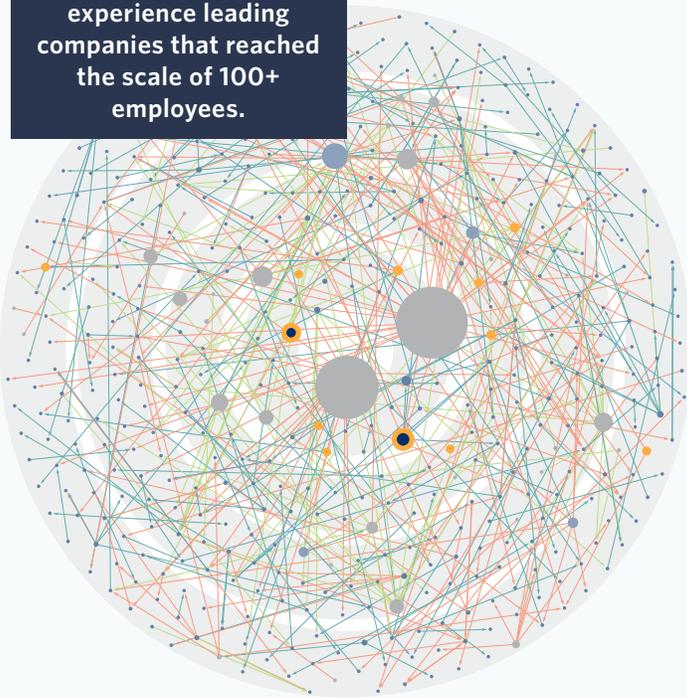
BANGALORE

Almost all the major influencers in Bangalore have experience leading companies that reached the scale of 100+ employees.

Source: Endeavor Insight.

PATTERNS OF INFLUENCE IN BANGALORE'S NETWORK

Bangalore's entrepreneurship community illustrates a common principle observed in network systems commonly referred to as "like-attracts-like."[32] According to this principle, network members tend to build relationships with people who share common characteristics. Sociologists point to this tendency when explaining why people usually form close friendships with others who are relatively similar in terms of age and levels of education.[33] The principle of like-attracts-like can also help to explain some of the unique characteristics of individual entrepreneurship communities.

In Bangalore, a number of influential community members are boomerang founders who spent time working or studying outside of India before returning and starting a company.[34] These founders are significantly more likely to build relationships with other boomerangs. In this manner, like has attracted like: as a small group of boomerang entrepreneurs became more influential in the community, the total number of boomerang entrepreneurs increased.

The patterns of influence in Bangalore reveal other important characteristics about the local community. **Many of the most influential network members in Bangalore are companies and investment firms run by individuals with experience**

leading entrepreneurial companies that have reached the scale of 100 or more employees.[*] This can be seen in the orange highlights in the network maps above.

The high levels of influence coming from these network members are likely to attract new entrepreneurs who aspire to build companies that reach scale. These influencers also implicitly communicate messages to other community members about what is valued in the network through their attributes and actions.[†] Founders in the city who wish to earn status and influence among their peers are given signals from the community that building a large and successful company is the best way to reach this goal.

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[*] Experience leading an entrepreneurial company that reached the scale of 100 or more employees was defined as being a founder or C-level executive at a firm of this size. Leadership in a local organization was defined as a general partner or CEO of an investment firm; a board member, CEO, or executive director at a non-profit organization; and a founder or cofounder of an entrepreneurial company.
[†] These entrepreneurial companies that reached scale were often the first thing that respondents mentioned about these influencers in project interviews, which suggests that reaching scale was broadly seen as the primary source of their credibility.

BLACK HIGHLIGHTS: LEADERSHIP INCLUDES NO ONE WITH ENTREPRENEURIAL EXPERIENCE AS A FOUNDER OR C-LEVEL EXECUTIVE.
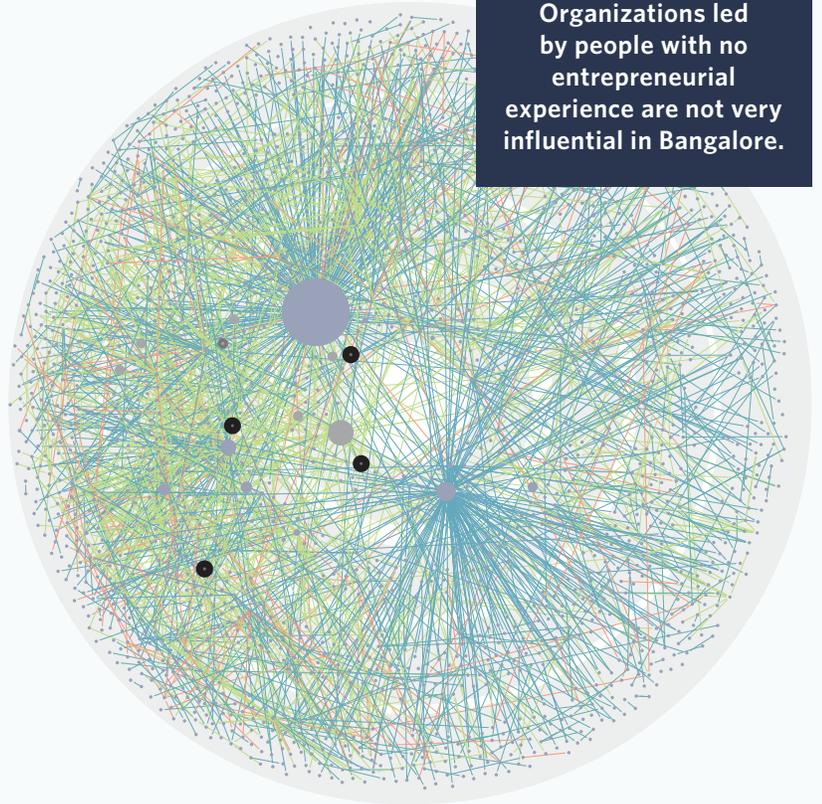
NAIROBI

Most of the influential organizations in Nairobi are led by people with no entrepreneurial experience.
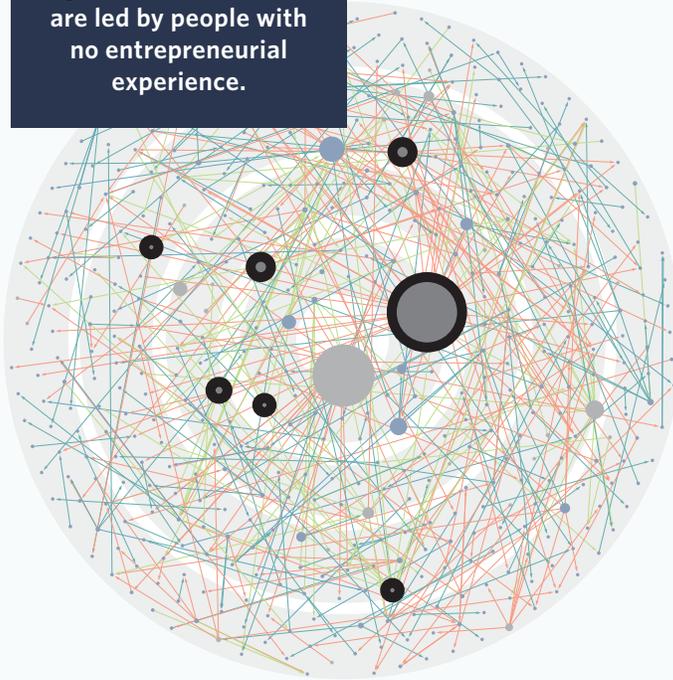
BANGALORE

Organizations led by people with no entrepreneurial experience are not very influential in Bangalore.

