Out of AFRICA

Conventional wisdom holds that the barriers to operating in an emerging market like Africa are daunting. But a closer look reveals ongoing innovation and an improving logistics and production environment.

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Conventional wisdom holds that the developed world is more technologically advanced, more experienced and more business savvy than the underdeveloped world. That's not surprising. Afterall, African countries, often captured as a proxy for developing countries, lag behind the developed countries on many fronts: they are economically poor, politically immature, have weak infrastructure and institutions, have high illiteracy levels and have socio-cultural characteristics that may not be so business friendly. Isn't it up to us to teach emerging markets a thing or two and bring them along?

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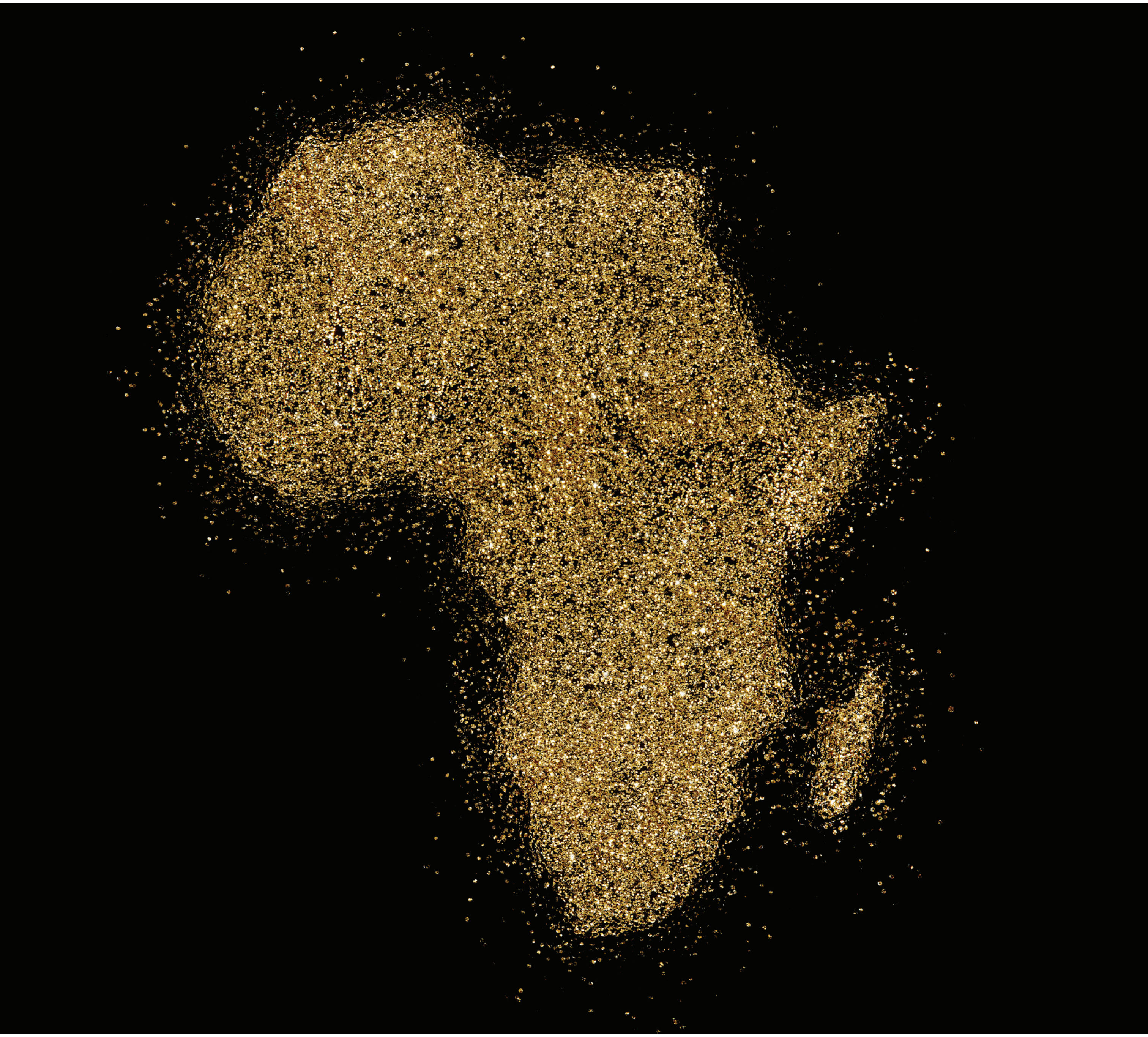

