



# PATH TO GROWTH:

SHAPING TECH SECTOR SUPPLY CHAINS IN EMERGING MARKETS

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By Lisa Harrington, President, lharrington group LLC and  
Associate Director, Supply Chain Management Center,  
Robert H. Smith School of Business, University of Maryland

In collaboration with Jan-Thido Karlshaus, Vice President Strategy  
& Business Development, Global Technology Sector, DHL Supply Chain



The greater the unknown, the greater the risk.

For technology sector companies doing business in emerging markets,<sup>1</sup> this statement is always top of mind.

Technology is a risky business and inherently unpredictable. The increasingly compressed lifecycle for many technology products is challenging in *any* market, allowing little room for error. And the relentless pace of change in the tech sector makes emerging markets even more of an uncertain bet.

In mature markets, demand patterns and technology adoption rates are better known and understood, as are the protocols of doing business in developed countries. The same cannot be said for emerging markets. There is no homogeneous emerging market or approach. Emerging markets and “clusters” within these markets each have their own variables, issues and challenges. Companies and consumers are evolving in a state of flux.

As one logistics industry executive observed, “These are called emerging markets for a reason.”

Even as technology companies evaluate growth strategies in these markets, they do so recognizing that they are entering uncharted waters. By combining varying levels of infrastructure and unpredictable demand growth with the pressures of the sector – including expectations for effective service, product innovation, competitive price and personalization – you have the definition of uncertainty. As a result, capitalizing on growing consumer demand for technology products requires a supply chain designed specifically to meet the inherent challenges of new rapid-growth markets.

This white paper takes a closer look at the current state of the technology sector in emerging markets. It explores supply chain challenges and offers a solution portfolio to address these issues.

<sup>1</sup> Throughout this paper, the definition of emerging markets to be used will be “a society transitioning to a free market-oriented economy, with increasing economic freedom, gradual integration within the global marketplace and an expanding middle class.”



## Part 1: Current state and driving trends

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For technology companies, doing business in emerging markets offers the potential of great rewards, such as serving a growing middle class with increasing purchasing power and securing lower production costs compared to developed countries. However, with these great opportunities comes the potential of tremendous risk.

Rapidly changing consumer behavior, coupled with the variables of infrastructure, culture, regulatory and political regimes and economic development, make volatility and unpredictability the norm rather than the exception in emerging markets. Factor in limited talent pools, fragmented distribution systems and security concerns, and the unknown variables increase.

“We can predict quite accurately what sales will be in the next year in developed markets,” observes the supply chain director at a United Arab Emirates-based consumer electronics company. “But with emerging markets, it’s hard to predict, which makes supply chain planning and execution difficult.”

Emerging markets also carry a different return on the investment paradigm. As one global networking products supplier explains: “We are in markets now where we are not going to get the density and leverage to build the economies of scale for five to ten years. This is a problem for a lot of U.S. and European companies which are used to having projects with a two-year payback.”

The lure of emerging markets is two-fold: they are an attractive place for production (especially China) and now, with the rise of the middle class and urbanization, a compelling new market for consumption.

“Emerging markets were once seen primarily as a place for sourcing products, based on a low-cost labor play,” explains Jan Thido Karlshaus, Vice President Technology, DHL Supply Chain. “That paradigm has changed. Emerging markets are fast becoming engines of



demand, a trend that carries tremendous implications for technology sector supply chains.”

Three trends in particular characterize the challenges and opportunities for the technology sector in emerging markets:

1. Regionalized supply chains
2. Shortening product life cycles
3. Shifting demographics

Each of these aspects of emerging markets, and specifically, the technology sector will be discussed in the following section.

### Regionalized supply chains

Compared to other industries, the technology industry has a truly cross-regional reach. Supply chains for products like semi-conductors, consumer electronics, mobile devices, PCs, tablets and printers are global in nature, as parts are being supplied from across the world. However,