Source: Endeavor Insight.

PATTERNS OF INFLUENCE IN NAIROBI'S NETWORK

The patterns of influence found in Nairobi are very different than those in Bangalore. These patterns offer an important perspective on the results of the real-world experiment initiated by the decision makers who fund early stage support programs in the city.

The most influential organizations in Nairobi are the accelerators, incubators, and business plan competitions. These organizations are often launched and led by expats.* The principle of like-attracts-like suggests that these influential expats would act as a magnet to draw in similar people. This seems to be the case in Nairobi.

As the first section noted, the city now includes a large number of expats working as software entrepreneurs.

Though the prevalence of expat founders is unique, the data collected for this project does not indicate that their presence reduces productivity. However, a different characteristic of the local network does seem to have a negative impact on entrepreneurs' performance.

Many of the most influential accelerators, incubators, and business plan competitions in Nairobi are run by people with no entrepreneurial leadership experience. [†] This is illustrated by the black highlights in the map above. These organizations are funded primarily by grants from

governments, donors, and corporations. This use of grant funding may be communicating unique signals about what should be valued to the founders they support. Entrepreneurs participating in these organizations are much more likely than other local founders to rely on grant funding themselves. Unfortunately, this type of funding is not associated with significantly improved performance among companies in the city.

The negative effects of these programs are not just limited to the promotion of grants. The influence of organizations run by people with no entrepreneurial experience can also help to explain the lack of productivity in the community, as the next section will demonstrate.

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* Leadership in a local organization was defined as a general partner or CEO of an investment firm; a board member, CEO, or executive director at a non-profit organization; and a founder or cofounder of an entrepreneurial company.
† Entrepreneurial leadership experience was defined as being a founder or C-level executive at an entrepreneurial company.

WHEN PEOPLE WHO HAVE LED FIRMS THAT SCALED ARE MORE INFLUENTIAL, IT EMPOWERS ENTREPRENEURSHIP COMMUNITIES TO BE MORE PRODUCTIVE.

The patterns of influence in entrepreneurship networks offer additional insights into the results of the collective actions taken by local actors. Analyses of these patterns can help to illuminate why Bangalore's software community is so productive and why Nairobi's community has been less able to realize its potential.

As the network map on page 16 noted, the patterns of influence in Bangalore are dominated by people who have led firms that reached scale. **Over 40 percent of the experience, support, and investment in Bangalore's network comes from people who led companies that reached 100 or more employees.** These connections are linked to much better performance among recipient companies. Receiving experience, support, or investment from someone who has led a company that reached scale was associated with an increase in the prevalence of top performance of around two to three times among entrepreneurs in the city.*

These patterns of influence seem to have greatly benefited local productivity. Approximately 6 percent of the software companies in Bangalore have reached the scale of 100 or more employees.

In Nairobi, connections from people who led companies at scale are much less common. Less than 10 percent of experience, support, and investment comes from people that led companies that reached the scale of 100 or more employees. Though these relationships are rare, they are still powerful, leading to an average of 1.9 times greater prevalence of top performance in the city.*

A majority of connectivity in Nairobi comes from two types of connections linked to lower performance: experience at a company smaller than 100 employees and support from an organization run by someone with no entrepreneurial leadership experience. These two connection types are associated with a 30 to 50 percent decline in the prevalence of top performance.*

Interviews in the city suggest that founders who worked at smaller companies acquired knowledge and habits that lead them to have much lower rates of entrepreneurial performance. (As page seven noted, the majority of these firms are low-productivity microbusinesses.)

A similar effect is likely occurring among founders participating in accelerators and other support programs run by people with no entrepreneurial leadership experience. The knowledge and skills that can be offered by people without relevant experience are unlikely to lead to high-performance and data shows that these organizations rarely connect founders to other mentors who possess experience at companies that scaled.

Given the frequency of lower performance connections, it might be expected that firms in Nairobi do not scale as often as those in Bangalore. This turns out to be true. Only 1 percent of tech firms in Nairobi reach the scale of having 100 or more employees.

Data from all the cities in this project suggest that Bangalore and Nairobi highlight an important lesson for other communities.† **When people who have led firms that scaled are more influential, it helps to empower their entrepreneurship communities.** The influence of leaders who have scaled is associated with better performance among individual companies and greater productivity among the cities in this study.

This conclusion is consistent with Endeavor's experience working with fast-growing global entrepreneurs in a wide variety of industries. It also makes basic sense. Increasing the influence of the best performers in a network should have positive results, while increasing the influence of worse performers and people with no relevant experience should have negative effects.

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* These results are significant at the 5 percent level (p < .05). This means that there is a less than five percent chance that the data analyzed would show results of the observed magnitude or greater if the variable tested had no actual effect.
† Examples of data on the proportion of influence created by leaders of companies that scaled can be found in Supporting Analysis 3 on page 33.
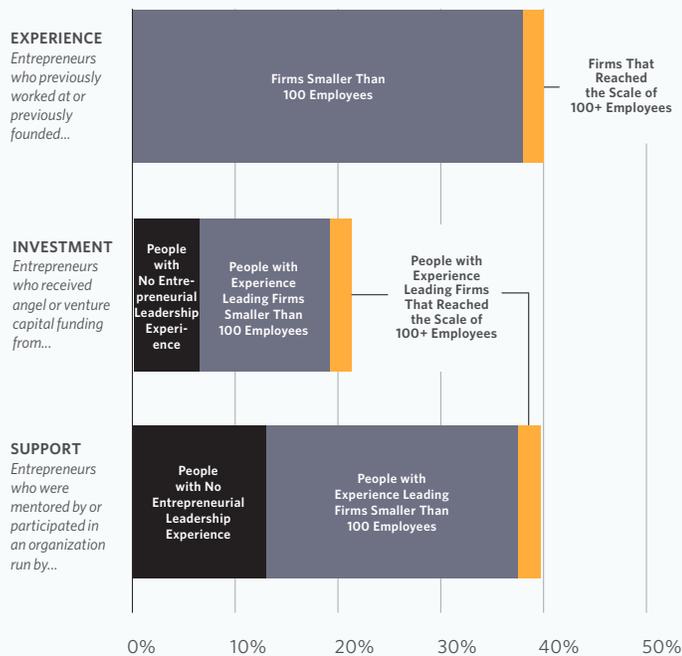
ANALYSIS: PATTERNS OF INFLUENCE IN EACH SOFTWARE ENTREPRENEURSHIP COMMUNITY

