

Robeco Trends and thematic investing  
The next digital billion: The  
next wave of internet users  
& global growth

Sustainable Investing Expertise by  
**ROBECOSAM**



White paper  
For professional investors  
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A transformative shift in global internet users is underway, forging a multi-decade trend that we believe will not only revolutionize emerging markets, but will challenge pre-conceived notions on how, where, and by whom new technologies are developed.

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# Introduction

The internet is shifting in its usage, its speed of development, and in where and by whom new technologies are created.

And the shift is such that in the very near future, the majority of global internet users will live in emerging markets. We believe this will lead to the next wave of value creation in the technology and internet sectors. This shift in internet usage becomes obvious when we look at the global number of internet users, and where most new internet users live. At the beginning of 2021, there were roughly 4.6 billion internet users across the world.<sup>1</sup> From 2013 through 2017, roughly 1 billion of these users (over 20% of the current total) came online for the first time.

This billion new internet users came mostly from a select group of about 20 countries, many of which are often referred to as 'emerging markets'. These 20 countries including demographic powerhouses such as China, India, Brazil, Indonesia, Nigeria and Egypt, represent a sizable share of the global economy. Together, they account for roughly two-thirds of the world's population and slightly less than half of global GDP, in purchasing power parity terms.<sup>2</sup>

Most importantly, however, this same group of populous countries is currently well on its way to 'producing' another billion new internet users – who we refer to as the 'next digital billion' or NDB – over a period that started in 2017 and will end this year.<sup>3</sup> These two waves of 1 billion new internet users have led to the emergence of local technological ecosystems that are now maturing, and to the creation of new products and services that are changing people's daily lives.

In these countries, smartphones and laptops are rapidly replacing more traditional means of consuming and doing business, while increased access to mobile internet and telecommunications infrastructure is causing step-function growth in the internet economies. Mobile internet in particular is acting as the critical gateway to the digital economy for these population groups.

As a result, new companies are being founded every day in emerging markets, with an increasing range of services via mobile applications that are developing innovative solutions to old problems. The companies catering to the NDB are unleashing new pockets of economic value, often creating markets that didn't exist before. It is these trailblazing businesses that we believe will continue to generate value over the coming decades, shifting overall market capitalization creation in the technology sector towards emerging markets.

From this, we derive a few key beliefs upon which our investment perspective is based:

1. Emerging markets are leapfrogging traditional economic development paths thanks to technological innovation
2. Many emerging markets now have reached 'internet critical mass' to unleash the next wave of tech companies
3. There is a secular shift in technology market capitalization creation towards emerging markets
4. Preconceived opinions on how, where, and by whom new technologies are developed will be challenged
5. This trend is multi-decade, multi-thematic, secular and structural

<sup>1</sup> Digital 2021 Report. Kempios and Hootsuite.

<sup>2</sup> Source: The World Bank. 2020 data.

<sup>3</sup> Bain & Company, "Where Will the Next Big Wave of Internet Users Come From?"

# Leapfrogging into the future

When examining both the technological and economic development paths of many western countries over the last century, we see the progression towards a digital economy followed a trajectory multiple decades long.

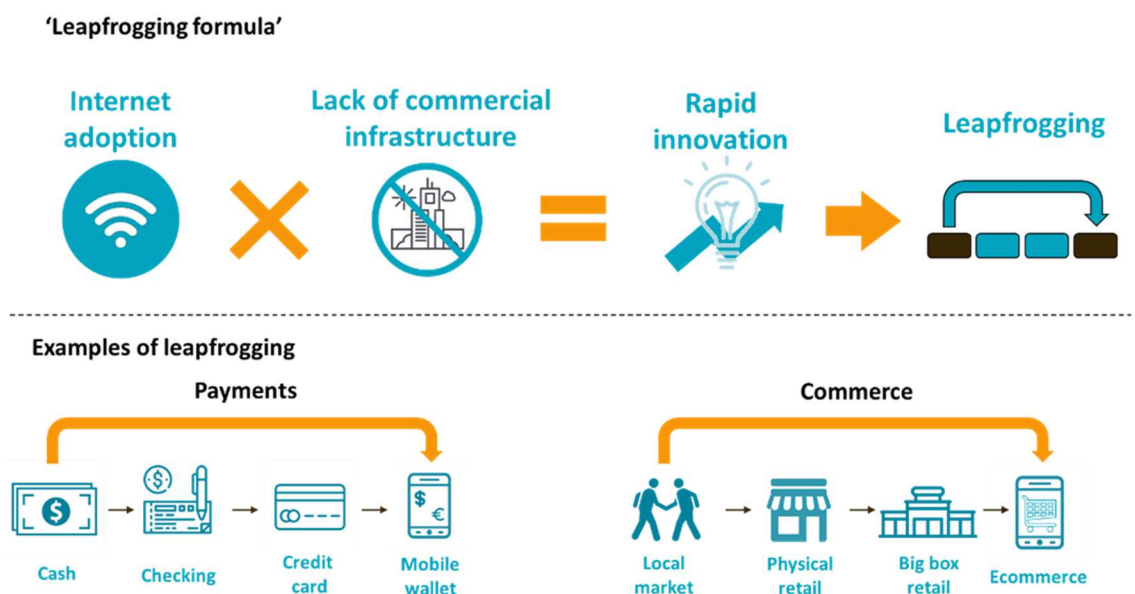
First, the commercial infrastructure for various industries was built which institutionalized many historical informal business practices. Then, early forms of technology and electronic processes were invented. This improved efficiency, access to information, and rapidly increased the speed of doing business. Next, as online populations grew, businesses and consumers started taking nearly all processes digital, bringing entire businesses and portions of the economy online.

