

AHEAD OF THE CURVE

LESSONS ON TECHNOLOGY AND GROWTH
FROM SMALL-BUSINESS LEADERS



BCG

THE BOSTON CONSULTING GROUP

The Boston Consulting Group (BCG) is a global management consulting firm and the world's leading advisor on business strategy. We partner with clients from the private, public, and not-for-profit sectors in all regions to identify their highest-value opportunities, address their most critical challenges, and transform their enterprises. Our customized approach combines deep insight into the dynamics of companies and markets with close collaboration at all levels of the client organization. This ensures that our clients achieve sustainable competitive advantage, build more capable organizations, and secure lasting results. Founded in 1963, BCG is a private company with 78 offices in 43 countries. For more information, please visit bcg.com.



AHEAD OF THE CURVE

LESSONS ON TECHNOLOGY AND GROWTH FROM
SMALL-BUSINESS LEADERS

DAVID MICHAEL

NEERAJ AGGARWAL

DEREK KENNEDY

JOHN WENSTRUP

MICHAEL RÜßMANN

RUBA BORNO

JULIA CHEN

JULIO BEZERRA

CONTENTS

3	PREFACE
4	INTRODUCTION
7	LESSONS FROM LEADERS Five Growth Drivers Consistent Lessons, Broad Impact
14	THE OPPORTUNITY FOR FASTER GROWTH AND MORE JOBS
17	A ROADMAP FOR OVERCOMING BARRIERS TO TECH ADOPTION BY SMES An Agenda for Policymakers An Agenda for SMEs
24	APPENDIX 1: METHODOLOGY
27	APPENDIX 2: COUNTRY SURVEY DATA
38	FOR FURTHER READING
39	NOTE TO THE READER

PREFACE

SMALL AND MIDSIZE ENTERPRISES (SMEs) are critical to fueling economic growth and job creation around the world. Their success matters. As SMEs search for ways to grow, they have the opportunity to embrace a new wave of information technologies. With the advent of the cloud, SMEs can access many of the same technologies as giant multinational companies. Yet the adoption of the latest IT by smaller companies has been decidedly uneven. This new digital divide threatens to widen the performance gap of SMEs as the pace of innovation accelerates.

The prospect of a growing technology gulf is relevant both for companies themselves and for policymakers around the world. The experience of technology leaders among smaller businesses shows a strong correlation between the adoption of advanced information technologies on the one hand and growth in revenue and jobs on the other.

To gain further insight into the factors that enable faster growth among SMEs and the role that technology adoption plays, Microsoft commissioned The Boston Consulting Group to prepare this independent report. The findings outlined below have been discussed with Microsoft executives, but BCG is responsible for all the analysis and conclusions.

INTRODUCTION

LUIS GONZALEZ AND PIERRE Schindler saw a national need and a big business opportunity. Although some 35 million Brazilians had private health insurance, second in number only to the U.S., most insurers were unable to offer prescription drug benefits owing to cost and supply chain issues. Many Brazilians shunned expensive medicines, hindering their recovery and increasing their sick days.

Gonzalez and Schindler set out to address both problems by using advanced technology to tackle the complexities of drug benefits programs. Today Vidalink, Brazil's first and largest pharmacy benefit management (PBM) company, is also one of the country's foremost administrators of drug benefits. At the core of its success is a software platform that links together 15,000 Brazilian pharmacies and manages a million transactions per month with the help of two parallel data centers synced through a private cloud. The company's revenues have doubled and its workforce has grown 50 percent, to 185, since 2010. "We are faster and can customize to a greater extent than our competitors," Gonzalez says. "We can also innovate more quickly."

Gonzalez and Schindler are two of many entrepreneurs around the world who recognize the extent to which the latest new wave of IT can dramatically empower small and medium-size enterprises. "The thing about a PBM business model is that it's very scalable. I can send one patient to these stores or 1,000 patients to these stores and my revenues will increase dramatically relative to the incremental cost," Gonzalez says.

Throughout the world, SMEs play a vital role in their countries' economies, often acting as the primary drivers of job and economic growth. SMEs vary widely in their adoption and use of technology—especially the latest IT tools.¹ Vidalink belongs to a subset of SMEs that we call technology leaders. These companies stay ahead of mainstream IT adoption, riding each new advance to improve efficiency, connect with new customers and markets, and compete with much larger play-

ers. They employ the full range of available tools—from productivity software to Internet connectivity to cloud-based services.

Our research shows that technology leaders far outperform their peers in the marketplace. We surveyed more than 4,000 SMEs in five countries—the U.S., Germany, China, India, and Brazil. The leaders in technology adoption from 2010 through 2012, across all industry sectors, created jobs almost twice as fast as other small businesses. Technology leaders also increased their annual revenues 15 percentage points faster than companies with lower levels of technology adoption. The latter companies, which we call laggards, are organizations that have not yet integrated well-established tools into their business models, much less explored the benefits of more advanced technologies, such as cloud-based capabilities.

Herein lies a big opportunity for both SMEs and policymakers around the world. If more SMEs could achieve the growth rates of technology leaders, we estimate that SME revenue could potentially grow by \$770 billion in the five countries we surveyed. SMEs in these countries also have the potential to create an additional 6.2 million jobs. Moreover, an increase in technology leaders would help create more vibrant economies because these companies excel at innovation.

Such opportunities have come along before. The first wave of broad IT adoption, driven by the PC and the basic productivity tools that it spawned, forever changed how organizations operate by enhancing individual productivity and effectiveness. These tools are now a foundational capability of many businesses. The second large wave of IT adoption—which enabled global connectivity and ubiquitous communications—has transformed entire industries by putting information, knowledge, and decision-making power directly into consumers' hands. It has allowed businesses to greatly expand their reach to customers, suppliers, and employees, while a more connected workforce has given rise to global knowledge networks. The adoption of social and mobile applications and Internet-based collaboration tools is extending and intensifying this process.

The third, cloud-based wave of IT adoption—which technology-leading SMEs such as Luis Gonzalez's Vidalink are riding—creates the potential for even more far-reaching innovation and business growth. This is because the cloud gives companies of any size access to capabilities and services that previously were available to only the largest enterprises—at a fraction of their historical cost. Moreover, for companies that make the right moves, cloud-based IT can help them leverage an already connected community of consumers and businesses of unprecedented size.

Government and business leaders around the world should make it a priority to empower SMEs to make full use of this latest wave of IT and to realize the economic benefits associated with it. Since the recent recession, many countries have struggled to create jobs and return to strong economic growth. Our research suggests that greater use of advanced IT by SMEs can potentially boost both growth and employment.

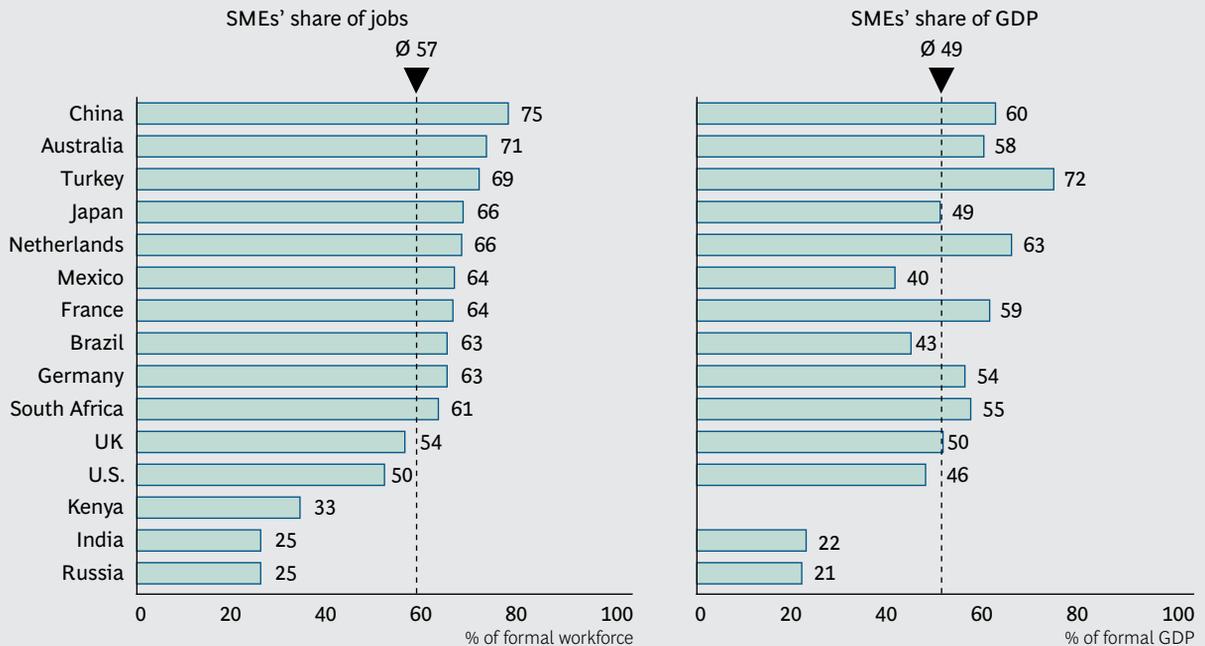
Because SMEs are the principal growth drivers of so many economies around the world, The Boston Consulting Group undertook a comprehensive study of the relationship between these companies' adoption of technology—in the form of new and existing IT tools—and their performance. We benchmarked 15 economies in which SMEs account for up to 72 percent of GDP and as much as 75 percent of total employment. (See Exhibit 1.) We surveyed SME decisionmakers in the U.S., Germany, China, India, and Brazil—five of the world's largest and most diverse economies—and took an inventory of their companies' IT capabilities. These include foundational technologies, such as personal computing and productivity tools; connectivity tools, such as Internet access and the use of mobile technology; online presence and the use of social networks; and enterprise-enabling capabilities, such as cloud-based services. We focused specifically on IT tools and services (hardware, software, and cloud services).

Below we examine the practices that set technology leaders apart and what other companies need to do to catch up. We also assess the sizable potential opportunity for their nations' economies, and we provide a roadmap for companies and countries that want to capitalize on the latest wave of technological innovation.

NOTE

1. Throughout this report, we will use technology and IT interchangeably.

EXHIBIT 1 | Small Businesses Are Major Contributors to Their Countries' Economies



Sources: EU values from European Commission, Small Business Act country fact sheets, 2012; employment limited to the business economy; excludes agriculture, forestry, fishing, education, and health. Russia data from Ministry of Economic Development of the Russian Federation; includes agriculture and fishing. Australia values from Australian Bureau of Statistics; includes all industry sectors and agriculture. South Africa data from National Small Business Amendment Act and South African Institute of Professional Accountants. Other sources include the European Commission, various national government agencies and data sources, and the Associated Chambers of Commerce and Industry of India.

LESSONS FROM LEADERS

IN THE FIVE COUNTRIES we surveyed in depth, we examined SMEs in a wide range of industries and markets through a single lens: how they employ IT tools and how users of these tools perform. We compiled data on IT adoption, identifying patterns of technology usage and cataloguing owners' and executives' attitudes toward the associated capabilities. We correlated these data with companies' business performance over the past three years, particularly revenue and job growth, looking for linkages with improved performance. (See Appendix 1 for our methodology.)

We found that, according to their reported patterns of IT adoption and use, SMEs can be divided into three categories:

- *Leaders* use a variety of technologies to power their businesses. They tend to employ a powerful combination of cloud-based services and solutions; online, social, and mobile capabilities; voice over Internet protocol (VoIP) and messenger tools; and productivity hardware and software. Their willingness to access the latest wave of technology sets them apart. They use cloud services, such as data storage, online customer relationship management (CRM) software, and “big data” analytics; they are also able to build custom software programs on cloud platforms, and they

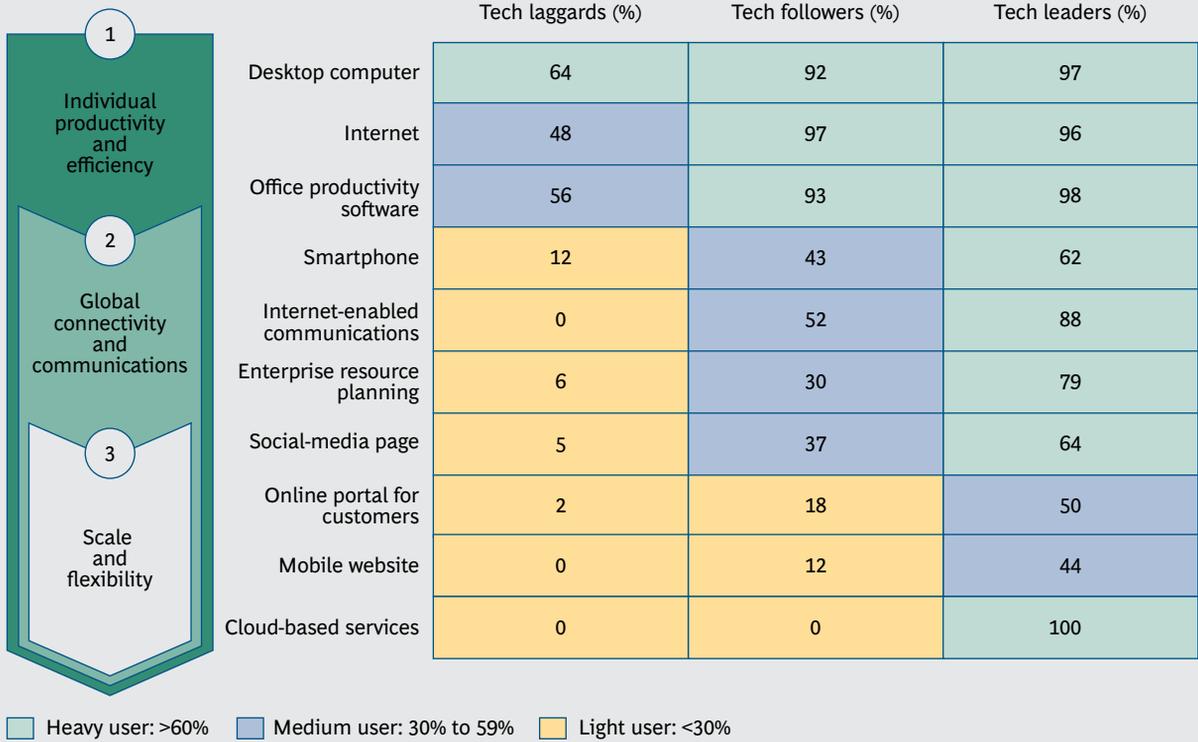
use services that provide overall IT-infrastructure management online. (See Exhibit 2.) The extent to which these leaders outpace other SMEs is both remarkable and remarkably consistent across all the countries we studied. (See Exhibit 3.) They often grow faster than the economy as a whole. (See Exhibit 4.)