Well, maybe not. If we shift the lens, we might find that emerging markets like Africa are improving their infrastructure, innovating out of necessity and positioning themselves to become an important link in global supply chains. This idea was explored more than a decade ago by C.K. Prahalad in his book: "Fortunes at the Bottom of the Pyramid." It was developed into a concept coined "reverse innovation" in 2012 by Vijay Govindarajan and Chris Trimble in their book: "Reverse innovation: a global growth strategy that could preempt disruption at home." According to the authors, it doesn't make intuitive sense for knowledge to flow uphill from Africa or developing countries to the industrialized world.

Before we look at innovations coming out of Africa, let's acknowledge the conventional wisdom and take a close look at the real barriers to doing business in Africa.

The African supply chain challenge

For many years African countries have been neglected in global supply networks because of the challenges of doing business in Africa. Although the World Bank's Ease of Doing Business ranking shows some upward movements, only two African countries are in the top 50 in the 2020 ranking. Such a low ranking may be attributable to the following challenges.

Infrastructural challenges. The movement of goods within supply chains is facilitated by the physical and information infrastructures, including land, rail, air and sea networks and the flow of information based on connectivity. These are key to any successful supply chain. Yet, according to e-Conomy, a 2020 report from the International Finance Corporation, the shortfall in African infrastructure investments ranges between $67 billion and $107 billion annually. It is estimated that close to 600 million Africans lack access to the electricity grid and potable water. Road transportation is very poor and air travel within Africa is one the most expensive in the world. Despite its energy efficiency, reduced greenhouse gas emissions and lower cost per ton kilometer, rail transport on the continent is below 20% of total freight transport volume.

While Africa is surrounded by the Atlantic Ocean and has some of the longest waterways in the world, marine and water travel cost is about 40% to 60% higher than the global average. Internet connectivity is a major challenge and access to housing per capital is one of the lowest in the developing world. Poor infrastructure inhibits the connection of large rural areas to regional supply chains and online transactions to offline production, and customs processes.

Although significant progress has been made in recent years, with China leading foreign investment in infrastructure, these infrastructural challenges continue to inhibit required developments in the logistics sector and lead to significant increases in cost of goods. Except for some pockets of excellence in countries such as South Africa and Rwanda, African countries generally fail in this regard.

Take, for example, the Lagos Apapa port in Nigeria, a nation that imports almost everything it's population of 200 million consumes. In spite of being the busiest terminal in West Africa, the capacity of the Lagos Apapa port is only sufficient to handle 22,000 TEU of containerized cargo. To compound the problem, the average waiting time for shipping liners is over 25 days at the container terminal due to long clearing times. The port is congested and delivery lead times are long. The situation is not singular to Nigeria. Many African ports are fraught with similar issues.

Once product is landed, African countries generally lack extensive road networks that facilitate delivery. The few roads that exist are in a constant state of disrepair due to a lack of maintenance. A shipping clearing agent at the Tema port in Ghana told us it can take up to 30 days to move heavy generator equipment from the port to the neighboring country of Burkina Faso, a trip that should only take three days. According to that executive, the truck has to move at night to avoid disrupting normal traffic because the roads are narrow and emergency pontoon bridges have to be constructed at locations along the route to avoid damaging existing bridges because of the size and weight of the consignment.

In sum, poor infrastructure leads to logistics and supply chain inefficiencies, which opens up opportunities for innovation in logistics and supply chain that we will discuss later.