NAIROBI
1% of firms reach the scale of 100+ employees

Percentage of All Observed Connections by Type and Source

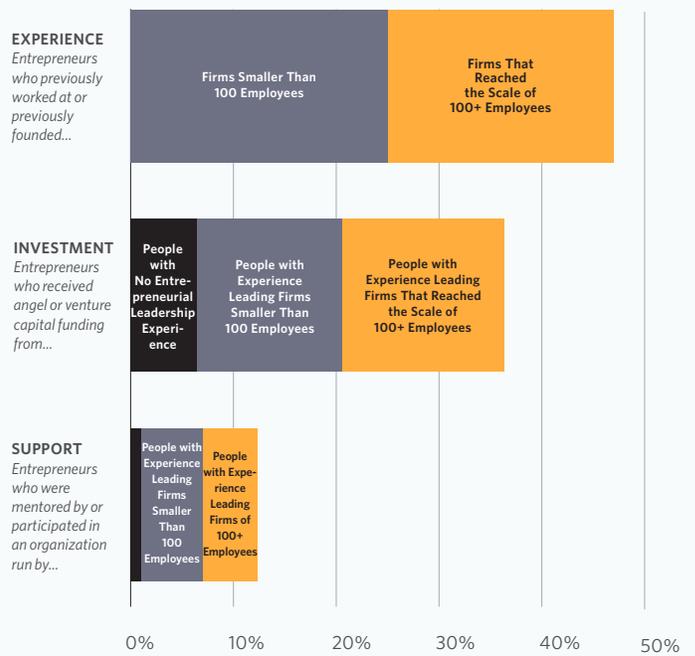> In Nairobi, only a small number of connections come from people who led companies with 100+ employees.

BANGALORE
6% of firms reach the scale of 100+ employees

Percentage of All Observed Connections by Type and Source

> In Bangalore, over 40 percent of the connections come from people who led companies with 100+ employees.

EXPERIENCE
Entrepreneurs who previously worked at or previously founded...

INVESTMENT
Entrepreneurs who received angel or venture capital funding from...

SUPPORT
Entrepreneurs who were mentored by or participated in an organization run by...

Note: Approximately 4 percent of connections in Bangalore and 1 percent of connections in Nairobi could not be classified and were not included in the graph.
Source: Endeavor Insight.

INFLUENCE IS RELATIVE IN NETWORKS.

The patterns of influence found in entrepreneurship communities are important for another reason. One unique aspect of network systems is that influence tends to function in a relative fashion.[35] The ability to change the behavior of 50 people can be very powerful in a group where no other actor can influence more than three individuals, but much less so in a network where most actors influence 100 or more.

In entrepreneurship networks, this fact leads to an underappreciated truth: when decision makers choose to elevate the influence of certain types of actors, they are also implicitly deciding to decrease the relative influence of others. If the founders of Flipkart chose to become active venture capital investors in Bangalore, it would reduce the relative influence of local investment firms led by non-entrepreneurs. Similarly, if a foundation in Nairobi funded a program run by someone with no entrepreneurial experience, it would decrease the relative influence of people who have reached scale.

From a network perspective, it is almost impossible for entrepreneurship programs to have a neutral impact. Even initiatives with short-term outputs that seem positive may have negative long-term impacts if they elevate leaders who weaken the local entrepreneurship network.

HUBS IN ENTREPRENEURSHIP NETWORKS ARE PERSISTENT.

Analyses of many different networks have also shown that once an entity becomes a major influencer, or hub, in a network, it will almost always remain very influential.[36] In fact, as networks grow in size, the influence of major hubs often increases. Even when new influencers arise, they often look very similar to the current network leaders, due to the effects of like-attracts-like. Because of this, the patterns of influence in a network today are often the best predictor for the patterns of influence in the future.

When decision makers transform entrepreneurship networks by elevating specific types of actors, these actions are likely to have long-term impacts. The choices of people seeking to guide entrepreneurship communities can continue to shape local founders even after those decision makers and their organizations are no longer involved.

DECISION MAKERS SHOULD SUPPORT AND ELEVATE THE INFLUENCE OF PEOPLE WHO HAVE LED COMPANIES THAT SCALED AND INCENTIVIZE THEM TO ASSIST UPCOMING FOUNDERS.

HOW CAN DECISION MAKERS EMPOWER ENTREPRENEURSHIP COMMUNITIES TO BECOME MORE PRODUCTIVE?

Though the analyses used to assess collective impact in this project are complex, the solution proposed by the study is simple. **Decision makers should support and elevate the influence of people who have led companies that reached scale and incentivize them to share their knowledge, capital, and other resources with upcoming founders in their cities.***

This is not a radical idea. It only requires that entrepreneurship communities be encouraged to operate as meritocracies in which the behaviors that promote growth are rewarded. Bangalore's software sector provides a useful illustration of the benefits of this strategy. Other successful examples can be seen in the entrepreneurship communities of Silicon Valley and New York City. As a general rule, activities that increase the influence of people with experience leading companies that reached scale should be encouraged, and those that undermine their influence should be discouraged.

Decision makers violate this principle when they implement programs that elevate the influence of people with no entrepreneurial experience. These programs are likely to decrease the performance of local companies and reduce the productivity of entrepreneurship communities.

The accelerators, incubators, and business plan competitions tested in Nairobi between 2007 and 2016 provide an illustration of the results of these types of programs.

Though the growth of MPESA and the success of the local companies cited on page eight have demonstrated that the city has the potential to generate productive tech businesses, these programs did not support a single company that reached significant scale during that ten year period. Even worse, since most of these organizations are run by people with no entrepreneurial experience their work has also weakened the relative influence of community members who have led entrepreneurial companies that reached scale.

The results of this real-world experiment on entrepreneurship support programs offer valuable lessons to other communities. However, as any researcher can attest, experiments cannot be considered a success if people refuse to learn from them.

The final two sections of this report contain resources for decision makers who wish to promote productive patterns of influence in local communities. The first outlines how to develop a strategic approach that empowers the most qualified leaders in an entrepreneurship community. The second offers practical recommendations for implementing this type of approach to create a program of Entrepreneur-Led Economic Development.

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* As page eight noted, the threshold used for "significant scale" in this project was set at 100 employees in order to compare the data in this project to that found in previous studies. Decision makers in other communities may find that different employment threshold levels or other measures, such as company valuation or revenues, may be more useful metrics for assessing scale in other entrepreneurship communities depending on the particular features of the community's industry and the availability of data. These approaches can still be aligned with the findings in this report, as long as the metrics used are linked to productivity-related outcomes and there is clear differentiation between scaled firms and average firms in the local entrepreneurship community.

RECAP: FIVE LESSONS ON ENTREPRENEURSHIP COMMUNITIES AND PRODUCTIVITY

① **Entrepreneurship communities are not predestined to follow a single development path.**

As the examples of Bangalore and Nairobi have illustrated, entrepreneurship communities can develop a wide variety of characteristics depending on the choices of local decision makers.

② **Entrepreneurship communities become productive by generating a relatively small number of companies that reach scale.**

Four productivity trends can be observed among the cities studied in this project as well as other communities around the world.

- A large proportion of entrepreneurial companies are low-productivity microbusinesses.
- A small number of companies that reach significant scale generate a very large share of productivity.
- More productive entrepreneurship communities outperform less productive ones by generating more firms that reach scale.
- Firms that go on to reach significant scale tend to grow much faster than peers in their startup years.

③ **Founders of the fastest-growing companies are much more likely to have received experience, support, and investment from leaders of companies that reached scale.**

The founders of the fastest-growing companies observed in this project were much more likely to build connections with people who had led companies that reached significant scale, i.e., 100 or more employees. These high-value connections came in three forms: experience via previous employment, support through mentorship, or early stage investment.