This shift towards a digital economy, built on the backbone of nearly half a century of technological progress and integration, is still ongoing today. In many developed countries, important parts of the economy still operate largely offline and are only gradually digitalizing. In many emerging markets, however, we see the digital economic shift taking place virtually overnight. This much swifter progress in economic development is often referred to as 'leapfrogging'.

In emerging markets, the rise in internet connectivity, combined with a lack of pre-existing offline commercial infrastructure is leading to exponential leaps in technology adoption and business model growth. For example, many new internet users have access to smartphones and mobile internet, but do not have access to traditional offline banking services. These users are either unbanked, or do not have access to physical bank branches that can provide services comparable to those in the US and Europe. As a result, these new users tend to be rapid adopters of mobile money and electronic banking services, never needing to use an ATM or write checks.

In terms of the physical commerce of goods, more European and US consumers are buying online, not needing to go to a physical store or shopping mall. However, in emerging markets, similar access to a variety of physical goods still exists primarily in informal local markets, leaving consumers with less product choice, greater price obscurity, and overall less convenience. Thus, ecommerce is rising quickly, providing consumers with more options.

Figure 1 | Leapfrogging is happening across industries in emerging markets



Source: Robeco.

Similar trends are unfolding for other daily activities, such as buying groceries, looking for employment, consuming media, moving around, and other. Online adoption is faster, local solutions become smarter, and internet economies are booming.

Given the lack of pre-existing commercial infrastructure, we believe that many emerging markets will have a greater portion of their economies operating digitally than many developed markets over the coming decades. Technology and widespread connectivity act as transformational drivers of economic leapfrogging, harnessed in one device: the smartphone.



# Mobile connectivity driving internet penetration

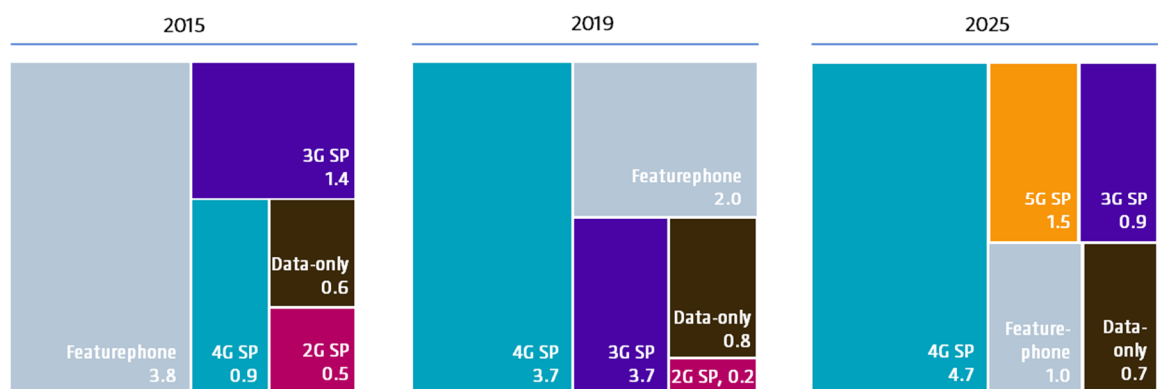
The number of smartphones sold per year increased exponentially over the past 15 years.

Since 2007, annual smartphone unit sales have been growing at a compound average growth rate of over 30%.<sup>4</sup> Since 2016, however, unit sales have begun to plateau and even declined in 2019. But industry associations are unconcerned, with new growth set to come from the countries where the NDB reside, and where much of the population still operates via feature phones. By 2025, it is estimated that global smartphone penetration will reach 80% of internet users, up from 60% in 2019.<sup>5</sup>

Rising penetration will be mainly driven by a small number of countries, including India, Indonesia, Pakistan, Mexico, and Nigeria. In these countries, NDB users will mostly be a 'mobile-only' generation – accessing a smartphone and using the mobile internet well before accessing a desktop computer or a laptop. Additionally, existing smartphone users will shift from 2G/3G devices towards 4G/5G devices, with more data processing capacity.

When looking at a global range of mobile telecommunications companies, only a few have seen their domestic average monthly data usage surpass 10 gigabytes per month. These include some operators in India, Russia, Thailand, and Malaysia. As a result, we see huge pent-up demand for mobile data by the NDB that is still in its early stages of materializing, and seems set to trigger a data explosion in the coming years.

Figure 2 | Installed base on mobile operator networks (in billions) shows a shift towards 4G/5G



Source: GSM Association. Note: 'SP' stands for 'smartphone'.

The average price of smartphones and the cost of data are also continuing to decrease, which in turn should draw more new users to the internet in emerging markets. Greater levels of internet connectivity combined with an ever decreasing average smartphone price is helping democratize access to the internet for billions of people. The overall internet penetration rate of many emerging markets compared to the US or Western Europe is still very low, however, which points to a continuation of this growth trend for the coming years.

However, with internet penetration rates currently at sizable levels, a critical mass of internet users already exists in many emerging markets. This should spur the creation of additional stock market capitalization over the coming decades through new IPOs and equity listings.

<sup>4</sup> Gartner Report.

<sup>5</sup> Global Mobile Trends 2020 Report. GSM Association

### Box 1: Spotlight on mobile subscribers in India

Although India already boasts the second largest number of total internet users in the world, the country still has a relatively low internet penetration rate of 45% of the population.<sup>6</sup> This is much lower than the internet penetration rate of developed markets, such as the US, which stands at 90%, and lower than the global average of 59%.

Among Indian internet users, roughly 91% access the web via a smartphone. In fact, from 2014 to 2018, the number of smartphones per 100 people increased nearly fivefold,<sup>7</sup> and has continued to experience a similar exponential growth trajectory since then. We expect India's coming wave of internet users to access the web in the same way, over the next decade.