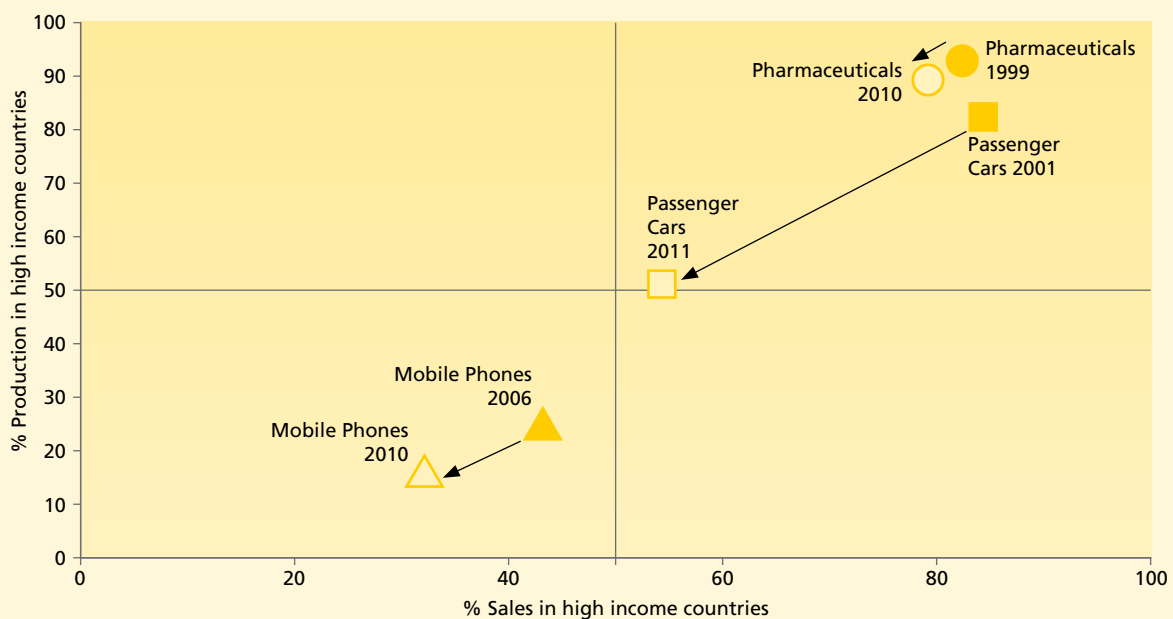
there is a shift in production and consumption as the attractiveness of emerging markets continues to grow. For example, in 2006, approximately 25 percent of mobile phones were produced in high-income countries but by 2010 that number was reduced to 18 percent (Figure 1).

At the same time, the technology sector is significantly more reliant on China than any other industry sector. As a result, technology supply chains are anchored in Asia, with an extremely large and often still growing share of manufacturing based in China.

*“Our production facilities are in emerging markets, such as China and Thailand and they will stay there. Indeed, we will see some production facilities in Japan move to China.”*

**Consumer Electronics Manufacturer,  
Russia and South Africa**

**Figure 1: Proportion of production and sales in high income countries (versus developing/emerging markets)**



Source: DHL Global Connectedness Index, 2012

Despite its dominance, China's role in the global technology supply chain is changing. Fueled by increasing Chinese labor wages and rising pressures to reduce costs, technology companies are establishing new low-cost locations for their manufacturing in Asia. For example Samsung, following Intel and Nokia, recently shifted some manufacturing plants from China to Vietnam, where the company expects to deliver more than 40 percent of its phones by 2015.<sup>2</sup>

However, the current change in technology supply chains goes beyond Asia. For nearly two decades, trade flows have been long-distance and east-west oriented, but these long-distance supply chains are being replaced, at least partially, by shorter, regionally based trade flows to meet the new global demand and changing market dynamics. The regionalized global supply chain, in which goods are produced and sold/consumed in the same geographic region, is emerging as the new paradigm.<sup>3</sup>

The challenge of meeting this regional demand, while managing short product life cycles, makes the tech sector an ideal candidate for the adoption of near-shoring and/or on-shoring. In this practice, companies shift their manufacturing bases closer to the end consumer in an effort to reduce risk and transportation costs, and improve customer service cycle times – while avoiding increased labor wages in China.

*“China's shift towards being both a producer/ manufacturer and a very high-growth consumer of technology products will continue to drive a strong market for high tech products. Domestic Chinese brands in certain tech categories such as smartphones are growing at exponential rates within China and will soon expand outward to the rest of the world.”*

**Victor Mok, CEO North Asia,  
DHL Supply Chain**

<sup>2</sup> Bloomberg, “Samsung Shifts Plants From China to Protect Margins”, December 2013.

<sup>3</sup> Lisa Harrington, Nearshoring Latin America: A Closer Look, Inbound Logistics, March 2012.