- *Followers* make widespread use of well-established technology tools; many also employ more advanced capabilities. For instance, 60 percent maintain a company website, 30 percent use VoIP tools, and a handful employ mobile devices and mobile apps and have a social-media page. But they do not use cloud-based platforms or solutions. And their performance, measured in revenue and job growth, trails that of leaders in every market.
- *Laggards* have generally low levels of technology adoption. They have no online presence. Only about 60 percent use computers, access the Internet, or make even the most basic use of office productivity tools. Their businesses perform less well than both leaders and followers.

Five Growth Drivers

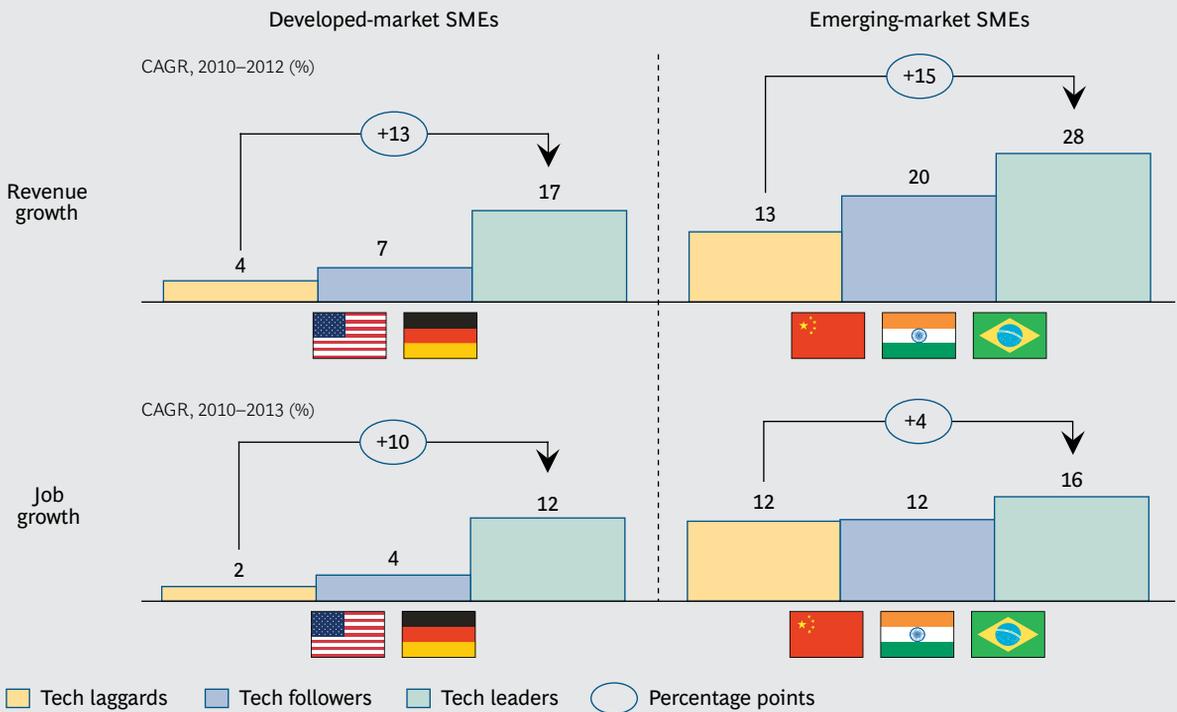
Our research confirms that there is a clear correlation between aggressive adoption

EXHIBIT 2 | Tech Leaders Are Early Adopters of Each New Wave of Technology



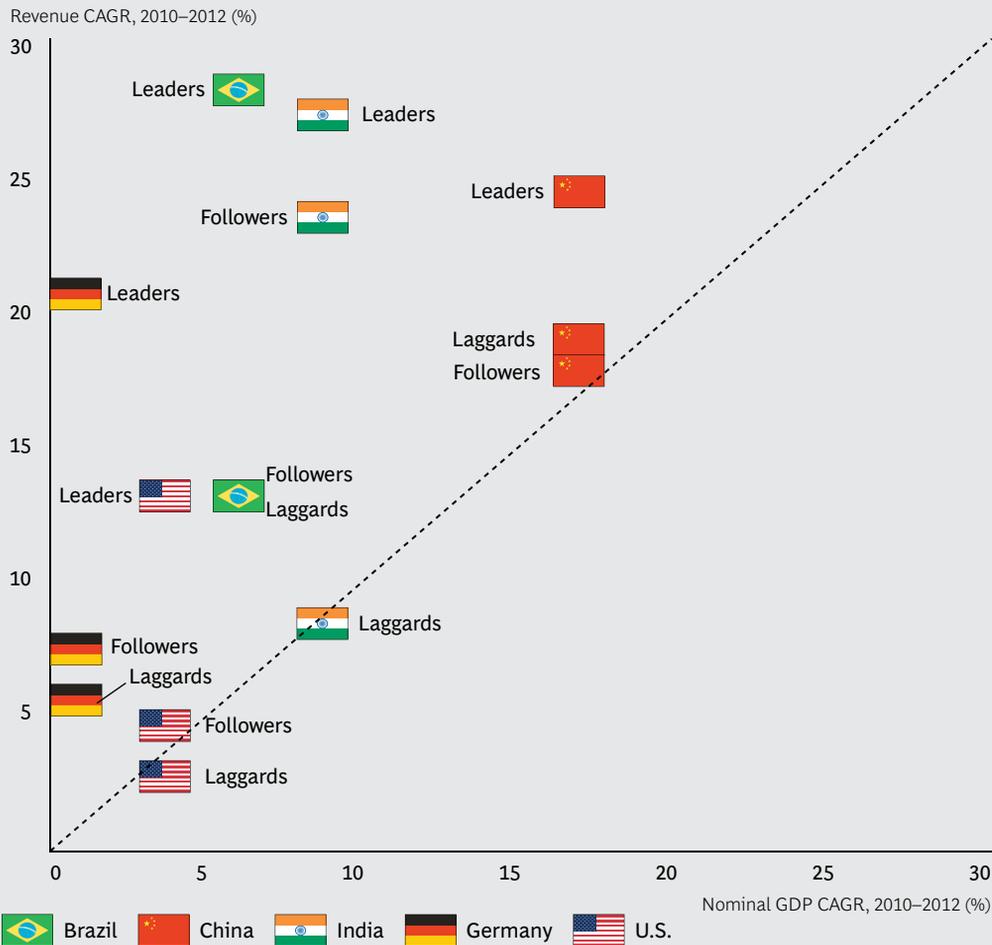
Source: BCG economic impact study quantitative survey, April 2013.

EXHIBIT 3 | Tech Leaders Outpace Other SMEs in Revenue and Job Growth



Source: BCG economic impact study quantitative survey, April 2013.

EXHIBIT 4 | Tech Leaders Tend to Grow Well Above the Rate of GDP Growth



Source: BCG economic impact study quantitative survey, April 2013.

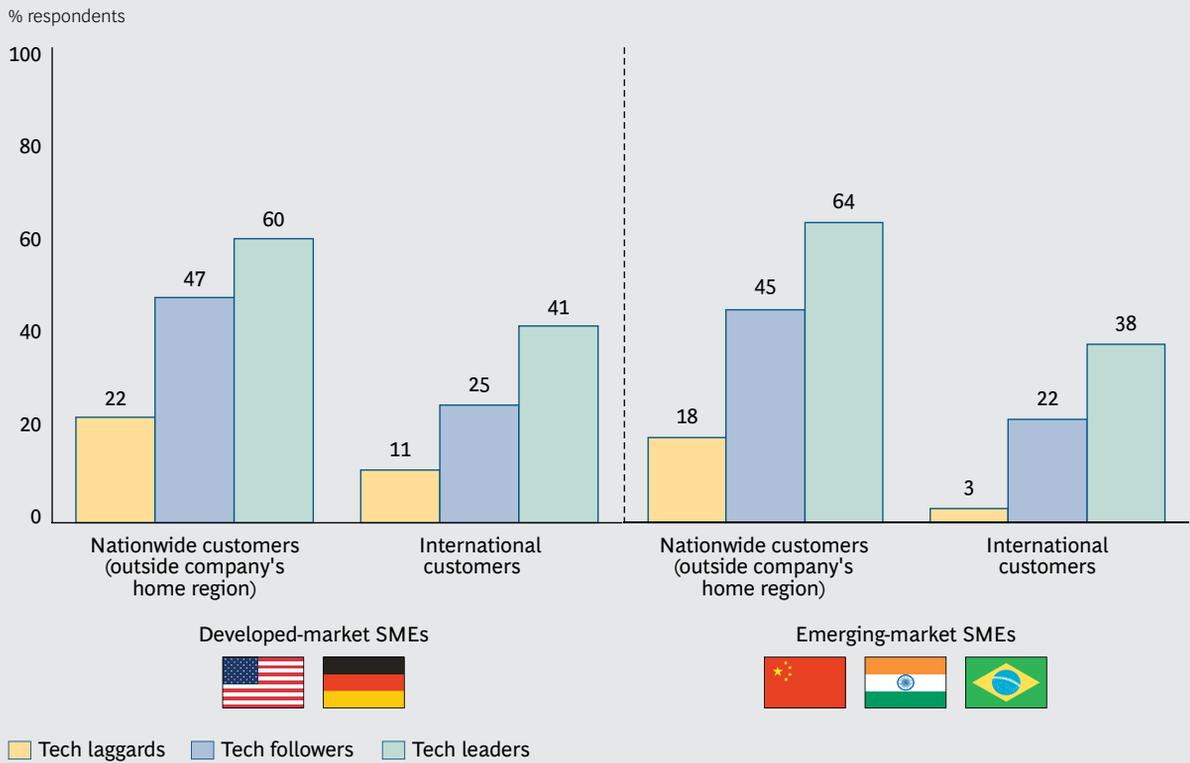
of new technologies and strong business performance among SMEs. But this is only part of the story. Leaders reap multifaceted benefits from the technology tools they adopt. Our study revealed five main ways in which leaders use technology to drive growth.

Leaders reach new markets and collaborate with customers and employees. Almost all technology leaders are online, 88 percent have broadband connections, and two-thirds use mobile devices and have social-media pages. The leaders we surveyed told us that technology-enabled collaboration has become key to how they compete against larger companies. They use cloud-based communication tools to connect, coordinate, and collaborate with customers, suppliers, and

employees everywhere. In both developed and emerging markets, many more leaders than laggards have international customers. (See Exhibit 5.)

Leaders communicate with their customers directly through VoIP and online portals and indirectly through social networks, which strengthens relationships and builds their brands. Two-thirds of leaders said they have more satisfied customers thanks to technology. “Technology lets me reach my consumers in real time,” says Melissa Shin, founder and CEO of Dagne Dover, a U.S. custom-handbag company. “Consumers want to have a dialogue with each other and the brand. They expect it. Technology lets us be unique, personal, and friends with our consumers without ever meeting in person.”

EXHIBIT 5 | Tech Leaders Are More Likely to Have Geographically Dispersed Customers



Source: BCG economic impact study quantitative survey, April 2013.

Technology also enables worker mobility, which facilitates access to talent. Moreover, cloud-based collaboration technologies allow SME leaders to more easily and effectively manage a dispersed and mobile workforce. Employees of many SMEs in the leader category are scattered across numerous locations. This is especially true in emerging markets, where more than one-third of SMEs have employees located outside their home region, and nearly 20 percent have employees in other countries. Online tools give these companies the ability to harness capabilities throughout the organization and across national boundaries, an advantage that is especially important to SMEs with limited resources.

Leaders capitalize on cloud technology's scalability and flexibility. The Internet gave SMEs the ability to compete with other companies regardless of location. Cloud-based capabilities enable them to go head-to-head with companies of any size by providing a host of powerful, pay-as-you-go capabilities. Enterprisewide solutions such as infrastruc-

ture, platform, and software as a service (IaaS, PaaS, and SaaS) allow SMEs to build synthetic scale incrementally and flexibly. They eliminate the need for big, upfront capital expenditures in favor of more manageable, ongoing operational expenses. This applies not only to IT purchases but also to the cost of entering a market. A company with these resources at its disposal no longer needs to open a new office or a new factory in a foreign country in order to gain access to its capabilities and customers.

Element Bars, a custom energy-bar company in Chicago, used cloud services to handle a big increase in traffic and order volume following its products' appearance on a reality TV show. "Our site did not crash," says CEO Jonathan Miller. "And we did not need to buy an entire system with features not necessary for our business." Businesses that experience significant seasonality benefit from the cloud's scalability: it helps retailers handle the holiday rush and agricultural businesses deal with seasonal variation. Because of the cloud's pay-as-you-go model, these businesses

no longer need to pay for and maintain technology that they only need during peak periods. Sundar Lakshmanan, an Indian entrepreneur with two startups under his belt, says, “I can’t imagine what we would do without cloud services being available. They allow startups like us to compete with almost no capital expenditure.”

Many SMEs access cloud-based services on a variety of devices, including tablets and smartphones, which enable employees to stay connected on the run. This mobility and flexibility is especially important in nations with limited access to broadband. For SMEs in these countries, mobile devices are often the only way to go online. Susan Mashibe, founder of TanJet, a private-jet-services company in Tanzania, plans to use tablets connected to the cloud so that her field employees can access her company’s enterprise-resource-planning (ERP) software without having to go to an office—and they’ll be able to use this software offline as well. This flexibility is especially critical in Tanzania, where Internet access is unreliable and limited.

Leaders are increasingly looking toward cloud solutions to store, mine, and analyze the growing cache of data.

The cloud provides resiliency and built-in redundancy in case of natural disasters. Following the earthquake in Japan and the tsunami in Thailand, for example, companies with cloud capabilities such as data storage, IaaS, and SaaS were back up and running within hours, while those that relied on on-site hardware and software were devastated. Says Sarah Yang, founder and CEO of MNE Creations, a Shanghai-based creator of mobile educational games, “It is very handy and comforting to know that you have a backup somewhere if the hardware fails.”