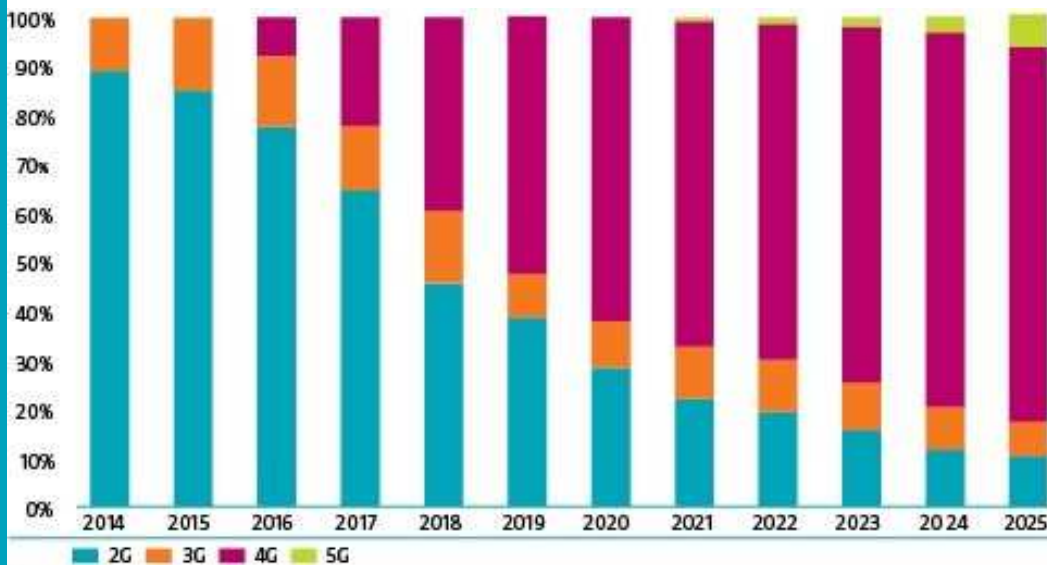
Besides rising incomes for the average Indian family, growing smartphone penetration and mobile subscriptions have been made possible thanks to increased network coverage in rural areas, as well as attractive pricing for smartphone devices and mobile internet data.

In the coming years, mobile industry associations estimate that India will account for 24% of all new mobile subscribers globally through 2025.<sup>8</sup> These new smartphone users will primarily have 4G connections. Faster speed means increased web browsing ability and mobile app usage, as well as a larger amount of data generated that can be mined to make services better and increase user engagement.

The rising number of better equipped Indian internet users is starting to trigger interest from large western technology companies. This was evidenced in 2020, when India's largest telecom company in terms of wireless subscribers, Reliance Jio,<sup>9</sup> received approximately USD 20 billion<sup>10</sup> in investment from external parties, including Google, Facebook, Qualcomm and others.

With many parties looking to capitalize on the new wave of internet users in India, the market is bound for more interesting developments in the years to come.

Figure 3 | India moving to 4G



Source: GSMA Intelligence. Note: data shows % of total cellular connections excluding licensed cellular IoT.

<sup>6</sup> Hootsuite, "Digital 2021" Report.

<sup>7</sup> McKinsey, "Digital India" Report, March 2019.

<sup>8</sup> GSMA Report, "India: becoming 5G-ready", 2019.

<sup>9</sup> As of April 30, 2021, according to Telecom Regulatory Authority of India report.

<sup>10</sup> Bloomberg Articles.



# The next wave of internet market capitalization

The trends seen currently in many emerging markets are consistent with those that already took place in the US in the late 1990s and in China in the early 2000s.

At the time, large swathes of the local population of both countries were already connected to the internet, forming a ‘critical mass’ in terms of users. New businesses targeting these users began to emerge, raising private capital, and eventually listing on stock exchanges. It was during this period that some of the largest technology companies known today were established. These now represent over USD 20 trillion and USD 2 trillion in market capitalization<sup>11</sup> in the US and China respectively.

This is clear when looking at the change in major index constituents of both the S&P 500 and MSCI Emerging Markets Indices. From 2000 through 2021, the S&P 500 Index went from having three tech companies in the top 10, to seven tech companies in the top 10, with several new entrants such as Amazon and Google. In the MSCI Emerging Markets Index, a similar pattern can be identified. Back in 2013, three technology companies and two telecoms were included in the top 10. These days, the top 10 are nearly all technology and internet related.

Figure 4 | Major market index constituents have shifted towards tech and internet, reflecting a global shift in the creation of new public market capitalization



Source: S&P Global, MSCI.

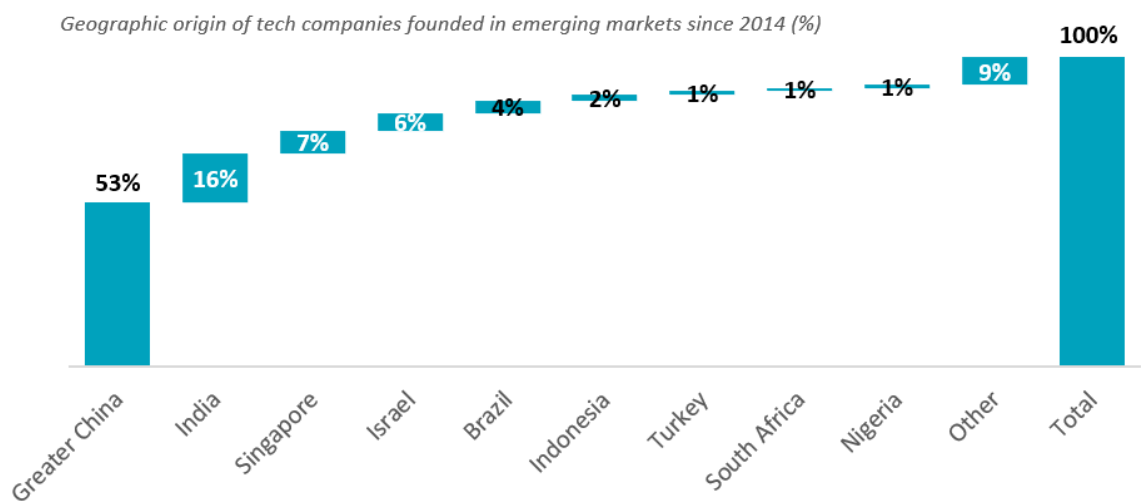
With these industry transformations occurring over a roughly 20-year period, the next wave in other emerging markets (having started around 2014) is beginning to create value of its own. Companies formed to cater to the NDB are already starting to create substantial value in the form of market capitalization. Several companies have surpassed USD 100 billion in market capitalization, and there’s potential for trillions more in listed value to be created over the next decades.