For example in 2013, both Apple and Motorola announced plans to move a portion of their manufacturing to the United States as part of a change in their supply chain strategy. Apple is opening up a new production facility in Texas, which will take over some of the company's laptop production activities. This represents a significant shift for Apple, which has not manufactured a technological device in the United States for retail sale since the 1990s. Similarly, Motorola's new Lenovo-owned smartphone production program will be based solely in Texas.

Additionally, the increased frequency of unknowns in emerging markets has fueled the regionalization trend. In Brazil, for example, customs process inefficiencies and high taxes (up to 60 percent) on imported electronic goods (maintained to boost the country's own manufacturing sector) are prompting multinational companies to build production capacity in-country.

While Asia, and especially China, will remain the tech sector manufacturing powerhouse, "Companies realize

they need a more balanced approach," Karlshaus states. "Evidence suggests that a more flexible, hybrid model is emerging, in which companies leverage the benefits of manufacturing in China but also operate production hubs elsewhere, closer to the developing consumer markets or in other low-cost markets."

This new paradigm in supply chain strategy stemming from the combination of shifting demand, shorter product life-cycles and increasing pressure for lower costs, means companies must implement supply chain solutions that balance both the opportunities and the challenges of emerging markets.

### Shortening product lifecycles

In the technology sector, product lifecycles are short – and getting shorter. Competition is global and intense, with manufacturers continuously introducing new or improved products to stay a step ahead. As a result, many segments of the sector behave much like the fashion business where obsolete product means markdowns, margin erosion and a potential loss of market share. "The technology world runs on price erosion," as one manufacturer puts it – a result of the constant stream of new product introductions, which immediately de-value or marginalize existing products.

Additionally, by 2025, annual consumption in emerging markets will reach \$30 trillion – the biggest growth opportunity in the history of capitalism.<sup>4</sup> This growth in consumption, combined with a stream of new product introductions, carries profound implications for the technology sector. Emerging markets now have the opportunity to leapfrog mature economies in embracing new products and technologies. For example, China and Africa skipped over the traditional fixed network and went straight to wireless communications, while India moved directly to LED lighting that could be driven by

<sup>4</sup> McKinsey & Company. Winning the \$30 trillion Decathlon. Going for gold in emerging markets.2012, p. 4.



solar panels, thus eliminating the need for the traditional electricity grid.

This constant introduction of new products puts additional stress on technology supply chains. Long lead times for products being manufactured in emerging markets combined with dynamic global consumer demand can quickly lead to product obsolescence. As a result, companies must have supply chains that are agile enough to fully support rapid new product rollouts, in order to maximize their profit opportunity window and reduce margin erosion.