④ **Patterns of influence shape the development of entrepreneurship communities.**

A number of common principles of network systems can be applied within entrepreneurship communities to help illuminate the ways in which they develop. For example, the principle of like-attracts-like helps to explain the pattern of specific types of members (e.g., expats or boomerang founders) attracting others like themselves to each community as they become influential. Another principle illustrates how influential members transmit value signals to other network members that can shape their behavior.

⑤ **When people who have led firms that scaled are more influential, it empowers entrepreneurship communities to be more productive.**

The prevalence of more experience, support, and investment coming from people who have led firms that reached scale can offer an explanation for why Bangalore's tech entrepreneurship community is so much more productive than Nairobi's.

Patterns of influence like these are especially critical since network systems tend to function in a relative fashion and persist over time. When leaders elevate the influence of specific types of actors in a local entrepreneurship community, their actions can have long-term benefits or consequences.

ENTREPRENEURSHIP COMMUNITIES SHOULD BE SUPPORTED USING BOTTOM-UP APPROACHES THAT PROMOTE PRODUCTIVITY AND MERITOCRACY.

The strategic approaches used in entrepreneurship communities across the world can lead to significantly different outcomes, as the examples of Bangalore and Nairobi demonstrate. These approaches can generally be categorized into two groups based on the type of people they empower to set their agendas.

The collective practices observed among most of the organizations working in Nairobi could be characterized as a "top-down" approach to entrepreneurship community development. In this type of approach, objectives are set primarily by individuals from outside the entrepreneurship community who have no experience leading entrepreneurial companies.

These individuals are often foreign "experts" and "technical advisors," or local professionals drawn from non-profit sectors, such as NGOs, government, or academia. These advisors and non-profit professionals place themselves above the community by excluding local entrepreneurial leaders from decision making processes.

A different set of collective practices is highlighted in the example provided from Bangalore. When the objectives of programs are set primarily by local entrepreneurial leaders, they can be said to be pursuing a "bottom-up" approach to entrepreneurship community development.

In practice, bottom-up initiatives are almost always run by the leaders of local companies that have reached scale, since they tend to have the most credibility and also possess the financial resources required to launch new programs. These leaders can be seen serving in roles that include day-to-day executives at local investment firms and organizations, as well as members of the boards of directors

for individual programs. It may seem strange for bottom-up approaches to be directed by leaders of local companies that have reached larger levels of scale. This is only a sign that founders prefer to be led by the most qualified members of their communities.

Bottom-up approaches can also supplement the existing base of local entrepreneurial leaders who have reached scale in a sector by incorporating successful founders from other, related industries in the same city, as well as founders who reached scale in the same sector in a different location. This allows communities to leverage broader local networks as well as immigrants to the area and members of diaspora populations.

These two strategic approaches have very different impacts on entrepreneurship communities. Top-down strategies elevate the influence of people with no experience leading entrepreneurial companies. In this way, they are somewhat ironic. Top-down practitioners believe that local entrepreneurs are highly capable, but not so capable that they should be allowed to lead decision making in their own communities.

This style of approach undermines the existing sense of local meritocracy by communicating to founders that it is possible to earn status in the entrepreneurship community without building companies that reach scale. These actions are likely to have negative consequences on local productivity.

COMMON APPROACHES OBSERVED IN ENTREPRENEURSHIP COMMUNITIES

BOTTOM-UP APPROACHES for Supporting Local Entrepreneurs	TOP-DOWN APPROACHES for Supporting Local Entrepreneurs
LEADERSHIP & FINANCING:	
• **Objectives** are identified by leaders of local companies that reached scale	• **Objectives** are identified by people outside the community with little-to-no participation by local entrepreneurial leaders
• **Ongoing decision-making authority** includes a significant number of top-performing founders, though others can be involved as well	• **Ongoing decision-making authority** excludes leaders of local companies that reached scale and often rests outside the community
• **Funding** includes tangible contributions from leaders of local entrepreneurial companies	• **Funding** comes exclusively from outside of the entrepreneurship community
RESULTS:	
• **Elevates** the influence of people with experience scaling local companies: typically successful local entrepreneurs or emigrants from the community who are successful founders elsewhere	• **Elevates** the influence of people without experience scaling local companies: typically foreign advisors or local non-profit professionals with no entrepreneurial leadership experience

Source: Endeavor Insight.

Bottom-up approaches support meritocracy by reinforcing the influence of local entrepreneurial leaders who have reached scale. By doing so, they communicate that status in the community comes from building companies that scale. These practices should help to increase productivity in entrepreneurship communities.

It is important to note that bottom-up approaches must also be designed to avoid certain risks. These include creating monopolies of influence and perpetuating systemic biases that exclude people based on attributes that are unrelated to performance, such as gender or ethnicity.

In practice, programs can fall somewhere in the middle of these two approaches by incorporating elements of each. However, decision makers should remain critical as they evaluate the approaches taken by local organizations. Top-down initiatives can often be disguised as "community-led" or "founder-centric" by incorporating participation of a token entrepreneur, input from community advisory boards, or limited initiatives to collect data from founders. Unless leaders of entrepreneurial companies are empowered to set or change program objectives, this is only a façade.

Decision makers may choose to support entrepreneurship communities for a variety of reasons. For those who are primarily interested in outcomes like job creation and economic growth the results of this study are clear. **If decision makers wish to increase productivity, they should prioritize reversing top-down approaches and implementing bottom-up initiatives.** As network analyses indicate, the patterns of influence that develop in an entrepreneurship community are likely to shape the culture and productivity of its entrepreneurs in the present and for many years to come.

ENTREPRENEUR-LED ECONOMIC DEVELOPMENT OFFERS PRACTICAL STEPS FOR DECISION MAKERS TO PROVIDE LOCAL FOUNDERS WITH BOTTOM-UP SUPPORT.

Endeavor Insight has compiled a set of practical steps decision makers can use to implement a bottom-up approach for supporting local founders. These five actions make up a collective program of "Entrepreneur-Led Economic Development" that uses existing strengths of local entrepreneurial companies to increase the productivity of the community. This program is based on the lessons in this study as well as research in more than 100 other cities across the world.

For additional information on how these steps can be implemented in an entrepreneurship community, please contact the authors of this study.

AVOID THE "MYTHS OF QUANTITY."

Many decision makers assume that increasing the quantity of startups, support organizations, or connectivity will automatically generate greater productivity in an entrepreneurship community. These assumptions do not seem to be supported by the data in this project.

Most startups are low-productivity microbusinesses. Arbitrarily increasing the number of these companies will not improve local productivity and may have adverse effects.*

Increasing the number of support organizations can also harm a community, since these efforts usually include funding for organizations run by people with no entrepreneurship experience. Similarly, increasing connectivity within a local network would be likely to decrease the relative influence of leaders at companies that reached scale. These leaders are fewer in number and tend to be more discriminating in the ways in which they build relationships.

Strategies that promote quantity for the sake of quantity often lead to actions that ignore the importance of quality. Decision makers can successfully reframe discussions on increasing quantity by asking two questions of any proposed program or initiative: **Who will this be elevating in the local community? What are we telling local founders to value if we support this?**

FOLLOW LOCAL FOUNDERS WHO HAVE REACHED SCALE.