<sup>11</sup> Market data as of March 2021.

According to a sample data set from Boston Consulting Group,<sup>12</sup> over 10,000 new tech and internet companies have been founded in emerging markets since 2014, with over half established outside China. We believe this number is grossly underestimated, since much of the private market funding and many new ventures being formed remain largely unreported, and are less covered by global data providers.

Venture capital funding data (shown in Figure 10) shows that there are approximately 3,000 new technology companies being funded every year in the emerging markets outside China. The trend is clear: more younger companies are forming in these markets, the most successful of which are likely to become publicly listed market capitalization leaders of the future.

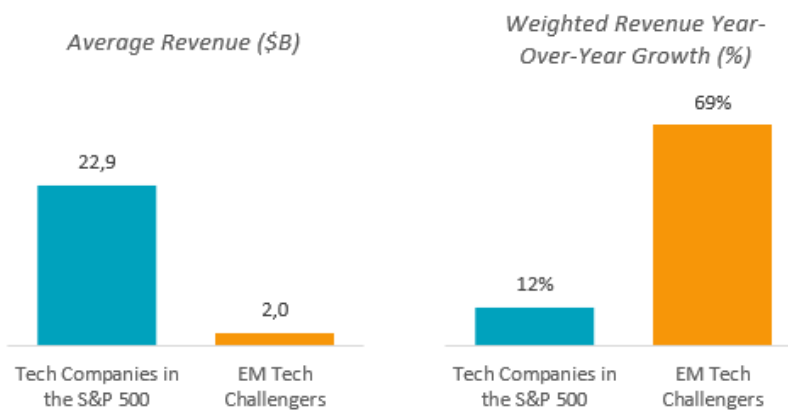
Figure 5 | More than 10,000 tech firms have been founded in EM since 2014, with almost half of them outside China



Source: 2020 BCG Tech Challengers Report, November 2019.

These companies are also growing at an extremely rapid pace. Compared to tech companies listed on the S&P 500, new emerging market technology challengers are growing almost six times faster.<sup>13</sup> Even though these emerging challengers are, on average, much smaller than technology companies listed on the S&P 500, the underlying demographic and technological trends they benefit from lead us to believe that these comparatively elevated growth levels can be maintained.

Figure 6 | Emerging market tech challengers are growing nearly six times faster than S&P 500 tech companies



Source: BCG Tech Challengers Report.

<sup>12</sup> 2020 BCG Tech Challengers Report, November 2019

<sup>13</sup> 2020 BCG Tech Challengers Report, November 2019

# Innovation hotbeds creating real ecosystems

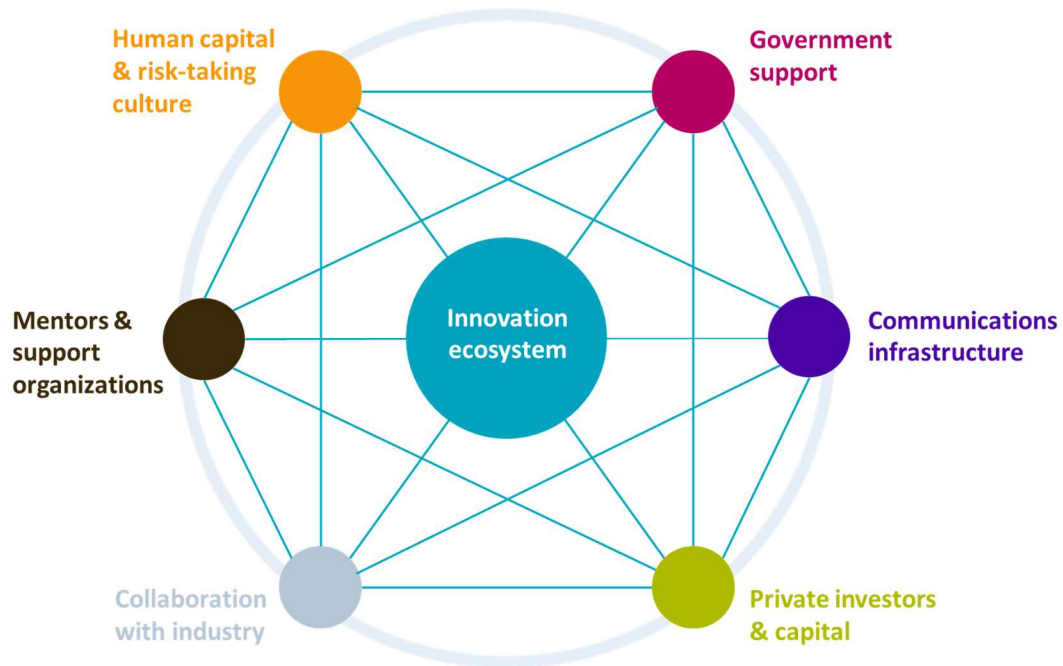
We are encouraged by the pace of new technology company formation in emerging markets, which is supported by the development and maturation of local innovation ecosystems.