Informal business sector. The informal business sector that includes small-scale economic activities is predominant in many African countries. It is termed "informal" because the sector operates through non-official channels and is not taxed or monitored by governments. Indeed, informal trading activities account for the majority of supply chain activities in Africa. The World Bank estimates that the informal sector is the main source of employment and the backbone of economic activity in urban Africa, accounting for about 81% of jobs. The informality of many supply chain activities makes it difficult for many global businesses to operate in Africa.

Weak institutions and under-resourced capital markets. The market condition in sub-Saharan Africa is notorious for its dysfunction with regards to massive inefficiency and rampant politicization of institutions of state. With recurrent conflicts weakening formal institutions, sub-Saharan African markets have become increasingly turbulent as evidenced by their poor ranking over decades with respect to enforcement of rule of law. This is argued to be a major barrier to the flow of foreign direct investment to the continent, averaging just about 1% of global flows, which in turn undermines the availability of capital to firms to expand, thus limiting logistics and supply chain activities. The low inflow of international capital to Africa increases the cost of capital to local and multinational businesses seeking to grow on the continent. The severity of this void also gives rise to the emergence of dysfunctional market conditions marked by widespread illegal copying and counterfeiting of branded products (including services) and growing violation of trademarks by other firms.

Overdependence on commodity exports and the risk of economic instability. Evidence shows that the continent's exports are largely dependent on the extraction of natural resources and the high importation of processed goods and services. For example, oil exports account for 95% of Algeria's exports, 94.5% of Nigeria's, 93% of Equatorial Guinea's and about 74% of the exports from Zambia and the Congo. Minerals and gem stones account for a significant percentage of exports from other countries on the continent. This exposes African countries to shocks in global commodity price vulnerabilities and increases the risk of economic instability. The predominance of non-value adding export activities also limits potential logistics and supply chain operations opportunities.

Civil conflicts and political unrests. The well-documented propensity for civil conflicts, political unrest and governments led by war lords and dictators are major challenges to economic development across Africa. There are two key antecedents to this: Large geographical spreads and small and dispersed populations have inhibited the establishment of strong governments that are capable of controlling their borders and facilitating efficient logistics and supply chains. In countries where the inhabitants are widely dispersed, evidence points to a systematic pattern of political instability that often disrupts local supply chains.

So why bother?

So, conventional wisdom is right? The challenges inhibiting the flow of goods and services are real. Yet, at the same time, there is evidence that African countries are in fact becoming the "beautiful bride" of many industrialized nations and international businesses. After all, how can one explain the more than $110 billion investment by China in different African countries in the last few years? In fact, several leading multinational agencies (including the World Bank, IMF and World Economic Forum) insist that the continent's growth has been exemplary and that greater integration of this market into the global trade system and supply chains offers opportunities for accelerated economic growth. There are several factors that necessitate the inclusion of Africa in global supply chains.

Attractive labor. Increasing labor wages in many Asian countries, particularly China, is driving the interest in the wage arbitrage in Africa. For example, the average labor wage in Nigeria is less than one U.S. dollar per hour. This is in addition to the continent's youthful labor force: The 2015 UN World Population Prospect report estimates that by 2050 Africa will be home to 1.3 billion of the world's 2.4 billion population, providing the continent with a strong demographic dividend. The implication of this is that African countries will be increasingly sought as sourcing locations for labor. This will have implications for increase in supply chain activities including procurement, production, distribution, transportation, logistics and warehousing.

Resource availability. Many African countries possess abundant raw materials and rich mineral resources that are required for the production of key products. For example, the abundance of crude oil and gas in Nigeria, Angola and Gabon could create opportunities for value-adding transformational supply chain activities in sectors such as oil and gas refinery, plastics and energy, to name a few. While some of these already exist, they are at present insufficient to meet the local demand. For example, Nigeria was once the 5th-largest supplier of crude oil to the United States but still imports fuel and other bi-products of crude oil and doesn't yet have a steady supply of electricity. The Democratic Republic of Congo has untapped gold, cobalt and high-grade copper reserves, yet lacks industries and production activities to add value to these minerals. Ghana is a major exporter of cocoa, but until recently had little production capacity to transform raw cocoa into finished products. These have potential implications for production operations and associated supply chain activities in the aforementioned sectors.