Founders who have reached scale are some of the most knowledgeable economic development researchers in any community. Each business they build represents a successful economic development experiment on the types of companies that can thrive in their city. Unfortunately, decision makers engaging in entrepreneurship communities often ignore local founders when deciding which sectors they will attempt to support. There are numerous examples of policymakers and other leaders wasting millions of dollars trying to build clusters in industries where no local founder has demonstrated "proof of scale" — i.e., real-world evidence that a local company can reach significant scale in the sector.

Mistakes like these can be easily avoided. Before moving forward with programs in new industries or geographies, decision makers should lead discussions using the following question: **What evidence is there that local entrepreneurs can succeed in reaching scale in the targeted industry?**

Founders at scale can provide even more specific signals in their entrepreneurship community. Decision makers who wish to launch initiatives to support entrepreneurs should look to see what types of support programs these founders are currently utilizing. This may reveal opportunities to increase the capacity of existing initiatives that are already successful.

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* An argument can be made that many less-productive entrepreneurship communities would benefit from having fewer startups. From a strictly mathematical perspective, reducing the number of low-productivity firms would automatically increase the average productivity among firms in a local network. In addition, it would better concentrate limited local resources, such as support from leaders who have scaled, financial capital, and skilled employees, among firms that are more productive.

LISTEN TO LEADERS OF THE FASTEST-GROWING FIRMS TO IDENTIFY THE MOST CRITICAL CONSTRAINTS IN THE LOCAL ENTREPRENEURSHIP COMMUNITY.

Founders of the fastest-growing companies are small in number, but critically important to the productivity of any entrepreneurship community. Data also shows that they face different obstacles than most other entrepreneurs.

For example, in the cities within this project, the founders of the fastest-growing firms frequently reported that their greatest challenge was access to talent, unlike the majority of other entrepreneurs who tended to struggle with access to finance. This was a surprise to many local leaders, but it represents an important finding. Since the fastest-growing companies are responsible for a very large share of productivity, addressing the obstacles they face will arguably have the greatest impact on the community.

The challenges faced by these founders are also useful because they are the best indicator of the systemic constraints in the local community. Any time an entrepreneur reports that something is a challenge, it is important to assess if this challenge is primarily due to the constraints of the founder's personal talents, or the constraints of the broader environment for all entrepreneurs. Since founders at fast-growing firms are the most talented performers in a community, compiling their collective needs can give decision makers the most valuable perspectives on the true constraints of the broader community.

Decision makers can use the following question to focus thinking along this line: **What challenges have the leaders of the fastest-growing local companies identified as major obstacles and are those challenges targeted in this initiative?**

EXPAND EXISTING MECHANISMS THAT LEADERS OF COMPANIES AT SCALE USE TO INFLUENCE UPCOMING FOUNDERS.

Data from this study shows that the leaders of entrepreneurial companies that reached scale can improve the performance of local founders by acting as mentors and investors. Though these mechanisms are powerful, there is reason to believe they are underutilized — even in highly productive communities like Bangalore.

The typical entrepreneurs at scale in the cities in this study are only mentoring a single entrepreneur in their communities, if they are active as mentors at all. The same is true for investment. Data from previous research studies indicates that entrepreneurial leaders can successfully mentor founders of two to three companies at a single time. Similarly, local founders who are angel investors can have upwards of five or more companies in their investment portfolios.

If every founder of a company that reached scale who was not active as an investor or mentor would commit to supporting one company in each of these two ways, the amount of investment and support coming from top entrepreneurial leaders in communities like Nairobi and Bangalore would more than double. This increase could grow even further if the leaders at firms that reached scale who are already active as mentors and investors took on a second or third protégé or investee.

The key question that decision makers can use to support action in this area is this: **How can we encourage the leaders of entrepreneurial companies that have reached scale to be more active influencers of upcoming founders in this community?**

INVITE LEADERS OF COMPANIES AT SCALE TO POSITIONS OF INFLUENCE AT EXISTING SUPPORT ORGANIZATIONS.

One of the potential challenges highlighted by this research is the consistency of patterns of influence in entrepreneurship communities. Once an entity becomes a hub in a local network, it is very likely to remain one, even if it was created by leaders who are not qualified to assist entrepreneurs.

Stakeholders who wish to pursue bottom-up approaches should look at influential organizations led by people with no entrepreneurial experience as opportunities for positive transformation. If founders and executives at local companies that have reached scale can be invited to join the leadership of these organizations, they may be able to provide benefits similar to those seen at organizations that are already run by people with experience leading companies that reached scale. These leadership positions could include day-to-day roles or positions on an organization's board of directors.

Decision makers considering support for initiatives that are run by people who lack leadership experience at companies that scaled can use two questions to help frame their engagement. **Where are there opportunities to involve the leaders of companies that reached scale into executive or board-level roles at support organizations? If these leaders decline to participate, is this a signal that certain programs should be changed significantly or discontinued?**

ENDNOTES:

1 Browne, Ryan. "Walmart Agrees to a $16 Billion Deal to Buy a Majority Stake in India's Flipkart." CNBC. 9 May 2018, www.cnbc.com/2018/05/09/walmart-agrees-deal-to-buy-a-majority-stake-in-indias-flipkart.html.

2 "INFY: Summary for Infosys Limited American Deposi." Yahoo! Finance. 27 June 2018, finance.yahoo.com/quote/infy?ltr=1.
"WIT: Summary for Wipro Limited." Yahoo! Finance. Yahoo!. 27 June 2018, finance.yahoo.com/quote/WIT?p=WIT.

3 Endeavor Insight analysis.

4 "Bangalore will become the world's largest IT cluster by 2020."The Hindu Business Line. 12 November 2014, https://www.thehindubusinessline.com/info-tech/%E2%80%98Bangalore-will-become-the-world%E2%80%99s-largest-IT-cluster-by-2020%E2%80%99/article20909098.ece.

5 Murthy, Narayana. "The Azim Premji I Know: Narayana Murthy on the Wipro Legend's Extraordinary Legacy." The Economic Times. 17 Aug. 2016, economictimes.indiatimes.com/magazines/panache/the-azim-premji-i-know-narayana-murthy-on-the-wipro-legends-extraordinary-legacy/articleshow/53732147.cms.

6 Infosys Limited. "Company History & Defining Milestones | About Us." Infosys. www.infosys.com/about/Pages/history.aspx.

7 Ibid.

8 Basu, Kaushiki. "India's Emerging Economy: Performance and Prospects in the 1990s and Beyond." MIT Press, p. 218–219.

9 Vardaan. "Flipkart, Ola and Other Indian Startups Launch A Nasscom-Like Lobby Group Indiatech.org." IndianWeb2.Com. IndianWeb2.Com. 28 Sept. 2017, www.indianweb2.com/2017/09/28/flipkart-ola-indian-startups-launch-nasscom-like-lobby-group-indiatech-org/. "Nandan Nilekani: Aadhaar Architect Set to Turn Peacemaker." The Economic Times. Economic Times. 24 Aug. 2017, economictimes.indiatimes.com/tech/ites/nandan-nilekani-aadhaar-architect-set-to-turn-peacemaker/articleshow/60214015.cms.