Real ecosystems are forming in emerging markets, with all of the pieces of the puzzle now falling into place. While some ecosystems are still small communities of innovators meeting in co-working spaces and speaking to people in half-empty rooms about their new companies, in other ecosystems, mass halls are being filled with interest, and new businesses are receiving thousands of job applications. No two ecosystems are totally alike, but the most successful ones have several core elements in common:

- **Human capital & risk-taking culture.** Disruptive businesses are ultimately driven by people. These people craft the technology, deploy the business model, and inspire others to join them on their journey, either as customers, partners or employees. This is possible only if the necessary human capital is available, which requires education programs in science, technology, engineering, and mathematics (STEM) subjects, and a culture of experimentation and risk taking. These factors, amongst others, help spawn new businesses that challenge the status quo.
- **Government support.** Many of the new technology and internet companies operate in regulatory 'grey' zones, where regulation is sometimes loosely defined or still unwritten. In the fintech sector, for example, should online-only lenders need to comply with the same regulation as traditional banks? In the mobility sector, an often-debated issue is the enforcement of local labor laws for companies that require so-called 'gig economy' workers.<sup>14</sup> Some governments have set up 'regulatory sandboxes', that act as testing grounds for new business models not protected by current regulation. These sandboxes let businesses operate, while government bodies can work with them to concurrently develop regulation. Other government initiatives which help improve the ease of doing business and promote transparency for entrepreneurs also influence the number of companies that can form and operate. Many new start-ups also help governments meet their own economic goals, including the promotion of financial inclusion, education, and broader economic prosperity. Lastly, the appropriate amount of government funding for venture initiatives helps motivate private investors to take the needed risk to start funding early-stage companies.
- **Communications infrastructure.** Having high-speed internet, telecommunications, and reliable electricity are essential for ease of doing business. To the surprise of some, many emerging markets such as Thailand, China and Russia now boast some of the fastest broadband speeds in the world.
- **Private investors & capital.** Investors willing to fund high-risk, early-stage ventures is necessary for ecosystem growth. Hundreds of local venture capital (VC) funds have been forming across emerging markets over the past 10 years, establishing their own track records and lessons learned around the 'dos and don'ts' of financing new companies in their respective markets.
- **Collaboration with industry.** Established industry participants looking to pilot new solutions or create partnerships help alleviate bottlenecks in otherwise long sales processes. This also allows start-ups to test/iterate solutions in their early stages.
- **Mentors & support organizations.** Mentors and entrepreneurial community organizations are important for supporting new companies in local ecosystems. New founders speaking with others who have either been prior founders themselves, or have an understanding of venture financing or building technology businesses, are essential. The founder's journey can be a lonely one. Mentoring helps make that journey easier.

<sup>14</sup> 'Gig economy workers' is defined as independent contractors and freelancers working in part-time flexible jobs.

Figure 7 | What comprises a comprehensive innovation ecosystem



Source: Robeco.

### Box 2: Spotlight on Brazil's thriving fintech ecosystem

Brazil has quickly developed into one of the most thriving VC and technological ecosystems in emerging markets. A combination of local and foreign entrepreneurs are forming new companies with the objective to take advantage of the massive market opportunities that exist in Brazil through new technological solutions. The fintech ecosystem in Brazil in particular is becoming mature.

The Brazilian central bank has launched a 'regulatory sandbox', allowing fintech companies to test new solutions without all of the pre-requisite licenses. It has also been open to increasing competition in the Brazilian financial services industry.

There are currently around 500 fintech start-ups in Brazil<sup>15</sup> that collectively raised close to USD 2 billion in financing from a suite of investors, ranging from local VC firms to foreign strategics in 2020.<sup>16</sup> This represents approximately two-thirds of the funding raised for all venture-backed companies in Latin America during that period. Brazil now serves as a regional case study in the fintech sector, helping establish a blueprint for other Latin American countries to follow.



While Silicon Valley was and still is a global gathering place for technology industry participants, other ecosystems are beginning to develop their own legacies. Shenzhen hosts the headquarters of some of the world's largest tech companies. Jakarta is estimated to have an ecosystem value of approximately USD 26 billion, and Bangalore hosts the third highest number of start-ups in the world<sup>17</sup>. As such, innovation ecosystems in emerging markets have grown to such a level that many countries will be able to produce future local champions on a sustainable basis for years to come.

<sup>15</sup> Source: Korefusión 2020 LATAM Fintech Report

<sup>16</sup> Source: Latamfintechhub, "Fintech in Latin America – The state of the ecosystem – funding update", report.

<sup>17</sup> The Global Startup Ecosystem Report 2020, Startup Genome.



# Debunking the myths

Unfortunately for emerging markets, Western bias is often rampant among onlookers who passively dismiss the fundamental changes that are occurring.

In this section, we seek to highlight and debunk some of the myths surrounding emerging markets that still thrive among investors:

## Myth #1 – Emerging markets companies gain success by copying what's invented elsewhere

Copycatting and looking to replicate internet and technology-enabled business models that exist in the US and Europe is something that will inevitably continue to occur. To a degree, it is part of human nature to see something that works, and replicate it. However, while it's possible to be successful through this approach, this also often turns out to be a fruitless effort.

Rather than looking at 'product-market' fit, new emerging market technology companies are generally seeking a 'problem-solution' fit. From this perspective, local regulations, pre-existing market dynamics, and cultural tendencies, among other factors, explain why companies are creating entirely new solutions or innovating beyond existing solutions, instead of simply copying them, in order to cater to the NDB.