Producer economy. Given cheap labor and abundant raw materials and resources, Africa has huge production potential. Although the initial focus will likely be on low commodity products such as textiles, over time the continent may move up the value chain as skills and competencies improve, just as happened in China. A good example is the thriving textile industry in Ethiopia, which has attracted international textile companies including Inditex, H&M and Primark; This industry has created more than 20,000 jobs and spurred many supply chain activities in the region.

Consumer economy. African countries are huge consumers of local and foreign goods and services. With the fastest growing population in the world and the highest concentration of young population, African countries are and will continue to be magnets for consumer markets and products with huge implications for logistics, transportation, warehousing and last-mile distribution. By connecting 1.3 billion consumers across 55 countries with a combined gross domestic product (GDP) valued at $3.4 trillion, it is estimated that Africa's combined consumer and business spending will double to $6.7 trillion by 2030. With increased intra-Africa trading activities, it is expected that African markets will be reshaped with a greater focus on the creation of new industries and expansion of non-traditional sectors, thus having huge implications for supply chain activities.

Regulatory environments. Institutional voids and weak regulations in Africa may be a barrier to doing business. However, at the same time it presents opportunity. The lax regulatory environment in many African countries make them ripe for innovative supply chain activities for foreign firms. As we discuss in the next section, this has led to many innovative supply chain practices that have the potential to become "reverse innovation," to borrow a phrase.

African Continental Free Trade Area (ACFTA). ACFTA, the largest free trade agreement in the world, is a new free trade agreement between the 54 African countries that was officially started in January 2021. It will address many of the cross-border and trade issues within African countries, thus increasing supply chain and logistics efficiency and bolstering intra-African trade. Having a true sub-regional hub for delivery, postponement and customization opportunities should become a reality. There is no longer a need for foreign firms to ship to and focus on only a single country or market. Instead, AFCTA would enable the servicing of many countries and markets from regional hubs; this is poised to make cross-border transport easier. For example, Ethiopian Airlines recently engaged in the establishment of an East African smart logistics and fulfilment hub at Addis Ababa Bole International Airport.

AFCTA will also increase intra-African trade, which is currently less than 15% of total trade, thus having huge implications for logistics and supply chain activities across countries in Africa. The construction of the Africa

Integrated High Speed Network, which is planned to link the 54 countries in Africa and consist of 12,000 kilometers of new tracks, would facilitate intra-Africa movement and logistics operations. The construction of this railway is a testament to the opportunities opening up on the continent.

Infrastructure improvements. There have been significant improvements in the infrastructure of many African countries in recent years. The quality of internet connectivity is increasing, and from rural Africa to urban Africa, the penetration and use of smart phones is unprecedented. The researchers Oke and Maltz noted that "as of 2018, Africa had more mobile phones than Europe and more mobile communication users than the United States." They also noted that approximately a quarter of all new mobile phones subscriptions by 2025 will be in sub-Saharan Africa. Additionally, the ongoing deployment of the Starlink low-earth orbit communication satellites, which will provide high-speed broadband communication and be available anywhere on Earth, will improve internet connectivity in Africa.

There are also several physical infrastructure projects including intra-country and inter-country railway networks, road networks, new modern airports and seaports currently ongoing in several African countries. Although many of the infrastructure projects are funded by controversial Chinese loans, the fact of the matter is that the investments are contributing immensely to the development of Africa's infrastructure. One must not fail to mention China's One Belt One Road (OBOR) project; the Maritime silk road is planned to include and connect up to 20 African countries directly into global supply chains through physical infrastructure. These developments all have implications for increases in logistics and supply chain activities in Africa for many years to come.

Sustainability. There is increasing demand and recognition for Environmental, Social and Governance (ESG) initiatives in global supply chains. It's safe to assume that African supply chains may be the weak link in the push to achieve excellence in ESG because African countries have some of the most daunting environmental challenges in the world. Due to poor economies and the issues previously discussed, pushing ESG initiatives is typically not a priority for many African firms or governments, but therein lies the opportunities. Foreign firms' supply chains could quickly strengthen this link and gain an advantage over other supply chains.