10 Endeavor Insight analysis.

11 Endeavor Insight analysis.

12 Runde, Daniel. "M-Pesa And The Rise Of The Global Mobile Money Market." Forbes. 12 Aug. 2015, www.forbes.com/sites/danielrunde/2015/08/12/m-pesa-and-the-rise-of-the-global-mobile-money-market/.

13 Hughes, Nick, and Louie, Susie. "M-Pesa: Mobile Money for the 'Unbanked' - Turning Cellphones into 24-Hour Tellers in Kenya." innovations. Winter & Spring 2007, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2012/06/innovationsarticleonmpesa_0_d_14.pdf

14 Furdelle, Olivier, and Sadoulet, Loic. "Vodafone M-Pesa: "Unusual Innovation" - From a Corporate Social Responsibility Project to Business Model Innovation." INSEAD. Sept. 2014, https://centres.insead.edu/social-innovation/what-we-do/documents/INSEADSocialInnovationCentre5693-Vodafone_MPESA-CS-EN-0-09-2014-w.pdf

15 Suri, Tavneet, and William Jack. "The Long-Run Poverty and Gender Impacts of Mobile Money." Science. American Association for the Advancement of Science, 9 Dec. 2016, science.sciencemag.org/content/354/6317/1288.full.

16 Endeavor Insight analysis.

17 Endeavor Insight analysis.

18 Endeavor Insight analysis.

19 Endeavor Insight analysis.

20 Cook, Peter And Olafson, Ellen."Growth Entrepreneurship in Developing Countries A Preliminary Literature Review." World Bank, p. 13. "Global Entrepreneurship and the Successful Growth Strategies of Early-Stage Companies." World Economic Forum, p. 60-67. "Entrepreneurship at a Glance 2017." OECD, p. 35-50.

21 Endeavor Insight forthcoming paper.

22 Neumann, Jerry. "Power Laws in Venture." Reaction Wheel. Jerry Neumann's Blog. 2 Dec. 2017, http://reactionwheel.net/2015/06/power-laws-in-venture.html. Zider, Bob. "How Venture Capital Works." Harvard Business Review. Nov. 1998, hbr.org/1998/11/how-venture-capital-works.

23 The Entrepreneurship Database Program at Emory University. "2017 Year-End Data Summary." Feb. 2018, p. 9. https://www.galidata.org/assets/report/pdf/2017%20Year%20End%20Data%20Summary.pdf

24 The Entrepreneurship Database Program at Emory University. "2017 Year-End Data Summary." Feb. 2018, p. 10.

25 The Global Accelerator Learning Initiative. "Accelerating Startups in Emerging Markets: Insights from 43 Programs." May 2017, p. 17. https://www.galidata.org/assets/report/pdf/Accelerating%20Startups%20in%20Emerging%20Markets.pdf

26 Shivapriya, N. "Patni Computer Systems That Spawned Offshoring, Moulded Infosys Men, Finally Fades into Oblivion." Economic Times. 13 May 2012, economictimes.indiatimes.com/tech/ites/patni-computer-systems-that-spawned-offshoring-moulded-infosys-men-finally-fades-into-oblivion/articleshow/13041550.cms.

27 Endeavor Insight analysis.

28 Morris, Rhett. "Mentors Are The Secret Weapons Of Successful Startups." TechCrunch 9 May 2018, https://techcrunch.com/2015/03/22/mentors-are-the-secret-weapons-of-successful-startups/. Feloni, Richard. "An investor's story from Mark Zuckerberg's early years adds another dimension to the confident, articulate Facebook CEO." Business Insider 16 Nov 2017, https://www.businessinsider.com/linkedin-reid-hoffman-how-mark-zuckerberg-evolved-2017-11.

29 Endeavor Insight. "The Power of Entrepreneur Networks: How New York City Became the Role Model for Other Urban Tech Hubs." Nov. 2014, p. 11. http://www.nyctechmap.com/nycTechReport.pdf

30 Jackson, Matthew O. "An Overview of Social Networks and Economic Applications. Handbook of Social Economics." 25 June 2015, p. 11-26 https://web.stanford.edu/~jacksonm/socialnetecon-chapter.pdf.

31 Ibid.

32 Ibid.

33 Ibid.

34 Endeavor Insight analysis.

35 Jackson, Matthew O. "An Overview of Social Networks and Economic Applications. Handbook of Social Economics." 25 June 2015, p. 11-26 https://web.stanford.edu/~jacksonm/socialnetecon-chapter.pdf.

36 Ibid.

METHODOLOGY:

GLOSSARY:

▶ **Angel investment:** an investment in a company made by an individual, not on behalf of a business or investment firm.

▶ **Entrepreneurial firms:** for-profit businesses that are started by individuals who possess ownership and control of the firm. This excludes businesses that began as either government entities or subsidiaries of larger companies.

▶ **Local companies:** businesses that were founded or are currently headquartered in a city's metropolitan area. The six cities included in this study are Bangalore, India; Dar es Salaam, Tanzania; Dhaka, Bangladesh; Kampala, Uganda; Lagos, Nigeria; and Nairobi, Kenya.

▶ **Mentorship:** a connection through which a mentee will meet the mentor at least three times for a minimum of 30 minutes to discuss critical business issues.

▶ **Metropolitan area:** the boundaries of a city's metropolitan area are defined using local input.

▶ **Serial entrepreneurship:** the activity of founding of a company by someone who previously founded one or more companies.

▶ **Software companies:** firms where the primary business activity is either software development, fintech, or e-commerce.

▶ **Spin-off:** a company started by a former employee of another company.

▶ **Startups:** companies founded no more than three years earlier.

▶ **Target companies:** entrepreneurial firms founded or currently headquartered in the city's metropolitan area and in the software industry.

▶ **Top performer:** a company in the top decile of all local, entrepreneurial companies founded in the same year based on its number of employees.

SAMPLING FRAME:

Companies were considered "targets" and included in the sampling frame if they met the following criteria:

1. The company is local.

Companies were included if they were:

a) Founded in the city's metropolitan area, or

b) Currently headquartered in the city's metropolitan area after they were founded elsewhere.

Target companies also included businesses that have closed after being founded or headquartered in the metropolitan area, and those that have been acquired after being founded or headquartered in the area.

2. The company fits the definition of a technology company.

Software companies are defined as for-profit businesses whose primary activity could be described as either:

a) Software development for enterprises (e.g., CRM, logistics systems, or security software), or consumers (e.g., mobile apps, digital gaming); or

b) Internet-based or mobile-based retail or services (e.g., e-commerce or fintech).

This definition excludes firms for which software development is a secondary activity, such as consulting firms and graphic design firms, as well as businesses in which internet and mobile-based platforms are secondary platforms, such as print newspapers.

3. The company is entrepreneurial.

Entrepreneurial companies are those started by individuals. This excludes businesses that began as either:

a) Government entities, or

b) Local divisions of corporations based in other cities.

DATA COLLECTION:

The data collected for this project comes primarily from surveys and interviews with local entrepreneurs and stakeholders.

This study began by identifying "VIP entrepreneurs" and other stakeholders who had an in-depth perspective on the sector (Heads of venture capital firms, government officials, etc.) in each city. VIP entrepreneurs selected for interviews were identified based on:

A) Scale – i.e., the current largest companies in the sector, or

B) Influence – i.e., companies that have made large exits, received a large investments, or were otherwise noteworthy or influential.