Leaders use technology creatively to operate more efficiently. Leaders are the first to adopt the latest technologies, and they also find innovative ways to use established IT tools. In

this era of rapidly increasing digital data, small-business leaders use software to process information quickly and generate unique value from it. In Brazil, Vidalink’s software system processes a transaction every second. The business, which did not exist ten years ago, is “very much about the scale and systems,” founder Luis Gonzalez says. Similarly, parts maker Halder, based in Germany, makes novel use of basic data-processing software to better manage its operations. Sascha Beyer, Halder’s head of IT, explains: “We needed help managing our warehouse. So we custom-built a tool using spreadsheet software. It enables us to track and source materials much more efficiently.”

The ability to more effectively manage both people and data will become an increasingly important differentiator among businesses. Leaders appreciate the role that technology plays in making staff more efficient and collaborative. Most believe that their employees get more done, are easier to manage, and work better together thanks to technology. Big data is also getting bigger, with the quantity of information online growing exponentially and companies of all sizes struggling to process it. Leaders are increasingly looking toward cloud solutions to store, mine, and analyze the growing cache.

Leaders innovate, experiment, and embrace tech-enabled business models. Luis Gonzalez and Pierre Schindler started a whole new industry in Brazil. Many other new business models have come into being thanks to emerging technologies, such as online and media retailers (Amazon.com and iTunes), digital gaming (Warcraft and King), social media, crowd sourcing (Yelp and Angie’s List), and algorithm-based services (Kayak and Travelocity).

Another example is China’s MNE Creations, which delivers educational games on mobile devices using a “freemium” model. This gives users the option of playing free games or playing more sophisticated, paid versions. The company also uses technology to target and engage high-potential customers. “We do not target everyone with everything,” CEO Sarah Yang says. “We are now looking at 18- to 35-year-olds only in Asia and Latin America.”

Greater availability of cloud-based solutions and services means that SMEs also have access to an ever-expanding set of technology tools that require little upfront investment for experimentation and innovation. Leading SMEs understand the potential that new technologies hold. As Sarah Yang puts it, “We use a variety of cloud services. We also have been trying some enterprise software as well. When we feel we really need something, we’ll try it out. We’ve tried many different CRM solutions, and we’re trying some new online supplier-resource-management services now.”

Technology leaders invest for impact and grow faster. But they do not necessarily spend more as they grow.

Five times as many leaders as followers and laggards said they are typically the first in their markets to invest in new technologies. More than twice as many leaders as followers or laggards said that technology has greatly improved their companies’ ability to innovate.

Leaders adopt technology in smarter ways, getting more bang for their buck. Technology leaders invest for impact. As a result, they grow faster. But leaders do not necessarily spend more as they grow. Our study found no correlation between the amount spent on IT per employee and average job and revenue growth.

Rather, leaders leverage newer, more cost-effective tools with flexible payment models. They also have a more sophisticated approach to assessing the value of technologies. Very few decisionmakers among our SME technology leaders said they spend too much. As one executive put it, “A new business can use cloud services and invest an additional \$15,000 in client acquisition instead of IT infrastructure.”

Decisionmakers at these companies also value and leverage the expertise of others. They

are more likely to share decision-making authority or invest in someone who understands the needs of the business and the power of technology. More than 30 percent of technology leaders have a dedicated IT manager or chief technology officer on staff, and almost 60 percent reported that the CEO makes technology acquisition decisions in concert with others rather than alone. Leaders also look to technology vendors for advice and support. Local partners, for example, help many SME leaders decide on new technology, integrate it into their operations, and maintain it.

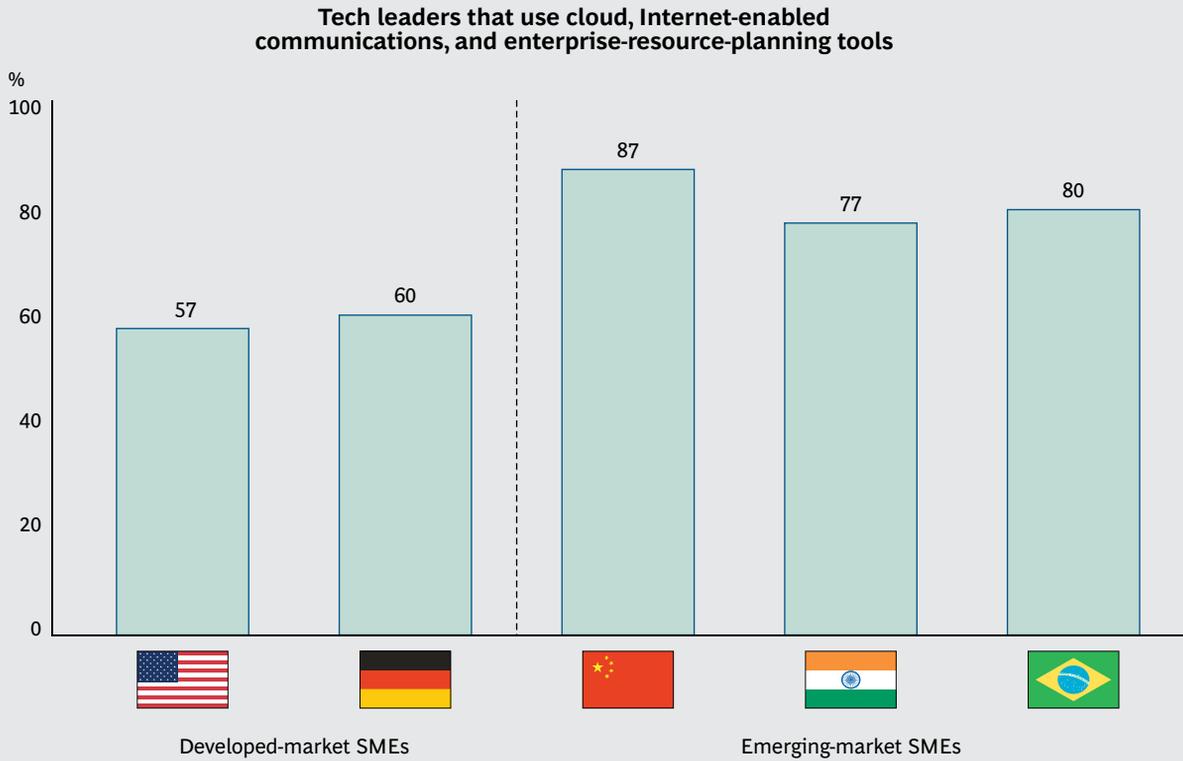
Adopting technology in an intelligent way is critical to the future business success of many SMEs. More than 90 percent of leaders said that IT is important to their business’s future, and almost two-thirds said that new technologies will lead to higher revenues and profits or more jobs at their company.

Consistent Lessons, Broad Impact

Technology leaders are a diverse group, but these lessons hold across all the markets we studied, transcending industry, geography, and macroeconomic conditions. For example, in emerging markets, it is striking that the technology leaders among SMEs do not lag their peers in more advanced markets. Leaders in these countries are just as quick as their developed-market counterparts to embrace new tools—sometimes more so. (See Exhibit 6.) Approximately 80 percent of technology leaders in emerging markets use cloud services, communication tools, and ERP software, whereas only about 60 percent of technology leaders in developed markets do so. Followers in emerging markets show similar adoption patterns. In India, for example, many followers use communication tools to a significantly greater extent than their counterparts in the U.S. and Germany.

More respondents from emerging-market than from developed-market SMEs said they thought technology plays a critical role in their business and will have an impact on future revenues and profits. These convictions likely fuel their willingness to adopt technologies before others do. For example, nearly 30 percent of respondents from Chinese and In-

EXHIBIT 6 | Tech Leaders in Emerging Markets Are Likely to Have Robust Technological Capabilities



Source: BCG economic impact study quantitative survey, April 2013.

dian companies said they believed they were the first to adopt new technologies in their markets. Only 6 percent of U.S.-based SMEs said they were.

All SMEs can learn and benefit from these lessons. Doing so is likely not only to improve their performance but also to have a broader economic impact.

THE OPPORTUNITY FOR FASTER GROWTH AND MORE JOBS

TECHNOLOGY CLEARLY AFFECTS ECONOMIES in a variety of ways, some good and some bad. In our survey, we asked SME business leaders to assess technology's impact on their businesses. We looked for the degree of correlation between technology adoption and business performance at SMEs in the U.S., Germany, China, India, and Brazil. The positive correlations, and the stories that SME business leaders told us, suggest an important relationship worthy of the attention of policymakers. The business growth differential that we observed—consistently across all five countries—between technology leaders and laggards suggests that the effective use of technology by the SME sector is one important ingredient in the overall success of small businesses, which are, in turn, a vital portion of most of the world's economies. In all five countries, leaders' revenues grew significantly faster than GDP.

Because SMEs contribute so significantly to employment and GDP, a potentially large economic impact could result even if only a portion of laggard and follower SMEs achieved the level of performance of their tech-leader counterparts. We calculate that in the five countries surveyed, SMEs could generate up to an additional \$770 billion in combined revenues and create about 6.2 million new jobs if more SMEs performed at that higher level.

We base these projections on two assumptions. The first is that 15 percent of tech laggards and 30 percent of tech followers become leaders. (In fact, in the three years covered by our survey, we observed that nearly 40 percent of followers moved up to the level of leader; however, we use the estimate of 30 percent in order to be conservative.) The second assumption is that after making this transition, these companies perform at the same level as the leaders in our study. (See Appendix 1 for our methodology.)

Our economic-impact scenarios are probably conservative for two reasons besides the assumption that a smaller percentage of followers become leaders. First, revenue and job growth estimates capture only part of the potential impact. They do not include the enormous number of small businesses that make up the so-called informal economy in many developing nations—companies that the World Bank describes as operating “partially or fully outside government regulation, taxation, and observation.” Second, we limited our projections to direct job and revenue growth, giving no consideration to any multiplier effect or to the indirect jobs and revenues that would result from performance improvements.

Every country would benefit if more of its SMEs became technology leaders, but the nature of the impact would vary from

developed to emerging markets, as shown below in a summary of the five countries covered by our survey.

- *United States.* In the U.S., helping more SMEs to achieve the business performance of technology leaders could serve to accelerate the current sluggish rate of economic growth. Increasing the growth rates of U.S. tech laggards and followers has the potential to increase revenues by approximately \$360 billion. SMEs in the U.S. could also add more than 2 million jobs, an enormous gain in an economy that produced a total of only 2.1 million new positions in 2012. The extent of the opportunity reflects the wide differential in performance between tech leaders and laggards in the last three years, during which the U.S. economy has struggled. Leaders racked up annual revenue-growth rates 11 percentage points higher than those of laggards and job growth rates that were likewise 11 percentage points higher.

Indian technology laggards hold enormous, largely untapped economic potential.

- *Germany.* More SME leaders could be the boost that Germany's economy needs to lift it out of the postrecession doldrums. We project a potential \$150 billion in additional SME output and more than 670,000 potential new jobs. As in the U.S., these figures represent substantial growth; the German economy expanded at only 0.7 percent in 2012 and added only 150,000 jobs—the slowest growth of the five countries we studied.
- *China.* If more Chinese SMEs achieved the performance of technology leaders, they could serve as future buoys to the economy. Although we did not observe the same extent of correlation between tech adoption and job growth in China that we did in other countries, we estimate that the SME sector could increase revenues by

as much as \$90 billion if a portion of the country's SMEs matched the performance of their tech-leader counterparts. China's economy grew the fastest of all the countries we studied—an annual nominal rate of close to 18 percent from 2010 to 2012. Laggards, followers, and leaders all experienced double-digit revenue growth. Only now is China showing signs of slowing. If the economy continues to brake, companies that are ahead of the curve in technology adoption will have an advantage.

- *India.* Indian technology laggards hold enormous, largely untapped economic potential. The country's technology followers outperform laggards by a factor of three, demonstrating the power of even modest levels of technology adoption. Nearly 90 percent of SMEs in India have no access to the Internet, compared with only 22 percent of SMEs in China and 5 percent in the U.S. We project the potential impact from greater technology adoption to be \$56 billion in added economic output and 1 million in additional jobs.

The huge base of unconnected SMEs reflects India's relatively poor digital infrastructure. Only 7.5 percent of Indians have access to the Internet at home, for example, and only a small percentage of SMEs have an online presence. As a result, tech leaders in the Indian economy have fewer opportunities to fully leverage more advanced IT tools. Even though these companies tend to adopt more advanced technologies than their developed-world peers, their mostly unconnected customers impede their ability to capitalize on their own capabilities.

The informal SME economy in India is much larger than that of the other nations surveyed. National statistics place India's formal SME economy at only 22 percent of GDP. An estimated additional 55 percent of India's GDP and 57 percent of its labor force comprises small businesses operating beyond the reach of official government statistics, according to the International Labour Office (ILO). As

noted above, this portion of the economy is not included in our projections.

- *Brazil.* Brazil's large SME sector could become a cornerstone of national economic growth as more companies move up the technology ladder. Technology leaders outperformed followers and laggards in Brazil by the widest margin in terms of revenue growth—16 percentage points. We estimate approximately \$120 billion in potential additional economic output and 2.5 million potential new jobs

in SMEs. This does not include potential gains in the informal economy, which accounts for an estimated 33 percent of GDP and 27 percent of the labor force, according to the World Bank and the ILO.

In all countries, the opportunity is evident. But many barriers still impede broader technology adoption. In the following section we examine these impediments and provide a roadmap for companies and policymakers looking to overcome them.

A ROADMAP FOR OVERCOMING BARRIERS TO TECH ADOPTION BY SMES

THE PACE OF TECHNOLOGICAL innovation is accelerating. SMEs need to mobilize quickly and embrace currently available technologies—from office productivity software to cloud-delivered solutions and services. They must then prepare themselves for the next wave of new technologies. SMEs that fail to do so will, at the very least, miss out on promising growth opportunities. Others may find that the only alternative to attaining leadership status is to fall out of the competition altogether.

Some SMEs—and the national economies they support—are already lagging behind. And the leaders of companies in a good position today may not be leaders tomorrow if they rest on their laurels. Technology moves quickly and the risk of losing ground is significant. Both SMEs and the governments of the countries in which they reside should take action to achieve the following objectives:

- Technology laggards make the leap into leadership roles.
- Technology followers move to the forefront of IT adoption.
- Technology leaders continue to use the newest technologies to scale up their businesses, accelerate job creation, and compete globally.

Achieving these goals will not be simple. SMEs and policymakers alike need to address a number of barriers to adoption. In our research, SME decisionmakers frequently cited data security and privacy, the perception that technology costs are high, inadequate broadband infrastructure, shortages of talent, incompatible technologies, and excessive regulatory costs and restrictions as key barriers and concerns. These problems are admittedly complex, but they are also largely addressable through sound public policy. The imperative to overcome them has never been greater than it is today.