Defying the odds and grabbing opportunity

While there are many challenges to including Africa in global supply chains, those challenges create opportunities at the same time. There are many supply chain innovations ongoing in Africa that have arisen out of opportunities that the challenges in Africa present. These innovations come about as a result of many factors. As we discussed above, weak regulations trigger innovations in supply chain practices. Also, there is simply the issue of lack of options. One executive that we spoke to in Nairobi, Kenya said that they are ready to try anything because there is lack of alternatives: "When you don't have stable electricity, you have to try anything to secure power." The saying "necessity is the mother of invention" truly plays out in many African countries. We discuss some of the innovative supply chain practices below.

Zipline drone technology. Zipline, an American medical drone technology company, has tested and perfected its drone technology for last-mile delivery in health supply chains of countries such as Ghana, Rwanda, Malawi and in recent times Nigeria. Zipline drone technology could be said to be a good example of a potential reverse innovation. Regulatory flexibility motivated the company to start operations in Rwanda before expanding to Ghana and other African countries, and, then the United States—thus demonstrating that technology can indeed flow uphill. The Zipline drones are used to deliver vaccines, blood and medicines to areas mostly rural that are inaccessible by the conventional transportation systems. It thus helps to solve a key logistics problem: last-mile delivery.

The lack of alternatives for last-mile delivery over swamps and inaccessible areas forced local governments to allow the use of the technology. According to one government official in Ghana: "If we don't approve of this, we would be doing a disservice to our people. How are they supposed to get their medicines?" In the height of the

COVID-19 pandemic, the drones were used as a source of reverse logistics to deliver COVID-19 test samples from rural areas of Ghana to laboratories in urban centers. The Zipline operations in Ghana, which have come to be recognized as the world's largest medical drone delivery network, was launched in 2019. Indeed, Bill Gates, the co-founder of Microsoft, extolled Ghana for adopting drone technology to supply essential medical items to health facilities across the country.

Blockchain. While many companies in the industrialized world are still searching for supply chain use cases for blockchain, the technology is gaining widespread use and acceptance in Africa. For example, it is used to support agricultural supply chains in Africa. In a project dubbed "Cocoblock," a blockchain-based traceability system was developed in 2019 to increase transparency, reduce transaction costs and increase profit margins and sustainability of cocoa supply chains in Ivory Coast. De Beers, the South African diamond company, uses blockchain to ensure authentic, conflict-free movement of diamonds within its supply chains. The technology provides an unchangeable record and enables traceability of every diamond registered from mining to delivery, thus helping minimize corruption within the mineral supply chains.

New logistics business models. A number of e-logistics companies that use Big Data, Internet of Things, Artificial Intelligence (AI) and mobile technologies to address on-demand warehousing, logistics and supply challenges have sprung up in Africa. Unlike the dominance of a few large third-party logistics service providers, like FedEx, DHL and UPS, in Africa, the transportation of goods and logistics services are predominantly done by small players and individuals that own trucks. This makes it difficult to connect local individual owners to major multi-national firms operating on the continent. However, this challenge has created an opportunity for new logistics business models: e-logistics companies. One e-logistics company executive in Tanzania noted that the logistics sector in Africa is overdue for digital disruption.

In Uganda, for example, Logistify AI uses AI technology to offer flexible warehousing, transportation and order fulfilment services for its clients. Haul 247, a Nigeria based e-logistics company, has deployed an Uber-like app platform to offer on-demand fast and reliable warehousing and logistics possibilities to companies and individuals. An executive at Haul 247 told us that large corporations use its services because of the logistical difficulties of dealing with individual transport and logistics owners.

Lori Systems is another e-logistics company that operates in East Africa and Nigeria. Similar to Haul247, the company provides on-demand services by connecting truck owners to clients that require logistics services through a mobile app tech-enabled platform. Sendy, another e-logistics company, offers delivery services for various sizes of goods across Kenya via a web- and mobile-based platform. The company connects motor bike and truck owners to merchants through its platform.