We believe this 'copycat' myth in the market unfortunately stems from the initial success of the Chinese internet giants that sprung up around the same time as the major US players, but were left to run free of western competition for many years due to regulation. Chinese search engine technology and ecommerce platforms that initially appeared as copycats to western eyes have now innovated well beyond their western counterparts in several areas.

Many emerging markets have also now taken the lead in research areas such as artificial intelligence, self-driving technology, and discovery-based internet search models, which change the way consumers shop online. The new tide is overflowing with localized solutions, some of which are reinventing value chains of industries in local markets. As a result, we see more and more western technology players starting to take their cues from their emerging markets competitors.

## Myth #2 – The existing large tech giants will continue to be the winners

Why invest in new entrants in the technology and internet sectors? Or why invest in local players when the US tech companies are already so big and global? While there's no questioning the present size and leading position of some of the world's largest technology platforms, there is also no guarantee they will remain the dominant players in the future. In fact, we believe the opposite.

It is our belief that western technology giants entering emerging markets will probably not be the winners, and there is always room for new players to emerge from local ecosystems, even when there is a presiding 'tech champion'. Examples of this include large western payments companies being virtually shut out of markets like Russia and Turkey, and western ecommerce firms spending billions of dollars to enter India and Latin America, with limited success.

Another example is China, where many investors believed the ecommerce market was played out – there were already large, established, multi-billion-dollar companies. However, new companies are emerging still today and taking market share from the existing leaders for specific product categories or new types of online shopping experiences.

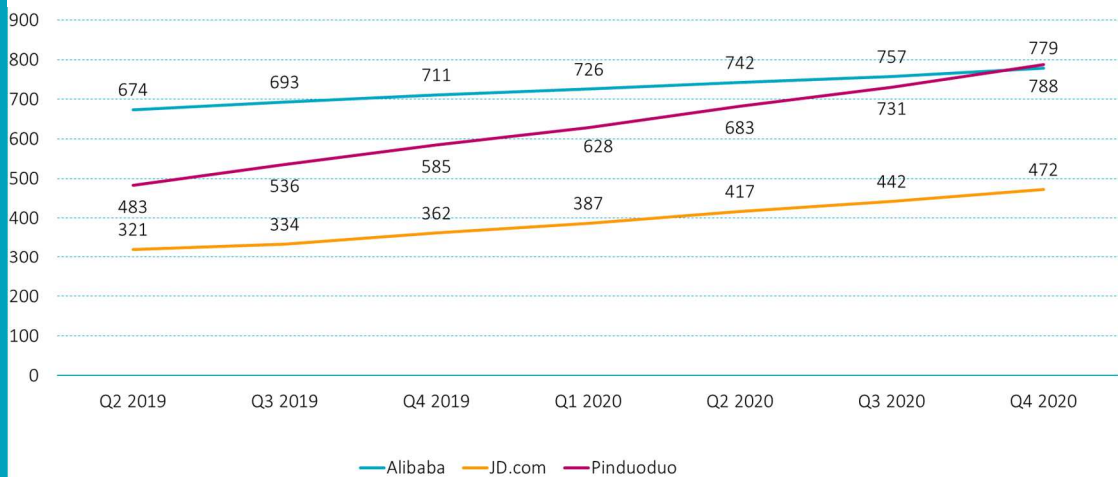
Just as great companies pioneering in their own time have risen and fallen over the past hundred years, this trend will surely continue. As Mark Twain reputedly said, history never repeats itself, but it often rhymes.

### Box 3: User growth for Chinese ecommerce platforms

The total number of Chinese ecommerce platform users continues to grow at a rapid pace. In this context, newer players are gaining market share, as consumer behavior changes, and it becomes ever easier for new entrants to develop their own brand of products and services.

Among some of the top ecommerce players in China, PinDuoDuo, founded in 2015, recently surpassed Alibaba in terms of annual active users with 779 million people using its platform.<sup>18</sup> While large players continue to battle for dominance, we believe that the ‘winner-takes-all’ concept in the technology sector is often exaggerated, and there is continued room for new players to take market share as the industry evolves.

Figure 8 | Annual active users (in millions) for large Chinese ecommerce platforms from Q2 2019 to Q4 2020



Source: Bloomberg. Company filings, March 2021.

### Myth #3 – There’s not enough local talent to produce the next great companies

“Talent is equally distributed, but opportunity is not,” as US businesswoman Leila Janah famously said. This is something that has long plagued various developing countries, where many of the next global changemakers are still undiscovered. Historically, many of these gifted individuals did not have access to the educational, social, and commercial opportunities with which they could flourish. Those who could get access to opportunities abroad would often do so, which has led to decades of ‘brain drain’ and the flight of human capital.

Fortunately, this is changing with access to smartphones and up-and-coming innovation ecosystems that are developing across emerging markets. Informal education channels, new online education businesses models, and more proactive government support are helping broader segments of the population learn software development and receive IT training. As a result, affordability is improved, and distribution of IT education has become less of an issue. This has led to a rapidly growing number of IT talent in NDB markets.

While the US is still estimated to have the largest number of software developers in the world (approximately 4.2 million out of the close to 26 million worldwide)<sup>19</sup>, India is expected to surpass it in the next few years. Meanwhile other countries, like Brazil, China, and Vietnam are also growing fast. Latin America had over 2 million software developers in 2019, and tech talent in Africa is now at a historical high and continues to rise. Today, there are roughly 700,000 software developers/IT professionals across Africa, with only 33% of them receiving a formal university education<sup>20</sup>.