An Agenda for Policymakers

Given the importance and size of the SME sector, governments that fail to encourage growth among SMEs today will face stagnant economies tomorrow. For local and national governments, there is a real imperative to help these small businesses tap their full growth potential. Policymakers must act now. They cannot afford to wait until the next wave of technology breaks. This means ensuring access to new technologies, supporting the training required to use them, and promoting a legislative environment that allows SMEs to fully leverage these technologies and protect whatever innovations result. Governments must foster the right conditions to fuel the growth of the next billion-dollar enterprises.

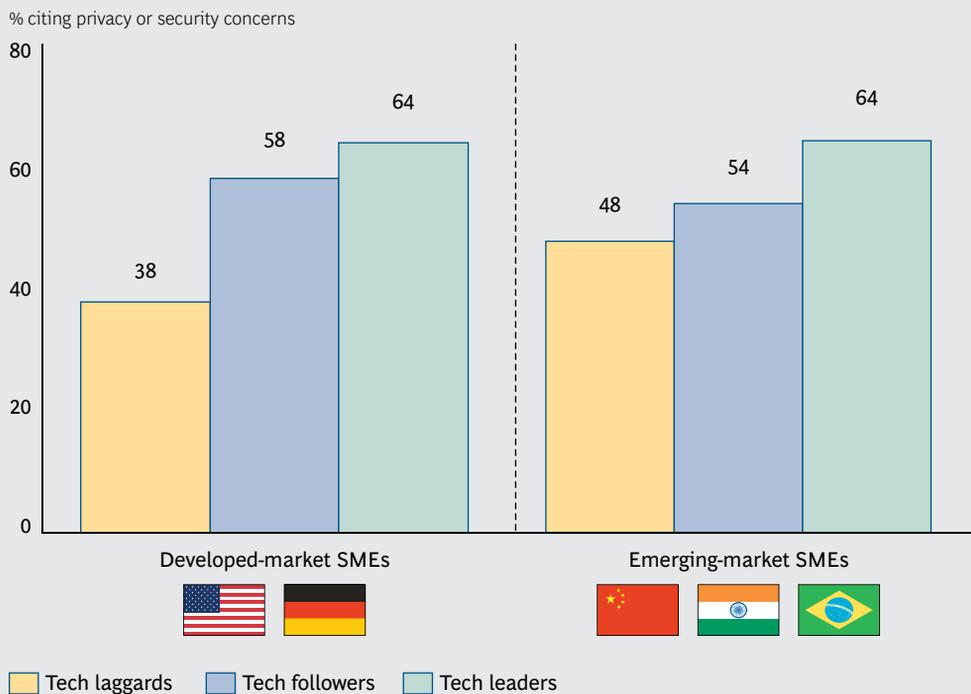
Ensure access to world-class infrastructure and networks. In order to connect, collaborate, and compete, SMEs need information and communications technology (ICT) networks that are accessible, affordable, trusted, and secure. Their customers and suppliers need access to these same networks. Our research shows compellingly that SMEs that are able to leverage such networks, and the advanced services that they enable, perform better. And as more businesses learn how to take advantage of cloud services and mobile services, the importance of broadband network access—both wireless and wireline—increases dramatically. Government leaders must carefully evaluate their own policies to ensure that their SMEs truly have access to multiple secure and affordable wireless and wireline networks. Consumers and workers, who are increasingly adopting mobile devices and are mobile themselves, also demand such access.

Currently, the quality of ICT infrastructure and networks varies dramatically around the world. While almost 100 percent of South Koreans, 82 percent of Germans, and 94 percent

of Norwegians use the Internet, for example, less than 8 percent of Indians have access. Indian policymakers are now dedicating significant resources to increasing connection rates. The Indian government plans to invest \$6 billion in ICT infrastructure and to boost the number of broadband connections from 13 million in 2012 to 600 million in 2020. The Kenyan government has likewise made ICT infrastructure a priority—and has made remarkable strides in a relatively short time. In 2008, less than 10 percent of Kenyans used the Internet. In 2012, this figure surpassed 25 percent. Kenya has now risen to the top of the World Economic Forum’s Network Readiness Index among low-income countries. In 2013, it launched a super Wi-Fi public-private partnership to deliver low-cost, high-speed wireless access to unserved and underserved communities. Such creative approaches can provide Internet access in situations where conventional deployment is too slow or expensive.

Support policies that address privacy and data security concerns. More than 60 percent of the SME leaders we surveyed cited data security or privacy as a concern. (See Exhibit

EXHIBIT 7 | Data Security and Privacy Matter to SMEs from Developed and Emerging Economies Alike



Source: BCG economic impact study quantitative survey, April 2013.

7.) Business owners in Brazil and China were just as concerned as those in the U.S. and Germany. Says Luis Gonzalez, founder of Vidalink in Brazil, “Privacy will be increasingly important, especially as our customers become increasingly aware of data security. Our bigger customers already state the level of security and control that we have to have.” These risks are likely to grow as more companies embrace big data and more data move to the cloud.

A flourishing IT ecosystem can provide SMEs with much-needed local support.

Customers have confidence in the cloud when they have control of their data and can access and move this information freely. They need to know that their data are truly private and inaccessible to hackers and that cloud providers’ use of their data is transparent. Governments need to enact policies that encourage innovation and growth without putting private data at risk. They should protect users from unauthorized access to proprietary or private information and ensure that they have control of their data. An early step in encouraging all governments to raise data security standards is the Council of Europe Convention on Cybercrime. This is an international treaty that aims to create a common policy environment for cybercrime offenses, to provide the legal powers necessary to effectively investigate and prosecute cybercrime offenses, and to establish methods of international cooperation that facilitate action at speeds that match those of cybercrime.

Governments should also collaborate with industry to achieve and maintain security certification for cloud vendors as the U.S. government did through the Federal Information Security Management Act and FedRAMP, a governmentwide certification program. This will help remove the perception that the cloud is not secure and achieve an “infrastructure of trust” that will enable the uptake of cloud services. Another way to encourage

trust in the cloud ecosystem is its adoption by governments themselves. For example, the UK government has signaled its trust in the cloud by moving its procurement process into its g-cloud (government cloud) procurement tool.

Unnecessary rules inhibiting the flow of data and data services across borders may also be a factor preventing SMEs from obtaining the best cloud services. And as the events of 2013 have highlighted, governments’ own need for data related to law enforcement or national security should be balanced against customer expectations of privacy and security through policies that are clear and acceptable to the private sector.

Support innovation through a flourishing local IT ecosystem. Many of the SMEs we surveyed do not have their own senior executives skilled in IT acquisition and implementation. They therefore must depend on local IT vendors and advisors to enhance their use of technology. Our survey results also suggest that SME technology laggards would be willing to invest more in IT if they were better advised on how to do so. Moreover, customer support was among the most important needs cited by SMEs regarding IT.

These results underscore the fundamental importance of a strong local IT ecosystem. A flourishing network of hardware vendors, value-added resellers, systems integrators, service providers, and software developers can provide SMEs with much-needed local support. Many of these ecosystem players are also sources of innovation, building on top of existing solutions to help their customers.

Intellectual-property incentives and protections are key to successfully promoting such innovation. Governments should support robust intellectual-property protection to help ensure that local innovations are safeguarded and that local entrepreneurs and innovators are able to obtain a return on their investment in innovation. Governments can also continue to foster ecosystems of IT vendors by extending training, incubation, and procurement programs to support these networks.

Support development of a strong skills base.

Many SMEs cited lack of technical skills among their employees as a barrier to adopting new technology—particularly in nations with relatively low rates of enrollment in secondary education. For example, 31 percent of Indian business owners said that they had not adopted new technologies because their employees lacked sufficient skills, training, and exposure to IT.

Governments need to ensure that SMEs have access to a skilled workforce by placing a high priority on secondary and vocational education, especially in science, technology, engineering, and math—skills that form the bedrock for the IT skills that SMEs need. They can also emphasize other core business skills, such as accounting and management. Governments and schools should collaborate with SMEs to identify key skills gaps and fill them through job-training programs. Government leaders and educators alike need to work with IT industry providers to ensure that students understand today’s technologies and are prepared to profit from the technological innovations of tomorrow.

SMEs founded by women are among the most technically advanced and successful.

Ensure that the skills base is developed for women as well as for men. In many countries, women have less access than men to the education and technology that would help them either join a company or start one of their own. In Sub-Saharan Africa, for example, only about 9 percent of women have access to the Internet, according to a study by Dalberg, a strategic advisory firm. Women’s access to the Internet trails that of men by 40 percent.

Yet our own research shows that SMEs founded by women are among the most technically advanced, innovative, and successful. (See the sidebar “Female Entrepreneurs and Technology.”) Policymakers who can level the playing field and make IT more accessible to female

entrepreneurs will benefit their economies in multiple ways. The U.S., for example, gives money to female entrepreneurs through the Amber Grant and the Women’s Financial Fund to defray such startup costs as technology investment. Programs that encourage technology adoption to enable mobility and flexibility have disproportionate benefits for women competing in the traditional workplace. (See the sidebar “Technology Can Promote Diversity and Inclusion.”)

Reduce counterproductive government-imposed costs. In some countries, heavy import duties, taxes, regulations, and expenses associated with compliance greatly inflate technology costs. The SME decisionmakers we interviewed in Brazil and India, in particular, cited high taxes and regulatory costs as disincentives to adopting new technology. In Brazil, in fact, the combination of import duties and taxes adds more than 60 percent to the base price of a computer. Complex laws and regulations can add to the difficulty of acquiring and implementing new technology.

In contrast, some countries give not only tax relief but also subsidies to support IT acquisition. Governments should reassess and bring clarity and consistency to their policies on taxation, protective tariffs, and regulatory expenses. This could help ensure that taxation concerns do not prevent SMEs from adopting the same technologies as their international competitors—with equal benefits to the countries in which these companies reside.

Encourage innovation by supporting market-driven standards and interoperability. Interoperability and market-driven standards foster innovation in two important ways. First, they allow SMEs to build upon existing, well-understood standards to create new, value-added solutions that are compatible across markets around the world. Second, certification of vendors to relevant international standards lets SMEs know that a minimum level of security, privacy, and data protection is in place. Market-driven, internationally developed standards also give SMEs access to a broader, more global base of potential customers. And the predictability, trustworthiness, and wide adoption of such standards make them superior to local

FEMALE ENTREPRENEURS AND TECHNOLOGY

Technology can help level the playing field for groups that have been historically disadvantaged in business.

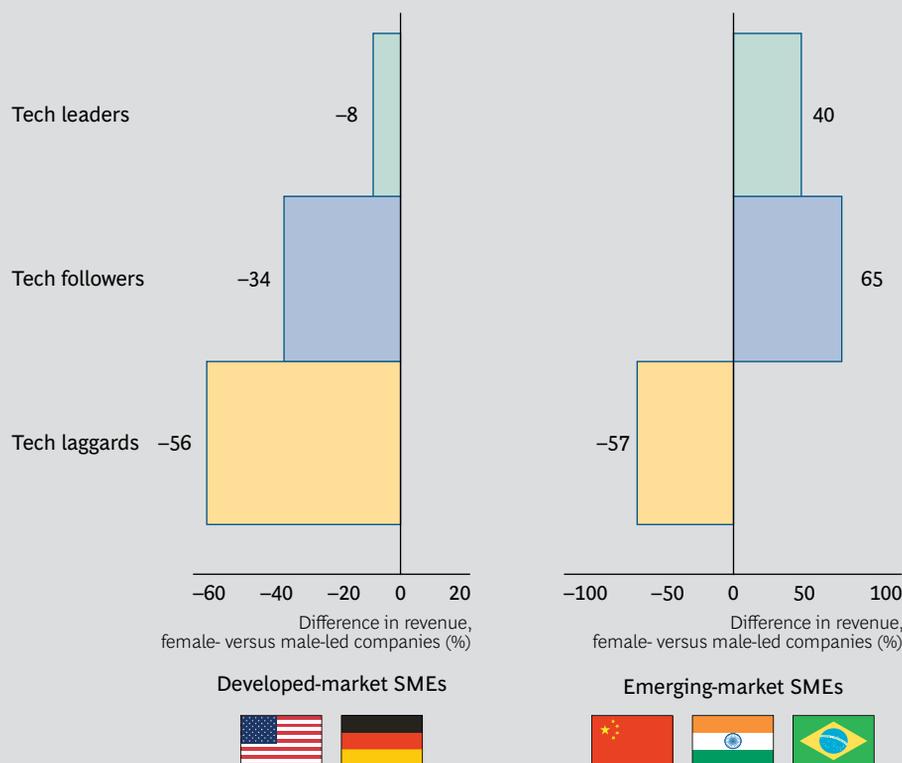
In most countries, women lag men in education, wages, and access to technology. Worldwide, 25 percent fewer women than men have access to the Internet. This gender gap reaches 40 percent in Sub-Saharan Africa. Women worldwide are 21 percent less likely to own a mobile phone; this deficit increases to 37 percent in South Asia. In the U.S., only 58 percent of women participate in the workforce compared with 70 percent of men. This disparity rises to 29 percent of women and 81 percent of men in India.

Among the SMEs we surveyed, though, technology leaders with female founders have bridged these gaps and achieved

average revenues that mostly match or surpass those of male-founded companies. (See the exhibit below.) Tech-leading SMEs that were founded by women were more likely to have a company website, social-media pages, and online offerings such as online stores and customer portals. The difference is most stark in emerging markets. In India, for example, companies in our survey that were founded by women are 1.5 times more likely to be technology leaders.

Equal economic participation by both men and women is a goal for many nations. Our survey demonstrated that tech-enabled SMEs led by women have high growth potential. Governments can help ensure that women have the ability to compete on a level IT playing field.

Higher Levels of Tech Adoption Lead to Revenues Closer to Parity or Higher for Female-Founded SMEs



Source: BCG economic impact study quantitative survey, April 2013.

TECHNOLOGY CAN PROMOTE DIVERSITY AND INCLUSION

Governments can enact policies and support programs that provide better access to more affordable technology for SMEs. These programs encourage worker mobility, flexibility, and work-at-home arrangements that would otherwise not be possible. Such programs have disproportionate benefits for women, caregivers, people with disabilities, and others who may face impediments to competing and remaining engaged in the traditional workplace. Colombia provides an example

of government and businesses coming together to promote a telework and mobility policy that leveraged technology, created new and previously nonexistent opportunities for people with disabilities, and contributed to the country's efforts to ease traffic congestion and pollution. In Japan, too, the government is driving an ambitious telework agenda that will tap female talent in addition to older workers.

standards and help lower costs for all. Their effective use may be especially important in fostering an ecosystem of local software developers.