Kobo360 based in Nigeria focuses on the FMCG sector and uses Big Data analytics to connect truckers and cargo owners via an Uber-like app as well as tracking the movement of the cargo to detect lapses in service delivery. Yobante Express is another company in Dakar, Senegal, that uses mobile and web platforms to connect providers to merchants. Zaidi Technologies, a Kenya-based e-logistics company, offers a unique service called milk ATM that enables small scale dairy farmers who lack access to large retailers to enter their daily milk liters on Zaidi's digital platform. Zaidi then arranges for the milk to be processed through third-party processors and sold on through Zaidi's ATMs. These innovative business models are facilitating the movement of goods by cutting out middlemen, leading to improved effectiveness and reduced logistics and supply chain costs.

Financial technologies. With a high number of informal businesses that often lack funding due to a lack of collateral and financial records, new financial technologies are increasingly used to finance supply chain operations in Africa. The use of mobile money (Momo) to pay and access loans for goods and services is one innovative example. This fintech solution makes it possible for supply chain operators in low resource contexts to finance their activities.

In 2020, Momo transactions rose to $68.3 billion in Ghana and $47.3 billion in Kenya. Zanifu, a Kenyan e-logistics company that works with manufacturers and retailers, offers credit facilities to retailers by giving them stock on credit rather than money to enable the quick movement of goods and payment to manufacturers. Amitruck, another Kenyan e-logistics company, offers financing to its truck owners and drivers to be paid immediately after service delivery to avoid the 30-day to 90-day wait for invoices to be paid. With low financing as a major hinderance to the supply chain activities, fintech companies have the potential to facilitate efficient supply chains in Africa.

So what?

In our view, the developments happening in supply chains in Africa have major implications.

1. As the success of Zipline's operations in Africa has shown, Africa is a good test bed for new innovations in supply chain practices. Attractive government incentives in countries like Rwanda, Ghana, Kenya and Ethiopia, and friendly regulatory environments, open up opportunities for foreign firms to operate in Africa, to test new innovations or to develop new ones. The huge market potential implies that such innovations can be perfected and exploited in local markets before making their way to foreign markets in the west. However, successful companies will be those that focus first on creating value for these local less developed markets; a laser-focused strategy on using developing countries primarily as laboratories for incubating innovations for the developed world is likely to backfire.
2. There are lessons to be learned from supply chain practices and operations in resource-starved environments like Africa. Unlike their African counterparts, Western companies have no "burning platform" other than the economic pressures that they sometimes face; a term coined from the 1988 Shell piper alpha offshore rig disaster, when a drilling platform is on fire, you have no choice but to jump into the sea. In general, the lack of a burning platform deters innovations. In contrast, African companies are constantly faced with burning platform situations spurring innovation among African firms. While such innovations may sometimes be as rudimentary as using motorbikes for last-mile delivery, they do solve real problems at a low cost, and we believe that companies in the West can learn from these.
3. African supply chains can only get better. With a huge market, improvements in infrastructure, innovative supply chain practices and availability of cheap and abundant labor, we believe that Africa is ready to play a major role in global supply chains. African countries can be good sourcing locations for products for the export market, while at the same time for intra-African trade that will be facilitated by the ACFTA. China is already making in-roads in this regard. Just like in the stock market where you want to get in early and buy low, this is perhaps the best time for foreign Western firms to get in and include African countries in their global supply chain operations. Unlike before, Africa is no longer the "dark continent." The information and digital age ensure that adequate information is easily and readily avail able about operating supply chains in Africa. Initiatives such as the African Trade Observatory, an intelligence tool which was recently implemented by the African Union (AU), the European Union (EU) Commission and the International Trade Centre (ITC) facilitates the identification and comparison of trade opportunities across Africa. Firms don't have to recreate their entire supply chain anymore to operate in Africa. It may simply be a case of " plug and play."

Let's conclude by noting that operating in Africa, or involving Africa in global supply chains, may be a case of "those who dare, win." The challenges and risks involved are still numerous, but the potential reward of doing so is equally high. We hope that African supply chains will cease to be the weak link in global supply chains and live up to their full potential.