The preliminary interviews, which were mostly in person, focused on these important stakeholders. The responses helped establish a list of the sector's most "influential organizations," i.e., organizations with outsized influence. It also provided critical data on the challenges, city characteristics, and each industry's entrepreneurial scene that helped inform later analysis.

The resulting primary company list formed a basis for the study, along with additional companies identified through other sources including databases such as Pitchbook, D&B Hoovers, and Crunchbase, as well as the portfolio companies of investors and entrepreneurship support organizations operating in the city. Only target companies moved forward for further investigation, i.e., those founded or headquartered in the mapped city, entrepreneurially founded and in the selected industry, and those fitting the aforementioned criteria on scale and influence.

Entrepreneurs from the target list received invitations to fill out an online survey or set up an interview (either in-person or over the phone). This mass

outreach campaign used standard questions, but the interviews were adapted to be more conversational.

The survey has remained relatively unchanged over the past few years, with only minor updates to reflect city-specific factors and to address areas where entrepreneurs have been most reticent about sharing data. Endeavor maintains confidentiality, and collected data is accessible only to Endeavor and its research partners.

In order to ensure that the company list was comprehensive, a secondary list of companies was compiled from those mentioned in the interviews and surveys that were not already on the primary list. The secondary list also included additional companies sourced from the portfolio companies of those associated with the new mentions. The secondary list also included new companies found on LinkedIn while collecting data on entrepreneurs and companies. These secondary targets then received invitations to complete surveys and interviews. The research and outreach process was repeated multiple times depending on the size of the city.

Once all outreach was completed, **the founders of target companies received verification emails**, regardless of whether they had been interviewed. The email contained a summary of all their connections, including those mentioned by other founders (e.g., if another interviewee they did not mention as a mentee listed them as a mentor). This verified each connection on both sides. Investors and support organizations received a different email to verify the accuracy of the tech companies in their portfolio.

The number of companies mapped and entrepreneurs interviewed varied depending on the size of the sector.

NETWORK ANALYSES:

The network analysis process within an entrepreneurship community typically lasts 6-9 months, from the preliminary data gathering to the concluding analysis.

Previous research by Endeavor Insight has found that there are **four main connection types among entrepreneurs** that drive the growth of an industry. For analyses that only include connections between entrepreneurial tech companies, these are:

1. Angel investment;
2. Mentorship;
3. Serial entrepreneurship; and
4. Former employee spinoffs.

For analyses that also included support organizations and other stakeholders in the sector, these same four connection types were used while expanding the scope of the first two. Angel investment included all forms of investment. Mentorship was expanded to include any type of entrepreneurship support from a stakeholder in the sector, such as an accelerator or a business plan competition.

To learn about these connections within entrepreneurship communities, the surveys and interviews discussed above focused on five core questions:

1. Who invested in your company? (This includes both angel and institutional investors.)

2. Who was your mentor during the growth and development of your company?

3. Have you founded other tech companies in your city?

4. Which of your former employees have gone on to found tech companies in your city?

5. In which entrepreneurship support organizations has your company participated?

The survey and interviews also asked about work and education history.

LinkedIn provided data to fill in the gaps for founders who did not respond. The responses to these questions formed an edge list of connections among organizations, along with a corresponding set of four types of outbound connections. The edge list then informed all subsequent network analyses and created the network map visualizations in D3.

For all network analyses, **each founder was assigned to only one company or organization**. Where an entrepreneur had founded multiple companies, his or her most prominent company represents his or her influence in the analysis and on the map. This was based on an index of founding date, number of employees, total investment, and exit sizes. Where an entrepreneur had founded an investment firm or support organization, it was the company entity that took precedence (if they founded one), followed by the founder's investment firm, followed by the accelerator or support organization.

The size of an organization's influence in the network was based on directed closeness centrality for unconnected graphs. In other words, the size of an organization was a function of the number of first-, second-, third-, etc. degree connections that the organization and its entrepreneurs had to others in the network.

There was no limit to the degrees of separation that factored into the centrality score. For example, if one mentor led to a chain of mentorship among entrepreneurs, the original mentor's centrality score will increase even if the mentor only directly mentored one entrepreneur. All connections on the map were weighted equally. Financials and employee counts did not factor into an organization's centrality.

Connections accrue to an organization based on the time period in which the connections occurred. Where the year of a connection was unknown, two different

approaches informed the date used in the study. Where year information for a former employee, investment, or founder connection was missing, it was assumed that the year of the connection between the source and the target companies was equal to the year the target company was founded. To estimate a mentorship relationship start year, authors reviewed mentorship relationships.

Companies were only included in the analysis if it was possible to identify their founding year. For companies whose employee count could not be determined, authors used the median number of employees for companies founded in the same year, where companies founded over ten years ago were combined into one cohort. Companies that were no longer operating were included in the analysis if it was possible to find enough data to target them. For companies that were acquired, the number of employees at the time of acquisition were used.

Data was analyzed at least twice for each city; once after the preliminary round and initial data collection period, and then again after confirming information and inferences made from the first round of analysis. The study also analyzed sub-networks based on the education background of entrepreneurs, the impact of VIPs, or any other potentially informative parameters. The proximity of companies in network mapping visualizations does not necessarily reflect the degree of connectivity. However, the maps will occasionally feature clustering sub-networks in order to emphasize the role of specific companies in the sector.

LIMITATIONS:

Omitted variables may have played a role in sampling, creating bias that would otherwise expose gaps in the research process. The study's double interview, verification and analysis procedures were meant to offset any adverse effects. If gaps in or misinterpretations of the data were revealed during the analysis, the map and results were corrected.

While efforts were made to be as complete as possible in data collection by using a mixed methodology for data gathering and a detailed respondent verification process, the observed data used in this study is only a highly developed representation of the entrepreneurship network in each community and may omit certain data or attributes.

PERFORMANCE ANALYSES:

Endeavor Insight gathered data on more than 100 different variables to conduct analyses on the founders of the most productive companies and identify the characteristics that distinguish them from other founders. These variables were identified through interviews with decision makers across the world and staff at the Bill & Melinda Gates Foundation.

This study focused on two types of software entrepreneurs: 1) founders who reached significant scale at their firms, i.e., 100 or more employees, and 2) top performers who built fast-growing companies that were larger

than 90 percent of peer firms at the same age. Peer firms are defined as companies founded in the same year, or age-cohort, and operating in the same city and industry.

In Bangalore, the analysis tested both types of entrepreneurs. In Dhaka, Lagos, and Nairobi, the analysis tested only the second type of entrepreneurs, due to smaller sample sizes in these communities. No performance analysis could be conducted in Dar es Salaam and Kampala due to sample size constraints.

Endeavor Insight tested for the prevalence of these variables among companies that fall into these two

groups, compared with those who did not, by looking across peer firms of the same age within each city. All reported results are significant at the 5 percent level (p < .05).

WHAT DO SCALING COMPANIES DO DIFFERENTLY THAN OTHER BUSINESSES?