Market-based standards also empower service providers to offer interoperable solutions by establishing a common foundation and framework within which to meet SMEs' needs. This promotes choice and reduces the risk of SMEs being locked into one vendor. Incompatible technologies, especially among cloud adopters, was cited as a major challenge by a significant number of the SME decisionmakers we surveyed.

An Agenda for SMEs

We call upon SME decisionmakers to invest in their human capital, rethink how they evaluate their investments in technology, actively look for lessons from technology leaders, and keep abreast of best-technology practices in their industries. We suggest that they adopt the following agenda:

- *Build a technology skills base.* Understanding and addressing current gaps in technology skills is essential, as is appreciating that the technological skills required will evolve as quickly as the technologies themselves. Leadership mandates constant vigilance.
- *Rethink both sides of the cost equation when assessing technology investments.* SME decisionmakers should reconsider the

long-term growth potential and competitive advantage conferred by intelligent IT adoption. Moreover, they should reassess how to invest in technology and embrace new pay-as-you-go options.

- *Embrace the new opportunities unlocked by technology.* Leaders constantly adopt and innovate with new technologies and experiment with the new business models that they enable. They understand that moving quickly can provide a distinct competitive advantage, especially in an increasingly global marketplace.
- *Learn from leading customers.* Technology leaders' current expectations regarding technology will likely soon be the expectations of all customers. SMEs must learn from these leaders and adopt the technology solutions that live up to their (and their future customers') expectations.

Tomorrow's SME innovators and entrepreneurs will be born in the cloud and ready to leverage the next wave of technologies. Already the founders of businesses created in the past three years are about 1.5 times more likely than the founders of older businesses to credit technology for their existence. Technology's impact on innovation is likely to increase. Moreover, SMEs will continue to play a critical role in their nations' economies. Governments that recognize and appreciate technology's role in starting and growing SMEs will be the ones that profit the most from future technology leaders.

NATIONS and their SMEs must respond to the opportunities and challenges presented by emerging technologies. In a hyper-connected world, the economic divide between those that embrace the latest technologies and those that lag behind could widen as tech-enabled SMEs break away from local competition and enter the world stage. Now is the time to catch up.

The next five years promise to be a period of massive technological advancement. The previous decade witnessed the emergence of high-speed wireless Internet, social media,

and cloud-based data storage. The next wave of innovation will transform businesses of all kinds in unforeseen ways. The companies leading this wave are again likely to seemingly come out of nowhere—they are the SME technology leaders of today. As a result, those nations that have the strongest technological foundation on which their SMEs can build innovative businesses are likely to reap the greatest economic rewards.

APPENDIX 1

METHODOLOGY

The key findings of our economic impact study of digital-technology adoption by SMEs derive from our analysis of a survey of SME leaders. We used these data to segment respondents as leaders, followers, and laggards and to project the economic impact of a portion of these companies moving to a higher level of technology use. An explanation of our methodology follows.

Survey Methodology and Design

In March and April of 2013, we surveyed around 4,000 leaders of SMEs in the U.S., Germany, China, India, and Brazil. Approximately 3,500 of these respondents completed the survey online. The remainder (respondents who did not have access to the Internet at work) completed the survey over the phone.

The online and phone surveys comprised around 65 and 55 questions, respectively. (The precise number depended on how certain questions were answered.) Additional questions in the online survey were related to more advanced technology usage and therefore were not relevant to respondents with low or very low levels of technology use.

Respondents were leaders and founders of SMEs. They were screened according to several criteria. Each respondent was the company's CEO, founder, or primary decisionmaker

on IT. Each company was at least three years old, meaning it was founded before 2010.

Our definition of "small to medium-size enterprise" varies by country and, where available, corresponds to the official definitions used by sources such as government census bureaus. In the U.S., we define SMEs as companies with up to 499 employees. In Germany, SMEs are companies with up to 449 employees, in China up to 2,000 employees, and in both Brazil and India up to 249 employees. (See below for further details on these sizes.)

We also targeted companies that have fixed-line Internet access on their premises, use the mobile Internet, or have smartphones or tablet PCs.

Survey Quotas

To help ensure credibility and comprehensiveness, we set quotas based on company size and level of technology usage. (For a representative example, see the exhibit below.)

For company size, we set maximums on the number of respondents from microbusinesses (those with fewer than 10 employees), small businesses (10 to 49 employees), and midsize businesses (50 or more employees).

For technology use, we set quotas on the maximum number of respondents from busi-

Technology Use Quota Definitions for the U.S.

Company size	Very-low-tech users	Low-tech users	Medium-to-high-tech users	Total
Micro (0–9 employees)	70	150	150	370
Small (10–49 employees)	70	150	150	370
Medium (50–499 employees)	70	150	150	370
Total	210	450	450	1,110

Source: BCG economic impact study quantitative survey, April 2013.

nesses with very low, low, and medium-to-high technology use.

- *Very-low-tech users*: No on-premises Internet, no mobile Internet, no smartphones or tablets
- *Low-tech users*: On-premises Internet but no mobile Internet and no smartphones or tablets
- *Medium- to high-tech users*: Mobile Internet and/or smartphones and tablets

We did not set quotas for specific industries. Rather, we targeted respondents from a broad range of industries. Possible cheaters and repeat respondents were all excluded from the survey results.

Types of Technology Users

We used cluster analysis to identify three types of technology users—laggards, followers, and leaders. We performed regression analyses to identify the key differentiating technologies among the clusters. We used these technology differentiators to formally classify respondents. We then grouped the survey responses according to company demographics, technology usage patterns, and respondents' opinions of technology.

With the exception of the leaders, we defined respondents based on which technologies they do not use.

- *Laggards*: No company website, no communications tools, no cloud-based

applications (such as IaaS, PaaS, SaaS, and cloud-based storage)

- *Followers*: No cloud-based applications
- *Leaders*: Cloud-based applications used

WEIGHTING

Respondents were not weighted. But an analysis of growth rates adjusted by industry yielded similar trends in growth rates for the different types of technology users.

Because the definition of SME varies by country, we did not adjust our results by workforce size, in order to mirror the demographic profile of each country's population of micro, small, and midsize businesses.

REVENUE AND JOB GROWTH

For growth data, each respondent's level of technology usage was based on the technologies the company used in 2010. Company size was based on the number of employees in 2010. The revenue growth figure was based on self-reported data for fiscal years 2010 and 2012. Job growth was based on self-reported data for 2010 and 2013. We reviewed the revenue and job growth data and removed extreme outliers, typographical errors, and false responses from the data set.

Technology spending figures are based on self-reported spending over the three-year period from 2010 through 2012. We screened these technology-spending figures for extreme outliers, typographical errors, and false responses.

For this report, we converted revenue and technology spending data into U.S. dollars based on the average exchange rates for December of the relevant year. Growth rates are nominal and were not adjusted for inflation. Growth rates do not reflect any changes in exchange rates.

Qualitative Surveys

We conducted 20 in-depth, hour-long surveys. Respondents were leaders of SMEs based around the globe that compete in a variety of industries. Interviews were conducted by phone in March and April of 2013.

MACROECONOMIC IMPACT PROJECTIONS

For each country, we projected scenarios of how the job and revenue increases recorded in our survey data could translate into a broader economic impact. This allowed us to understand SME performance improvement in the context of the economic and technological conditions of each country. The purpose of these projections was to provide a sense of the potential magnitude of the economic impact of SMEs' technological advancement. The projections should not be viewed as predictions or precise valuations.

Broadly speaking, we developed a simple projection model based on the size of the SME contribution to the economy in terms of both employment and GDP. This required making specific assumptions about the SME sector and technology penetration in each country. We used secondary research to assess technology penetration among SMEs in order to estimate the proportion of laggards, followers, and leaders among these companies in each country. Next, we considered what portion of laggard and follower SMEs would be likely to adopt technology and become leaders. Finally, we compared the growth rates of laggards and followers with those of leaders and projected the difference onto the overall population of laggards and followers in order to estimate the financial and employment contribution of the SME sector.

The sources for the three categories of assumptions—SMEs' contribution to the economy, technology penetration, and the movement of SMEs to the technology leadership position—are as follows.

SMEs' Contribution to the Economy. National statistical data are available for most countries on the contribution of the SME sector to GDP or gross value-added and to overall employment. In most cases, these figures are available according to local definitions of SMEs, which vary across markets. Whenever possible, we used the most common definitions used by the World Bank, defining microbusinesses at those with fewer than 10 employees, small businesses as those with 10 to 49 employees, and midsize businesses as those with 50 to 249 employees. In the following economies, local definitions were used.

- *United States.* Figures on the contribution of SMEs to the economy are based on companies with fewer than 500 employees.
- *India.* Figures are based on local SME definitions determined by financial investment rather than workforce size. Calculations from the 2006 census by India's Ministry of Micro, Small and Medium Enterprises indicate that, on average, investment-based definitions correspond to workforce size. The average microbusiness employs four people, the average small business employs 30 people, and the average midsize business employs 160 people.
- *China.* Figures are based on the historical definition of "small businesses" only, which until 2010 were those with fewer than 300 employees. We excluded Chinese definitions of midsize businesses, which are much larger than the international standard. (Definitions of SMEs established by the Chinese government in 2010 vary by industry but include companies with anywhere from 1,000 to 3,000 employees.)

Technology Penetration. We found proxies for laggards, followers, and leaders that corresponded to the products used by the SMEs in our survey findings. For laggards, we used secondary data on the portion of SMEs without a website. For followers, we used an estimate of SMEs that have a website but are not using cloud business services. For leaders, we used the portion of SMEs estimated to

have adopted cloud-based applications (such as IaaS, SaaS, and PaaS).

Movement of SMEs to the Technology Leader Position. Over the three years covered by our survey, 15 percent of SMEs that started as laggards became leaders (adopting a website and cloud-based applications) and 40 percent of followers became leaders (adopting cloud-based applications in addition to the website they had already). We used these

results for our projections, estimating that SMEs nationally would behave similarly, with 15 percent of laggards becoming leaders. For followers, we chose a slightly more conservative estimate, assuming that 30 percent would become leaders.

APPENDIX 2

COUNTRY SURVEY DATA

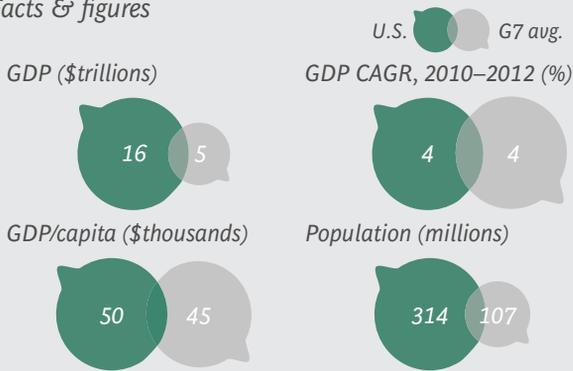
THE FOLLOWING PAGES PRESENT data from the five countries in our survey on the role of SMEs in each economy, the penetration of technology among small businesses, the impact of technology on SME perfor-

mance, and the opportunity for greater GDP and job growth from accelerated technology adoption among SMEs.

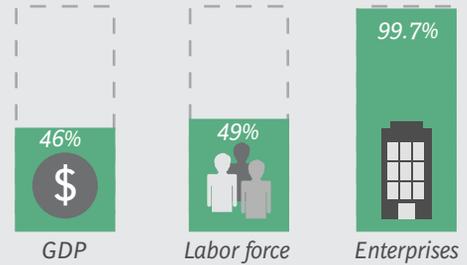
Role of SMEs and Technology in the United States



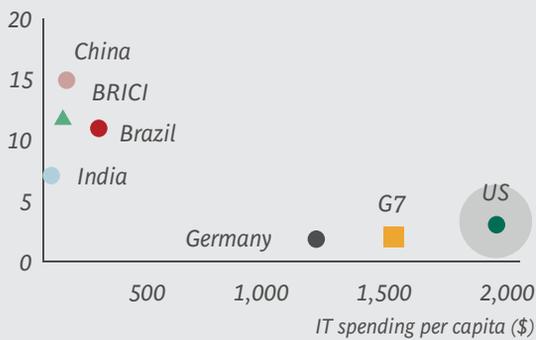
Facts & figures



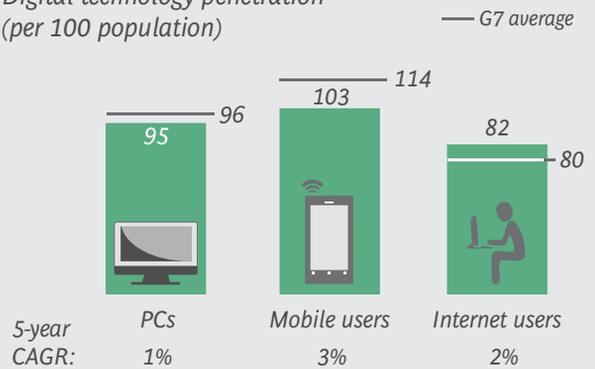
SME role in the economy



5-year IT spending, CAGR (%)



Digital technology penetration (per 100 population)



The Growth Opportunity for Tech Adopters

% increase in jobs (CAGR, 2010–2013)

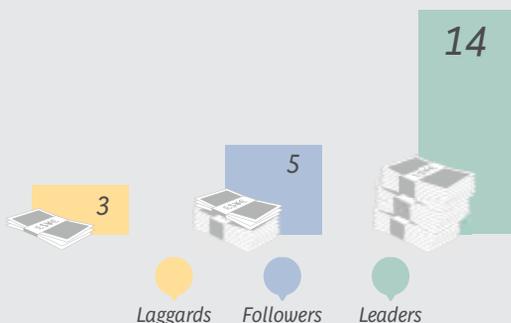


The Opportunity:

If 15% of laggards and 30% of followers were to become leaders ...