<sup>18</sup> Liu, C., 17 March 2021, “China’s Third Richest Person Cedes Control of E-Commerce Phenom”, Bloomberg news.

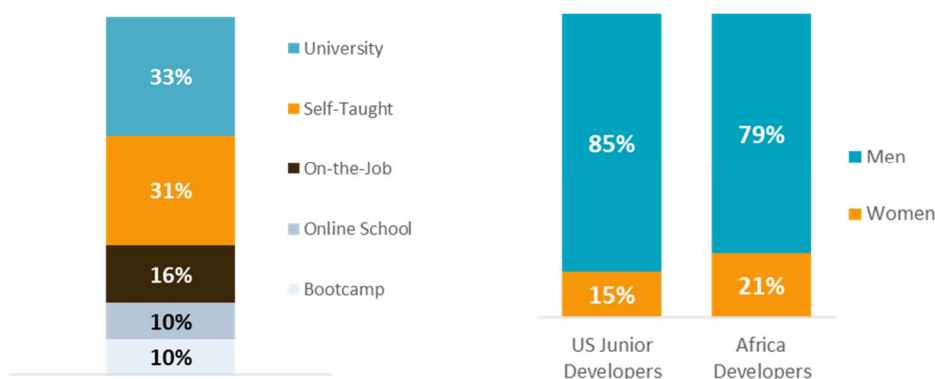
<sup>19</sup> “How Many Software Developers Are in the US and the World?” Daxx (blog), February 9, 2020.

<sup>20</sup> “e-Conomy Africa 2020” Report, IFC & Google

Over 30% are self-taught, roughly 15% learn on-the-job, and another 20% learn through online coding schools and coding bootcamps. Developer communities in Africa also tend to be more diverse than in the US, providing more opportunities to women.

Developers in Africa and in other NDB markets are also often younger and less experienced compared to those in the US (43% of African software developers have only one to three years of experience, compared with 22% in the US). But this will change in time, as local ecosystems expand and become more sophisticated. Even Google has stated that they are committed to training 100,000 software developers across Africa, seeking to take advantage of this young and growing talent base.

Figure 9 | Pathways to training for Africa’s software developers



Source: Google/Accenture/IFC, “Africa Technology Ecosystem,” April 2020.

This growth in engineering talent has helped spawn a global industry of software and digital transformation services in emerging markets that is already being exported worldwide, helping lead the charge for digital change, but also spurring further mobile and internet application development in local markets.

#### Myth #4 – Innovation & VC investment is a China story...and not happening elsewhere

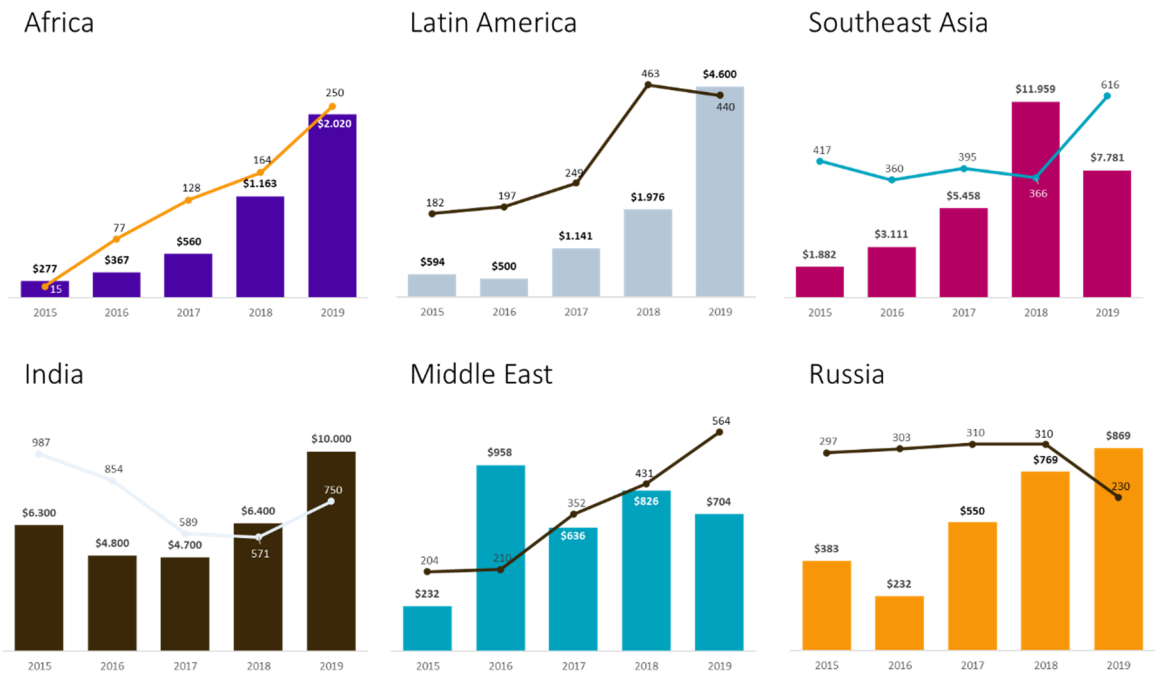
Today, investors and the mainstream media alike certainly acknowledge China’s meteoric rise as a global leader in technology and internet. In 2018, China became the world’s second largest VC market in terms of total funding. Having a robust local VC ecosystem is important. It allows hundreds, even thousands, of new companies to be funded every year and helps promote a culture of entrepreneurship. However, VC ecosystems in emerging markets go well beyond China alone.

While each region, or group of countries, have varying degrees of institutionalization in terms of local VC ecosystems and investors, the upward momentum of funding is obvious. After China, Southeast Asia quickly developed as the second largest VC ecosystem catering to the NDB, growing slightly larger in terms of funding volumes than India. Chinese companies and investors were quick to expand into Southeast Asia given historical cultural ties to many parts of the region helping stimulate this growth.