EXAMPLES OF ATTRIBUTES TESTED AMONG HIGH & LOW PERFORMING FIRMS:
Analysis conducted across Bangalore, Dhaka, Lagos & Nairobi

- Company goals
- Idea source
- Sub-industry categorization
- At least one female cofounder
- High school education abroad
- University education
- University education abroad
- University education at an internationally top ranking global institution
- Graduate-level education
- University major
- STEM degree
- Combination of STEM and Humanities
- Number of cofounders
- MBA on cofounding team

- Amount of work experience among cofounders
- Functional experience among cofounders (e.g., Sales, Finance, etc.)
- Combination of experience types on cofounding team
- Work experience at a "blue chip" global firm among cofounders (e.g., Fortune 1000 companies)
- Work experience at a publically listed local firm
- Work experience at a publically listed foreign firm
- Work experience at any local entrepreneurial software firm among cofounders
- Work experience at any local entrepreneurial

software firm among cofounders
- Work experience at a top-performing local entrepreneurial software firm among cofounders
- Over 10 years experience at a top-performing local entrepreneurial software firm among cofounders
- Work or study abroad
- Work or study abroad in a Western Country
- Serial entrepreneurship among cofounders
- Any mentoring relationships among cofounders
- Mentoring relationships from top-performing local entrepreneurs among cofounders

- Any external investment
- Any angel investment
- Angel investment from top-performing local entrepreneurs
- Any institutional investment
- Institutional investment from local firms
- Institutional investment from foreign firms
- Institutional investment from impact investment firms
- Institutional investment from top-tier global VC firms
- Institutional investment from top-performing local entrepreneurs
- Grant funding
- Entrepreneurship

support that does not meet GALI criteria
- Accelerator support that includes funding
- Accelerator support that does not include funding
- Accelerator support from a large local organization
- Accelerator support from an organization led by top-performing local entrepreneurs
- Accelerator support from citizen-led organization
- Rating of business obstacles (e.g., equity financing, talent, etc.)
- Social mission alongside financial mission
- Aspiration to scale

SUPPORTING ANALYSES:

SUPPORTING ANALYSIS 1

Endeavor Insight collected data on multiple measures of firm productivity — revenue, employment, and investment —in order to analyze the level of correlation between them. The revenues and number of employees at technology firms in the United States from 2016 were analyzed to test for a relationship. This data was drawn from companies that are publicly listed on the NASDAQ or New York Stock Exchange and that are working in the software sector.

Data from the United States was used because it was the most comprehensive and widely available. Though these very large firms are outliers in their industry, they still showed evidence of a relationship. The results of this analysis showed a significant level of correlation ($r = 0.61$) between revenues and employment.

Similar analysis also showed that the total amount of venture capital investment received by younger software companies is also correlated with their number of employees. This analysis was based on data collected by Endeavor Insight among New York software companies in 2014. Data from New York was used because the amount of venture capital investments is often unavailable or undisclosed in cities outside the U.S. The results of this analysis showed a significant level of correlation ($r = 0.67$) between employment and the total amount of venture capital raised among these firms.

Together, these two analyses demonstrate the relationship between the number of employees, revenue, and amount of investment received among technology companies. Based on correlations like these, Endeavor Insight measures firm productivity primarily based on employment. This metric also allows for comparisons to be made across different industries and geographies.

FIRM SIZE & PRODUCTIVITY WITHIN NATIONS

Country	All Companies with 1 to 9 employees			All Companies with 250+ employees		
	Percentage of All Companies	Percentage of Total Job Creation	Percentage of Total Value Add	Percentage of All Companies	Percentage of Total Job Creation	Percentage of Total Value Add
Belgium	94.6	35.0	24.2	0.1	29.7	37.4
Brazil	85.1	22.8	17.1	0.4	37.9	49.8
France	95.5	31.0	22.7	0.1	36.7	45.0
Germany	83.5	20.0	16.4	0.4	36.9	45.4
Israel	92.3	20.1	25.6	0.2	35.7	37.3
Italy	95.0	45.9	28.9	0.1	20.9	32.0
Mexico	90.4	30.6	8.5	0.2	32.1	61.5
Netherlands	95.2	29.1	21.6	0.2	33.8	36.0
Poland	95.1	36.2	17.7	0.2	31.7	47.7
Romania	88.4	22.9	15.9	0.4	34.2	45.8
Spain	94.8	40.8	25.1	0.1	27.1	38.3
United Kingdom	89.0	17.9	19.5	0.3	46.9	48.1

Source: OECD Entrepreneurship at a Glance, 2017.

SUPPORTING ANALYSIS 2

National-level data from the OECD illiustrates similar trends to those seen in the software entrepreneurship communities of Bangalore, Nairobi, and the other cities in this project. For the countries in Latin America and the Middle East, where OECD data was available, as well as the largest European nations listed above, the smallest firms that can be measured (those with one to nine employees) look very similar to the low-productivity microbusinesses identified in this study. The small firms in each of these national economies, while numerous, contribute a comparatively small amount to total job creation and value added productivity, which the OECD defines as "the difference between production and intermediate consumption, where total intermediate consumption is valued at purchasers' prices." (This measure offers one the best perspectives on direct productivity among firms.)

Conversely, the largest companies in each country (listed here as those with 250 or more employees) represent a very small percentage of firms, but are contributing at least 20 to 47 percent of employment and an even greater proportion of the value add among companies in their countries. This pattern is quite similar to that seen among the companies with 100 or more employees discussed in the research report.

Approximated Results by Entrepreneurship Community

	Bangalore	Dhaka	Lagos	Nairobi	Kampala	Dar es Salaam	New York
Total Firms	3,100	900	800	660	<200	<100	2,600
Total Number of Employees	550,000	22,000	9,500	7,400	<2,000	<1,000	53,000
Average Job Creation per Firm	180	25	12	11	<10	<10	21
Percentage of Firms that Reach the Scale of 100+ Employees	6%	3%	2%	1%	1%	0%	4%
Number of Observed Connections in Local Entrepreneurship Network per Firm	0.9	0.6	1.0	0.8	1.0	0.6	N/A
Percentage of Observed Connections Coming from Leaders of Firms that Reach the Scale of 100+ Employees	41%	11%	15%	6%	<5%	<5%	N/A

Notes: Data collected in New York City reflects year-end totals for 2013. Data for all other cities reflects year-end totals for 2016. An expanded data collection methodology made it possible to assess the level of connectivity per firm and among leaders of 100+ employee firms in all cities except New York. Source: Endeavor Insight.

SUPPORTING ANALYSIS 3

Data from the six entrepreneurship communities studied in this project as well as data collected using a similar methodology among entrepreneurial software companies in New York City highlights a number of patterns on connectivity, influence, and productivity.

The first factor evident among these communities is that communities that are more productive — as measured by total job creation or average job creation per firm — tend to have a larger percentage of local firms that reach the scale of 100 or more employees.

In addition, the quantity of connectivity — as measured here as the number of local experience, support, and investment connections among all actors per entrepreneurial company — show no sort of pattern with respect to productivity. Kampala, the community with the greatest level of connectivity, is among the least productive, while Bangalore, the most productive city is in between the other cities in terms of its connectivity per firm.

Finally, the table lists data on the proportion of connectivity emanating from companies that have reached the scale of 100 or more employees, as well as their leaders. This shows that the communities with higher levels of absolute and average job creation also tend to have a greater proportion of local influence coming from companies that scaled and their leaders. Additional data on each of the cities in this study can be found in the appendix to this report.