SMEs would hire **2.1 million more employees**

% increase in revenue (CAGR, 2010–2012)



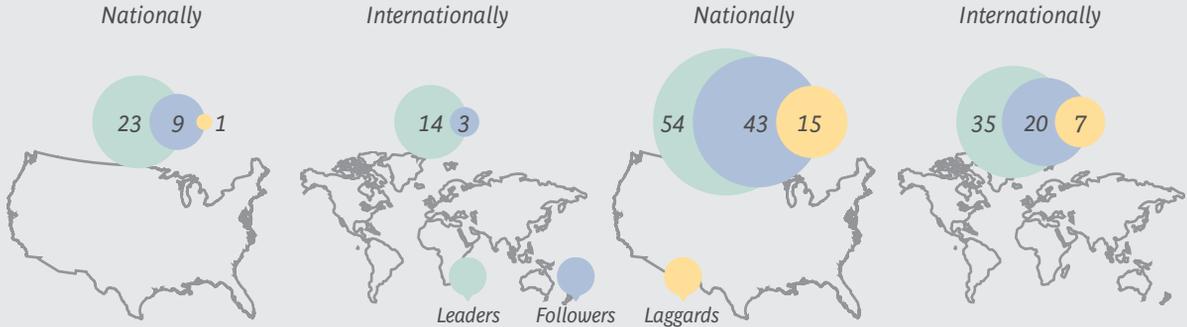
SMEs would inject an **additional \$357 billion** into the economy

Impact of Tech Adoption on SME Operations

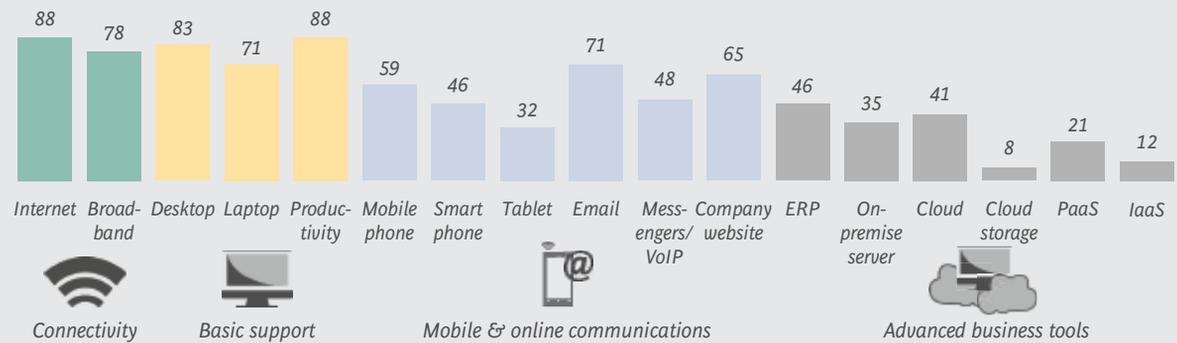


% respondents with EMPLOYEES located

% respondents with CUSTOMERS located

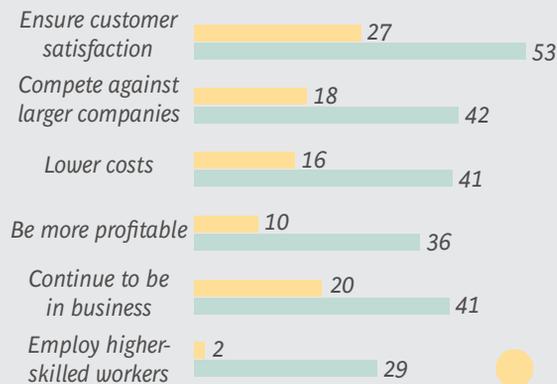


Penetration of key technologies among surveyed SMEs (%)

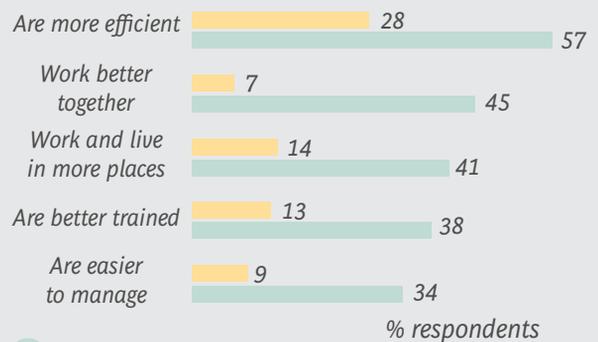


Surveyed SMEs Say Technology Affects Their Founding and Their Future

Today, we rely on technology to:

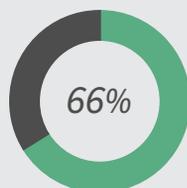


Thanks to technology, we:



66% of surveyed founders say they relied heavily on technology to start their business

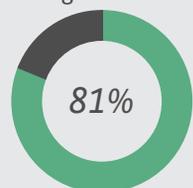
- Top reasons:
- Run operations
 - Reach customers
 - Reach suppliers
 - Grow quickly
 - Recruit employees



81% of surveyed SMEs believe new technologies will help their business

Top trends SMEs are prepared to manage:

- Deeper customer relationships via the Internet
- Online storage
- Rise of social media
- Presence across multiple devices
- Growing mobile usage

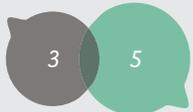


Role of SMEs and Technology in Germany



Facts & figures

GDP (\$trillions)



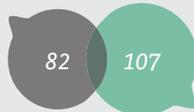
GDP/capita (\$thousands)



GDP CAGR, 2010–2012 (%)



Population (millions)



SME role in the economy



GVA

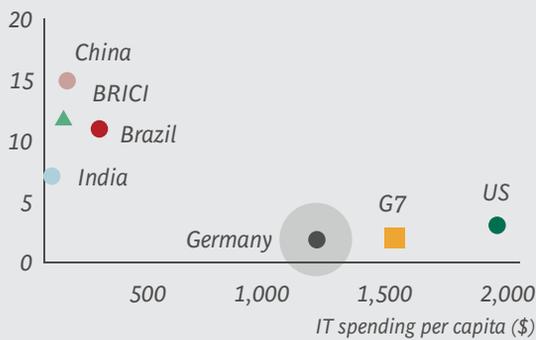


Labor force

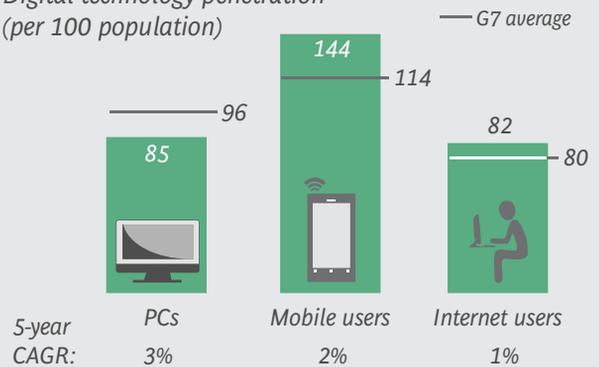


Enterprises

5-year IT spending, CAGR (%)



Digital technology penetration (per 100 population)

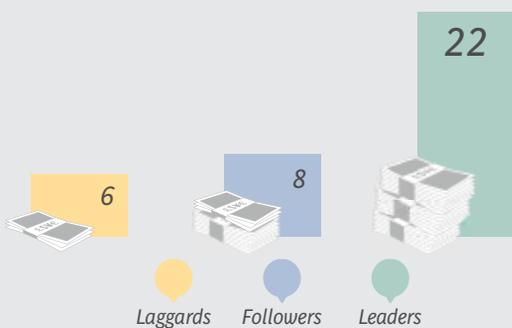


The Growth Opportunity for Tech Adopters

% increase in jobs (CAGR, 2010–2013)



% increase in revenue (CAGR, 2010–2012)



The Opportunity:

If 15% of laggards and 30% of followers were to become leaders ...

SMEs would hire **670,000 more employees**

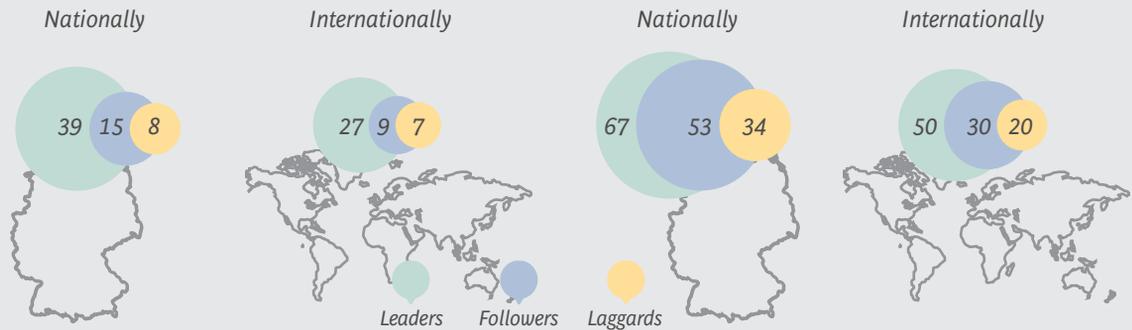
SMEs would inject an **additional \$149 billion** into the economy

Impact of Tech Adoption on SME Operations

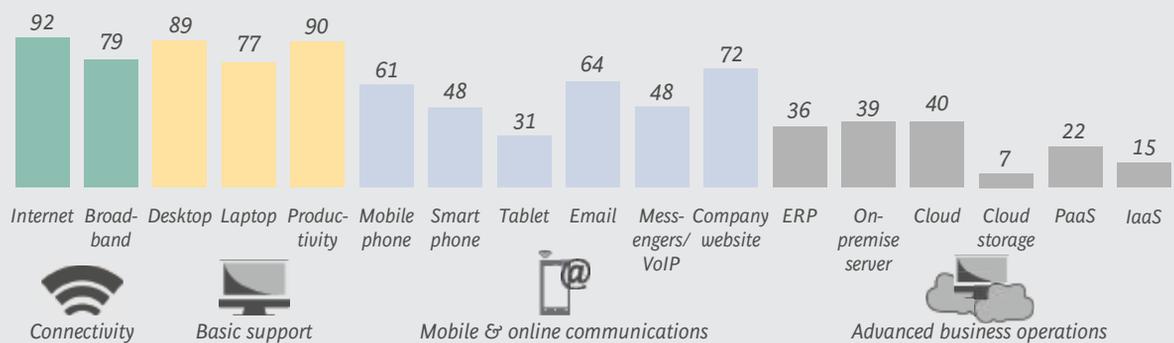


% respondents with EMPLOYEES located

% respondents with CUSTOMERS located

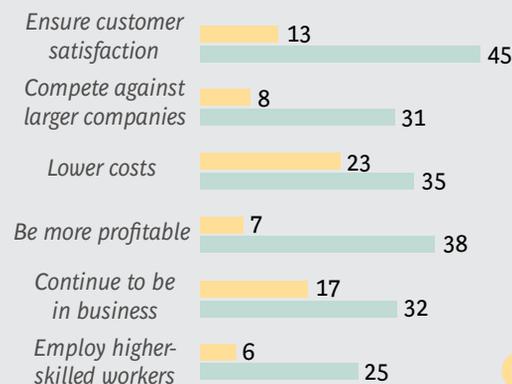


Penetration of key technologies among surveyed SMEs (%)

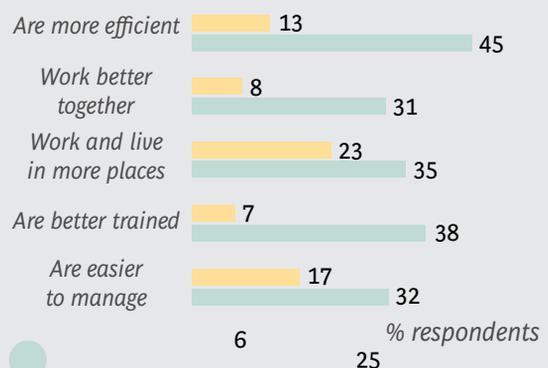


Surveyed SMEs Say Technology Affects Their Founding and Their Future

Today, we rely on technology to:



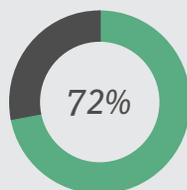
Thanks to technology, we:



72% of surveyed Founders say they relied heavily on technology to start their business

Top reasons:

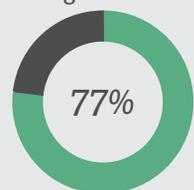
- Run operations
- Reach customers
- Reach suppliers
- Grow quickly
- Recruit employees



77% of surveyed SMEs believe new technologies will help their business

Top trends SMEs are prepared to manage:

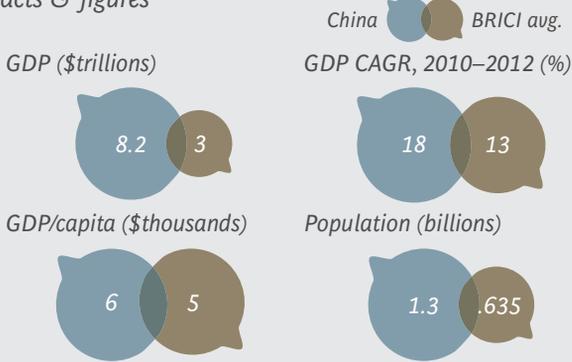
- Online storage
- Rise of social media
- Deeper customer relationships via the Internet
- Decline of traditional media
- Big data



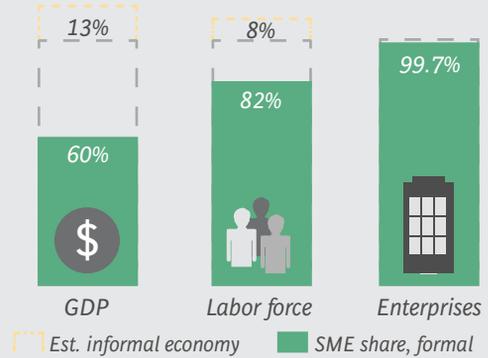
Role of SMEs and Technology in China



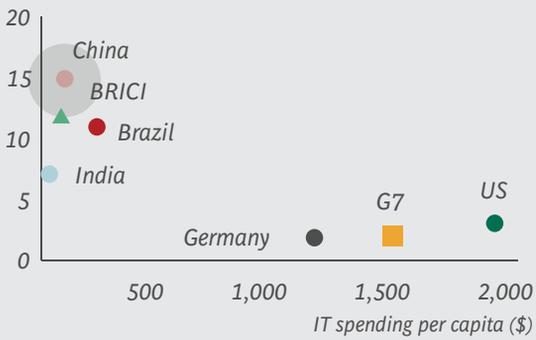
Facts & figures



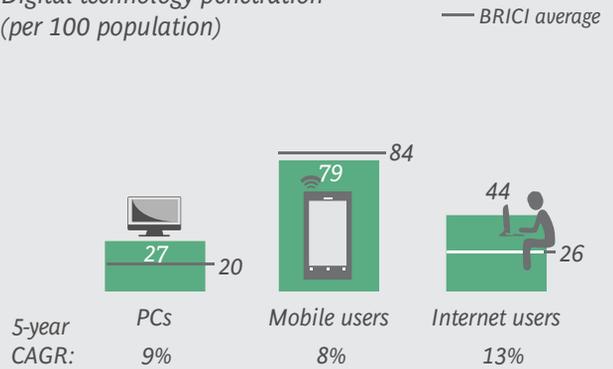
SME role in the economy



5-year IT spending, CAGR (%)

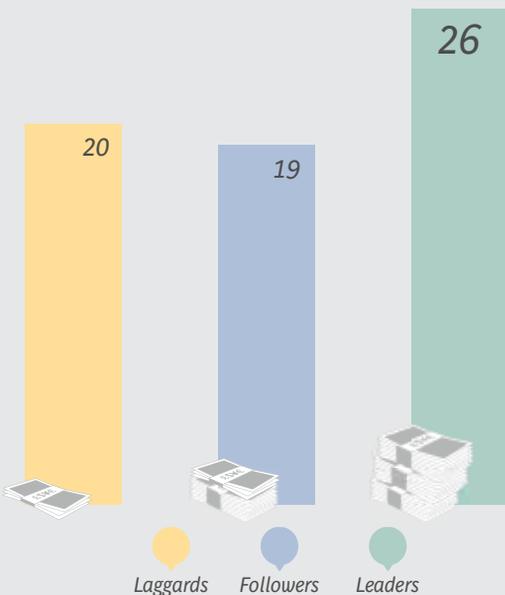


Digital technology penetration (per 100 population)



The Growth Opportunity for Tech Adopters

% increase in revenue (CAGR, 2010–2012)



The Opportunity:

If 15% of laggards and 30% of followers were to become leaders ...