Despite India being a major technology market globally for years, the VC ecosystem recently underwent a period of moderation between 2016 and 2018. With many highly-funded Indian start-ups having yet to produce a successful exit for investors, a cautious tone has slowed down the pace of deal-making in the country. Ongoing political tensions between India and China also has the potential to cause funding growth to stagnate, with a recent ban on certain Chinese mobile apps in India in 2020.

While VC funding in other regions such as Africa or Latin America is comparatively much smaller, it continues to grow every year, with hundreds of funding rounds taking place. New local funding sources (not coming from foreign investors) are creating a solid underbelly for local VC ecosystems. Funding developments per market are important for underwriting the pipeline of future public listings of companies catering to the NDB users.

Figure 10 | Venture capital invested (in USD million) and deal volume (2015-2019)



Source: Partech Africa Report; Crunchbase; Cento Ventures, Bain & Co.



# Investment approach and sectors of interest

When creating a public-markets investment strategy that capitalizes on the previous and next billion internet users, we follow several core principles.

We believe we are just scratching the surface of a multi-decade trend, and invest on the following principles:

1. **Take a multi-market approach.** Bigger isn't always better and smaller countries with new cohorts of internet users have the potential to also create innovative global companies. Additionally, it is important to learn some key lessons across geographies, and search to apply them across several NDB markets where applicable. Many of these markets often share similar problems, having more in common with each other than with developed markets. As a result, we believe a multi-market investment strategy is wise and helps optimize decision making.
2. **Bespoke analysis is required.** The NDB opportunity is not one-size-fits-all. While some investors believe that 'buying baskets' for trends that are in their early stages of development is advisable in order to avoid risk, we do not agree with this approach. Each market, or set of markets, may be at different stages in their own development. Additionally, local dynamics are bound to promote certain sectors over others. 'Buying blind' will likely lead to more mistakes than smart choices. Having a local understanding for each market and opportunity is key.
3. **Preference for national & regional champions.** We believe that in a majority of cases, national and regional champions will be the winners in catering to the NDB, rather than western internet incumbents. This is due to the localized nature of solutions required to be successful in NDB markets. Additionally, we find that large existing technology and internet players from western markets are either not paying attention, or in the end can only fight so many battles for dominance at once.
4. **Look primarily for digitally native disruptors.** Companies that are born digitally native and create solutions facilitated by technology will often take market share faster than incumbents attempting a technology transition. These companies (generally being 'disruptors') are often afraid to be disrupted themselves, thereby operating with an entrepreneurial mentality and constantly innovating to build on previous successes. In the race to capitalize on the NDB, there is no room for complacency or indolence.

The universe of listed companies is increasing every day, as new companies are established, and existing privately owned companies get listed. We have broadly categorized the investable opportunity set into six key groupings:

- **Internet platforms.** Is it possible to buy goods online, receive financial services, and receive online healthcare all with one company? For many of the NDB it is. Large local and regional internet platforms have formed in NDB markets that provide multiple products and services across sectors creating synergies within their network of customers.
- **Telecom & ICT enablers.** Who is providing mobile and broadband internet access to the NDB? Both local-country telecommunications providers as well as foreign controlled joint-ventures are actively targeting these population segments for their next wave of growth. They are also expanding their existing range of services to cater to country-specific needs, and in several cases providing financial services, digital content streaming, and other business solutions. The domination of the global smartphone manufacturing market is also shifting in terms of volumes, and may continue to shift in the future as new players emerge. In addition, there are various enablers of information and communications technology (ICT) which play a role in empowering the NDB.
- **Consumer internet & online media.** This includes online marketplaces, online travel services, social media, online food discovery and delivery, online groceries, and other services helping fulfill the rising demand of the next digital billion consumers. While first-mover US internet giants such as Google, Facebook, and Amazon are looking to these

markets for growth, national champions have also emerged to take market share and establish their own moats. New forms of online media consumption are also being developed, catering to local tastes.

- **Fintech.** Fintech has largely become more advanced and prevalent in these markets than in the US or Europe. This is due to several factors including the amount of people still unbanked in many of these countries and the demand for financial services, combined with a lack of existing financial infrastructure (such as retail banking locations and ATMs). In some markets, there is also an inherent distrust of existing financial institutions, particularly given historic volatility of local currency markets. New fintech solutions are both disrupting current value chains as well as creating new ones.
- **Mobility & e-logistics.** With crowded mega-cities of tens of millions and public transportation services still in development, several emerging markets had shared mobility services that already existed offline (both formally and informally), but have now been brought online to serve various use cases. Technology has also made its way into the traditional logistics sector, benefiting from the large e-commerce boom and increasing consumer demand. We have seen a rise in B2B and B2B2C logistics-tech services in freight, warehousing, and last-mile delivery that are changing the way supply chains function.
- **B2B services.** Multitudes of businesses selling to other enterprises (B2B) are also forming to make information flow and legacy industries more efficient. Cloud solutions, ERP, and other forms of software are making existing and new economy businesses run more smoothly, communicate better, and improve information asymmetry.

# Conclusion

The NDB concept does not refer to a particular moment in history. It is a constantly shifting cohort of people, and their journey with technology to improve their lives.

In other words, the NDB is a metaphor for the future of the internet – both referring to the growth in connectivity in emerging markets and the new technologies that will emerge from this shift. We believe this is an opportunity. An opportunity which will not only positively impact billions of people, but has the potential to result in tremendous amounts of value created for investors over the coming decades. This trend is unfolding rapidly, with new developments every day, and investors should consider evaluating how the NDB may play a role in their holdings.

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