SMEs would inject an **additional \$90 billion** into the economy

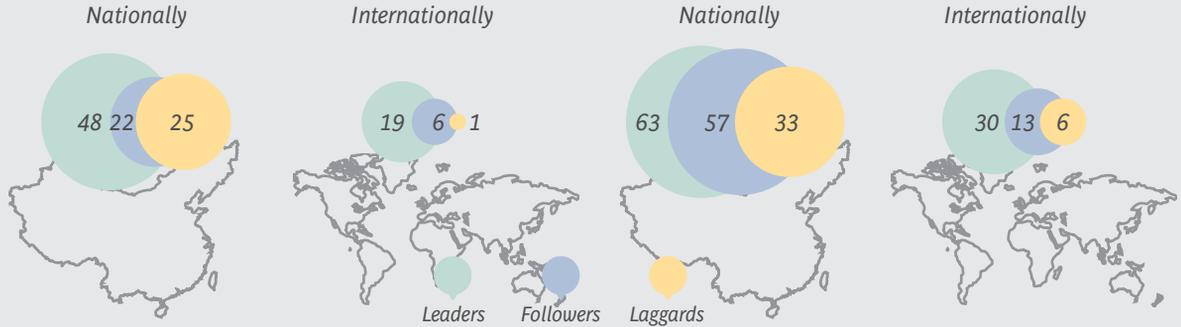


Impact of Tech Adoption on SME Operations

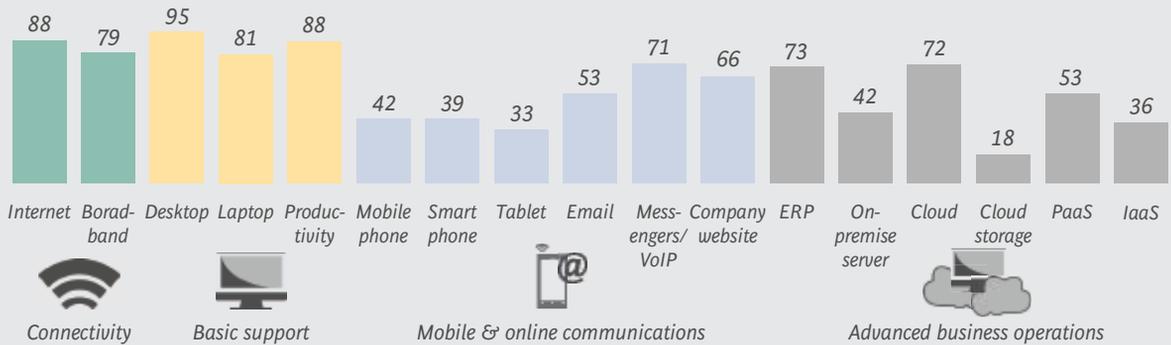


% respondents with EMPLOYEES located

% respondents with CUSTOMERS located

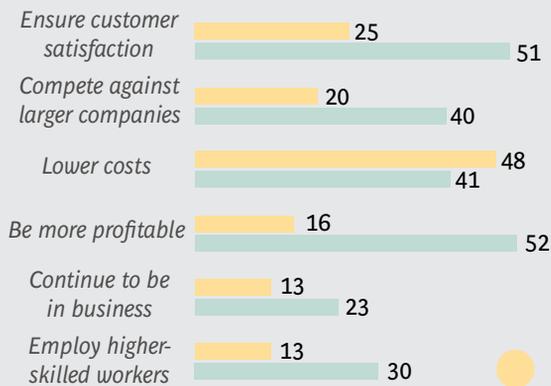


Penetration of key technologies among surveyed SMEs (%)

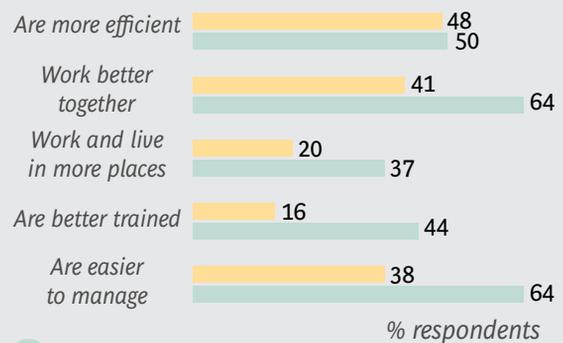


Surveyed SMEs Say Technology Affects Their Founding and Their Future

Today, we rely on technology to:



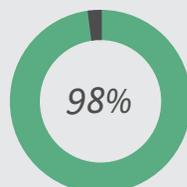
Thanks to technology, we:



98% of surveyed founders say they relied heavily on **technology to start their business**

Top reasons:

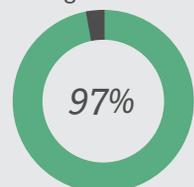
- Run operations
- Grow quickly
- Reach suppliers
- Reach customers
- Recruit employees



97% of surveyed SMEs believe **new technologies** will help their business

Top trends SMEs are prepared to manage:

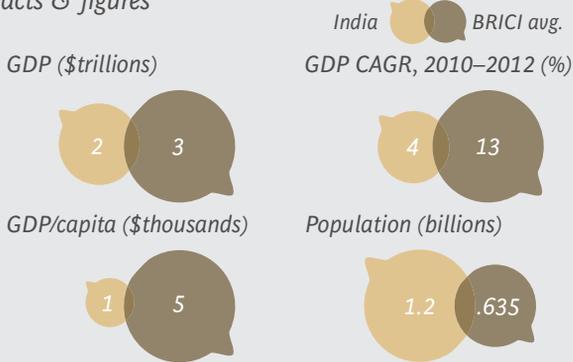
- Online storage
- Cloud-based computing
- Deeper customer relationships via the Internet
- Big data
- Growing mobile usage



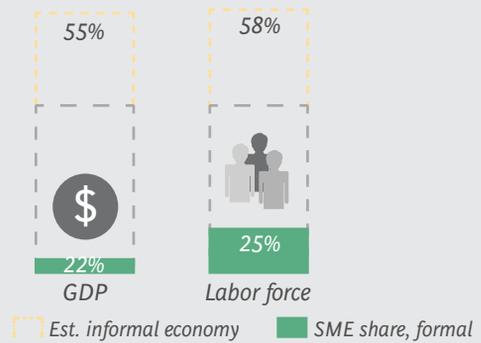
Role of SMEs and Technology in India



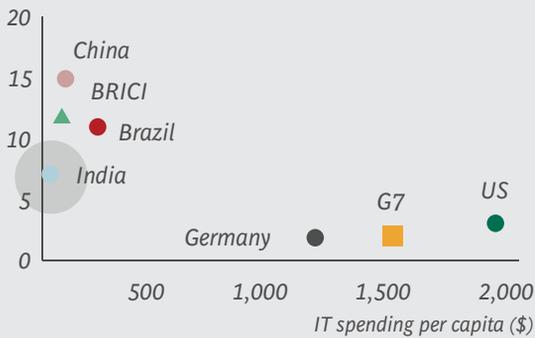
Facts & figures



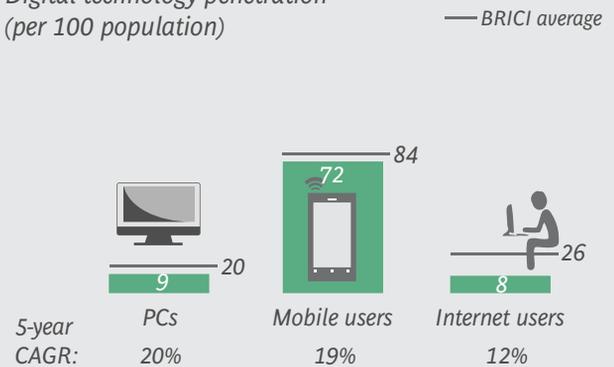
SME role in the economy



5-year IT spending, CAGR (%)

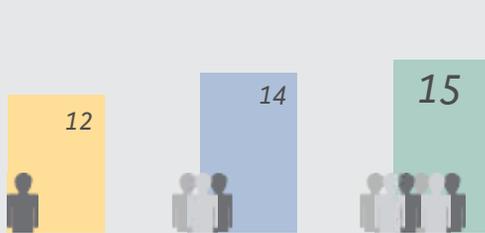


Digital technology penetration (per 100 population)



The Growth Opportunity for Tech Adopters

% increase in jobs (CAGR, 2010–2013)

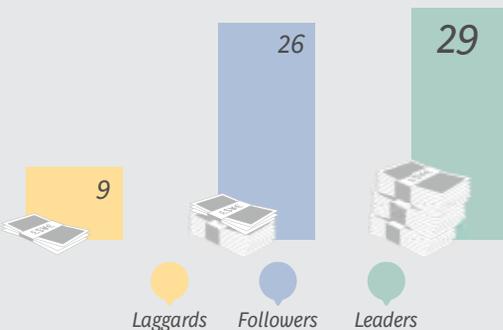


The Opportunity:

If 15% of laggards and 30% of followers were to become leaders ...

SMEs would hire **1.1 million more employees**

% increase in revenue (CAGR, 2010–2012)



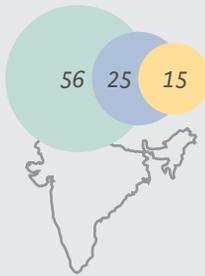
SMEs would inject an **additional \$56 billion** into the economy



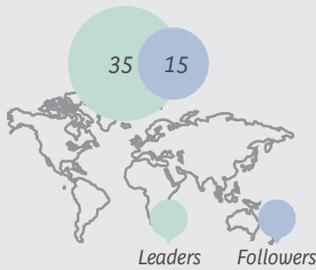
Impact of Tech Adoption on SME Operations

% respondents with EMPLOYEES located

Nationally

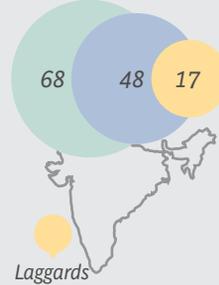


Internationally

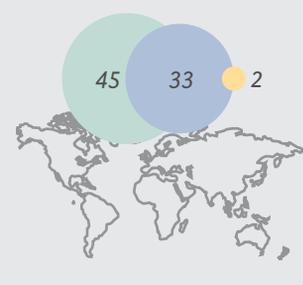


% respondents with CUSTOMERS located

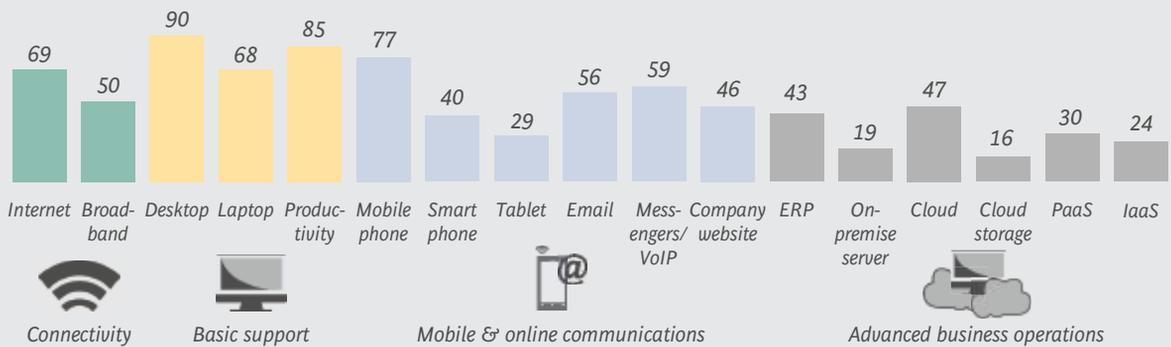
Nationally



Internationally

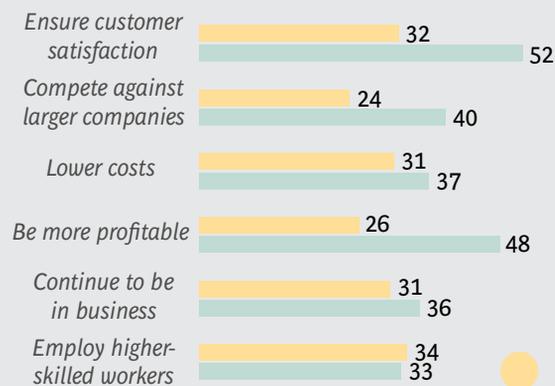


Penetration of key technologies among surveyed SMEs (%)

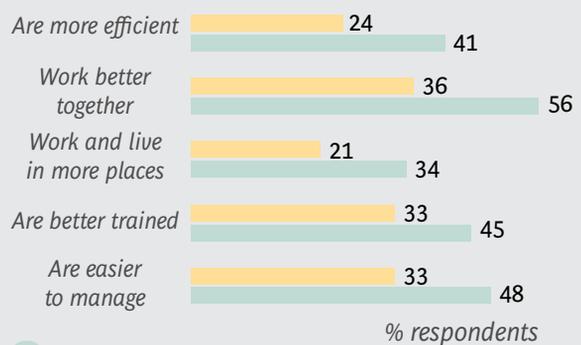


Surveyed SMEs say Technology Affects Their Founding and Their Future

Today, we rely on technology to:



Thanks to technology, we:



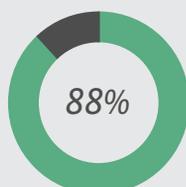
Laggards

Leaders

88% of surveyed founders say they relied heavily on technology to start their business

Top reasons:

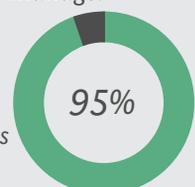
- Run operations
- Grow quickly
- Reach suppliers
- Reach customers
- Recruit employees



95% of surveyed SMEs believe new technologies will help their business

Top trends SMEs are prepared to manage:

- Deeper customer relationships via the Internet
- Online storage
- Presence across multiple devices
- Expansion of online marketplaces
- Rise of social media



Role of SMEs and Technology in Brazil

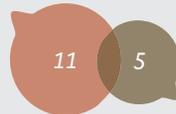


Facts & figures

GDP (\$trillions)



GDP/capita (\$thousands)



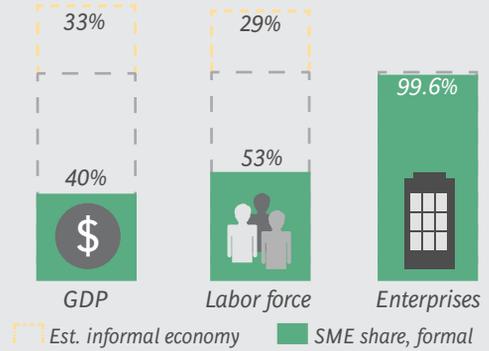
Brazil GDP CAGR, 2010–2012 (%)



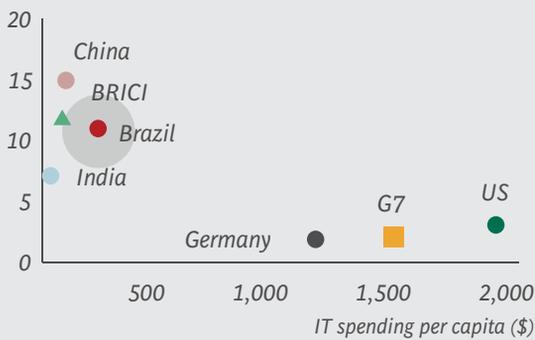
Population (millions)



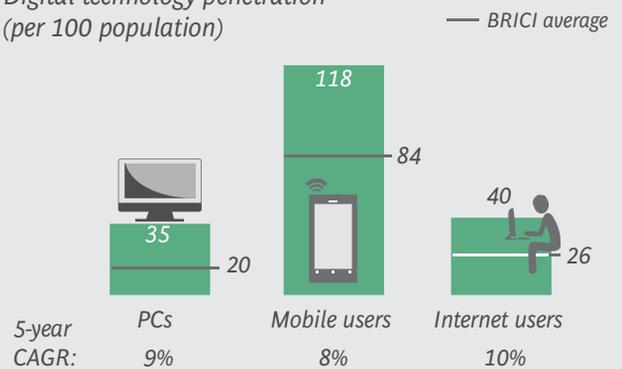
SME role in the economy



5-year IT spending, CAGR (%)

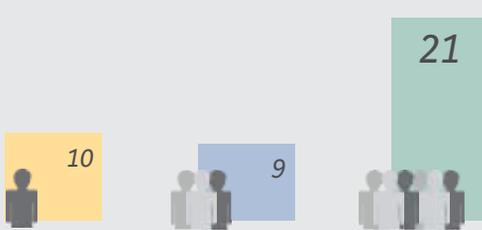


Digital technology penetration (per 100 population)



The Growth Opportunity for Tech Adopters

% increase in jobs (CAGR, 2010–2013)

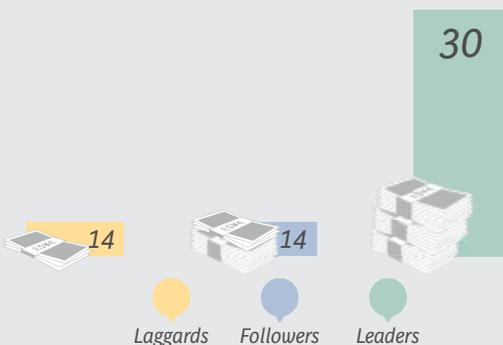


The Opportunity:

If 15% of laggards and 30% of followers were to become leaders ...

SMEs would hire **2.5 million more employees**

% increase in revenue (CAGR, 2010–2012)



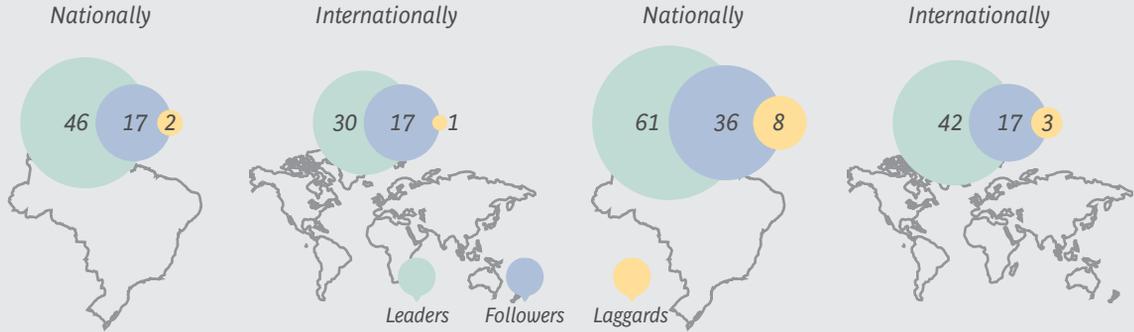
SMEs would inject an **additional \$122 billion** into the economy

Impact of Tech Adoption on SME Operations

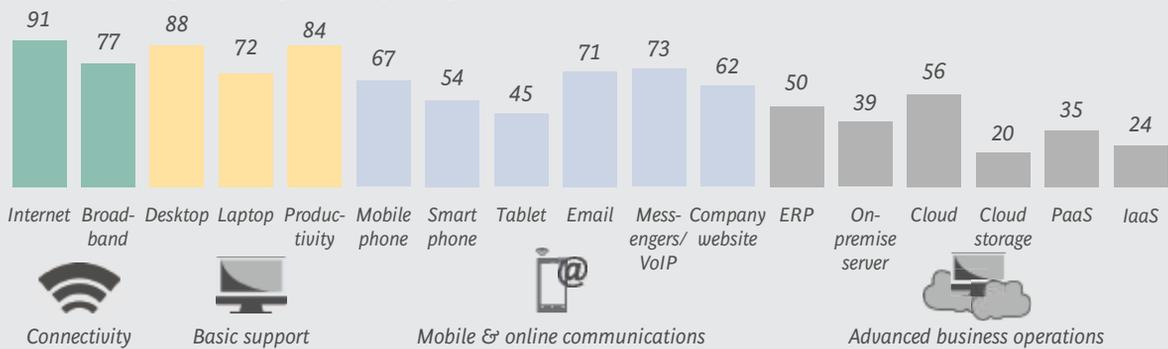


% respondents with EMPLOYEES located

% respondents with CUSTOMERS located

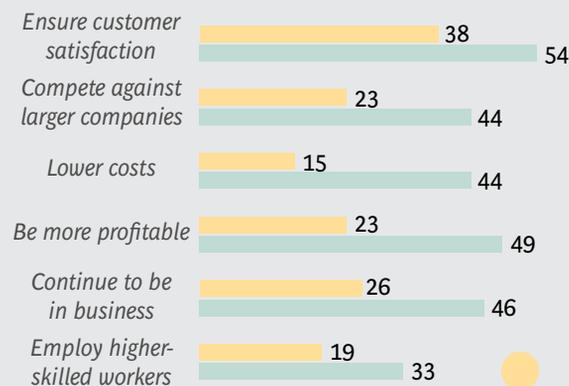


Penetration of key technologies among surveyed SMEs (%)

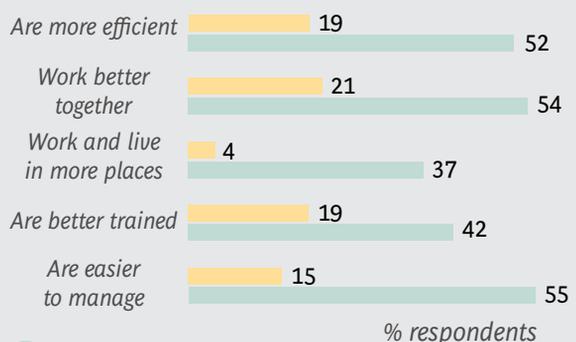


Surveyed SMEs Say Technology Affects Their Founding and Their Future

Today, we rely on technology to:



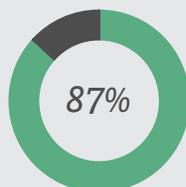
Thanks to technology, we:



87% of surveyed founders say they relied heavily on **technology to start their business**

Top reasons:

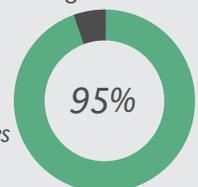
- Reach suppliers
- Reach customers
- Grow quickly
- Run operations
- Access financial capital



95% of surveyed SMEs believe **new technologies** will help their business

Top trends SMEs are prepared to manage:

- Deeper customer relationships via the Internet
- Online storage
- Rise of social media
- Expansion of online marketplaces
- Presence across multiple devices



FOR FURTHER READING

The Boston Consulting Group publishes many reports and articles on technology, business, and public policy that may be of interest to senior executives. Recent examples include:

Through the Mobile Looking Glass: The Transformative Potential of Mobile Technologies

A Focus by The Boston Consulting Group, April 2013

Adapt and Adopt: Governments' Role in Internet Policy

A Focus by The Boston Consulting Group, October 2012

A Digital New Deal

An article by The Boston Consulting Group, October 2012

The Internet Economy in the G-20: The \$4.2 Trillion Growth Opportunity

A report by The Boston Consulting Group, March 2012

The Digital Manifesto: How Companies and Countries Can Win in the Digital Economy

A Focus by The Boston Consulting Group, January 2012

NOTE TO THE READER

About the Authors

David Michael is a senior partner and managing director in the San Francisco office of The Boston Consulting Group. **Neeraj**

Aggarwal is a senior partner and managing director in the firm's New Delhi office. **Derek Kennedy** is a partner and managing director in BCG's San Francisco office. **John Wenstrup** is a partner and managing director in the firm's Seattle office. **Michael Rüßmann** is a partner and managing director in BCG's Munich office. **Ruba Borno** is a principal in the firm's San Francisco office. **Julia Chen** is a principal in BCG's Los Angeles office. **Julio Bezerra** is a principal in the firm's São Paulo office.

Acknowledgments

The authors are grateful to the following BCG colleagues for their assistance in preparing this report: Marcos Aguiar, Nicole Bennett, Charlie Black, Jack Clift, Olavo Cunha, David Dean, Owen Humphries, Damian Kastil, Lacy Ketzner, Arpit Midha, Deepak Murthy, Christoph Nettesheim, Steve Pan, John Pineda, Devesh Raj, Enrique Rueda-Sabater, Diana Shao, Navneet Vasishth, Nature Wang, and Yvonne Zhou.

The authors would also like to thank David Duffy and Pete Engardio for writing assistance and Katherine Andrews, Gary Callahan, Lisa Clark, Kim Friedman, Belinda Gallagher, Gina Goldstein, Eric Gregoire, Amanda Provost, and Sara Strassenreiter for assistance with editing, design, production, and distribution.

For Further Contact

For further information about this report, please contact one of the authors.

David Michael

Senior Partner and Managing Director
BCG San Francisco
+1 414 732 8000
michael.david@bcg.com

Neeraj Aggarwal

Senior Partner and Managing Director
BCG New Delhi
+91 124 4597000
aggarwal.neeraj@bcg.com

Derek Kennedy

Partner and Managing Director
BCG San Francisco
+1 414 732 8000
kennedy.derek@bcg.com

John Wenstrup

Partner and Managing Director
BCG Seattle
+1 206 538 5000
wenstrup.john@bcg.com

Michael Rüßmann

Partner and Managing Director
BCG Munich
+49 89 23 17 40
ruessmann.michael@bcg.com

Ruba Borno

Principal
BCG San Francisco
+1 414 732 8000
borno.ruba@bcg.com

Julia Chen

Principal
BCG Los Angeles
+1 213 621 2772
chen.julia@bcg.com

Julio Bezerra

Principal
BCG São Paulo
+55 11 3046 3533
bezerra.julio@bcg.com

© The Boston Consulting Group, Inc. 2013. All rights reserved.

For information or permission to reprint, please contact BCG at:

E-mail: bcg-info@bcg.com

Fax: +1 617 850 3901, attention BCG/Permissions

Mail: BCG/Permissions

The Boston Consulting Group, Inc.

One Beacon Street

Boston, MA 02108

USA

To find the latest BCG content and register to receive e-alerts on this topic or others, please visit bcgperspectives.com.

Follow [bcg.perspectives](https://www.facebook.com/bcg.perspectives) on Facebook and Twitter.



BCG

THE BOSTON CONSULTING GROUP

Abu Dhabi
Amsterdam
Athens
Atlanta
Auckland
Bangkok
Barcelona
Beijing
Berlin
Bogotá
Boston
Brussels
Budapest
Buenos Aires
Canberra
Casablanca

Chennai
Chicago
Cologne
Copenhagen
Dallas
Detroit
Dubai
Düsseldorf
Frankfurt
Geneva
Hamburg
Helsinki
Hong Kong
Houston
Istanbul
Jakarta

Johannesburg
Kiev
Kuala Lumpur
Lisbon
London
Los Angeles
Madrid
Melbourne
Mexico City
Miami
Milan
Minneapolis
Monterrey
Montréal
Moscow
Mumbai

Munich
Nagoya
New Delhi
New Jersey
New York
Oslo
Paris
Perth
Philadelphia
Prague
Rio de Janeiro
Rome
San Francisco
Santiago
São Paulo
Seattle

Seoul
Shanghai
Singapore
Stockholm
Stuttgart
Sydney
Taipei
Tel Aviv
Tokyo
Toronto
Vienna
Warsaw
Washington
Zurich