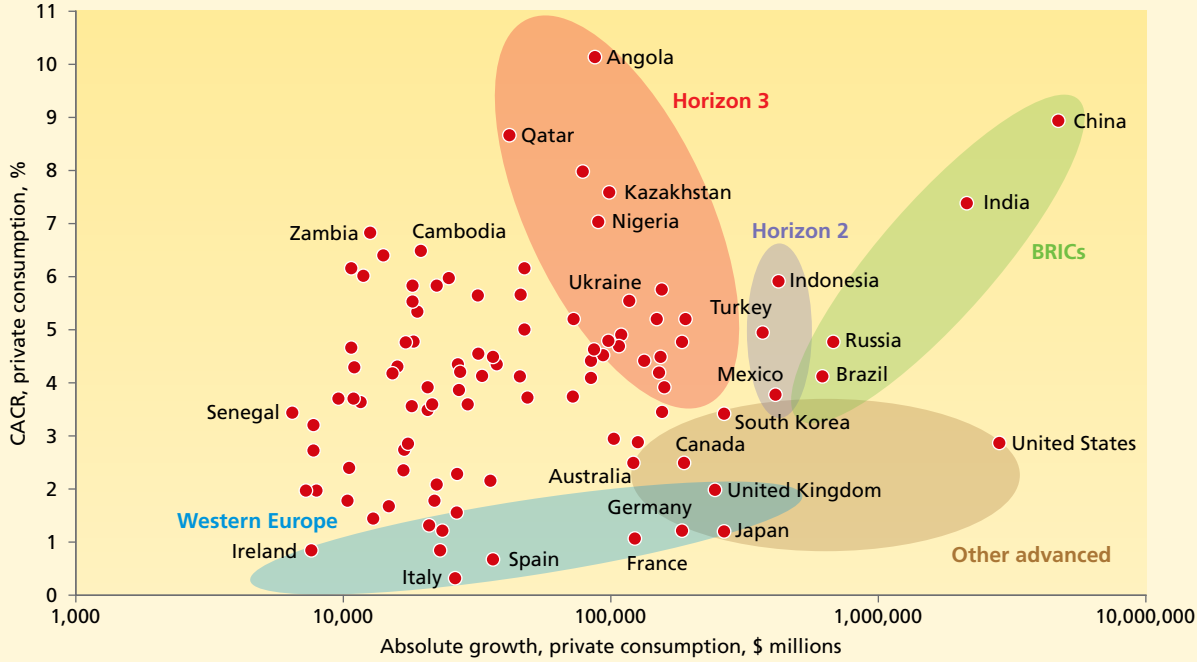
**Shifting demographics**

Two demographic trends are positioning emerging markets at the forefront of the technology sector’s future: The rise of the global middle class and urbanization.

Over the last decade, the cumulative proportion of global output for the emerging markets of Brazil, Russia, India and China (BRIC) has increased from 38 to 50 percent.<sup>5</sup> Other emerging markets, such as Mexico, Turkey, Indonesia and South Africa are experiencing rapid advances as well (Figure 2).

<sup>5</sup> The Economist, “The Great Deceleration”, July 2013.

**Figure 2: Private consumption growth**



In this chart, countries are grouped into similar growth categories – depicted by colors.

**Color key:** Blue: Western Europe  
 Brown: Other advanced/mature markets  
 Purple: Horizon 2 – Steadily growing emerging markets  
 Orange: Horizon 3 – Fast-growing emerging markets  
 Green: BRIC countries – Major emerging markets

Source: Oxford Economics; Accenture analysis, Outlook 2013, p. 5.

Such rapid growth makes these countries attractive for technology companies in search of new sales. In a recent survey,<sup>6</sup> 150 top executives in multinational companies indicated they expect about 28 percent of their global revenues over the next five years to come from emerging markets.

“The high-growth emerging markets of the world are building new cities, where residents, companies, universities and opportunities for prosperity are creating attractive new markets that are unfamiliar to many companies,” says David C. Michael of the Boston Consulting Group.<sup>7</sup> By 2030 all developing regions, including Asia and Africa, are expected to have the majority of their citizens living in urban areas and virtually all population growth over the next 30 years is predicted to be in cities.<sup>8</sup>

As total population grows, so does the size of the global middle class. The World Bank predicts that by 2030,

more than one billion people in the developing world will belong to the middle class – more than twice the number fitting that description in 2005. Income levels in emerging markets increased by 96 percent from 2000 to 2010 and are expected to grow an additional 45 percent from 2010 to 2016, driving a wave of consumerism for all types of goods, from basics to luxury items.

Urbanization and the rising middle class represent a huge opportunity, as well as a significant challenge, for tech company supply chains. To prosper they must do three things at once:

1. Be prepared to fulfill rapidly growing and highly volatile demand patterns
2. Operate in a very complex environment caused by inadequate infrastructure and complex and highly divergent regulatory requirements
3. Hedge their bets regarding inventory carrying decisions both to ensure supply and avoid obsolescence

<sup>6</sup> BCG, Globalization Readiness Survey; BCG Analysis, September 2013.

<sup>7</sup> David C. Michael, Boston Consulting Group, Keeping Up with Emerging-Market Growth, May 24, 2012.

<sup>8</sup> UN Habitat, State of the World's Cities 2010/2011 – Cities for All: Bridging the Urban Divide, p. 26.





## Part 2: Success drivers and solutions

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While high growth markets present enormous challenges, the growth opportunity they represent for technology companies is without precedent. To capitalize on this opportunity, the sector must create supply chains that are flexible, scalable, cost-effective and risk tolerant.

This section discusses supply chain practices that support these three key attributes. These practices include:

1. Managing risk through a scalable and flexible approach to market penetration
2. Prioritizing compliance and quality from the start, rather than low-cost quick fixes
3. Avoiding a “one size fits all” market approach

### Managing risk through a scalable and flexible approach to market penetration

In the high tech sector, rapid prototyping is a common practice in product innovation and development. Rapid prototyping is a technique for mocking up parts or models pre-production, and is used to test a concept or process before going to mass production.

Best practice technology supply chains in emerging markets embrace a similar approach. They are structured to start small, but with contingent capacity to scale up quickly, in a way that optimizes cost and controls risk, while effectively meeting demand. This contingent capacity must be vetted in advance, especially to avoid



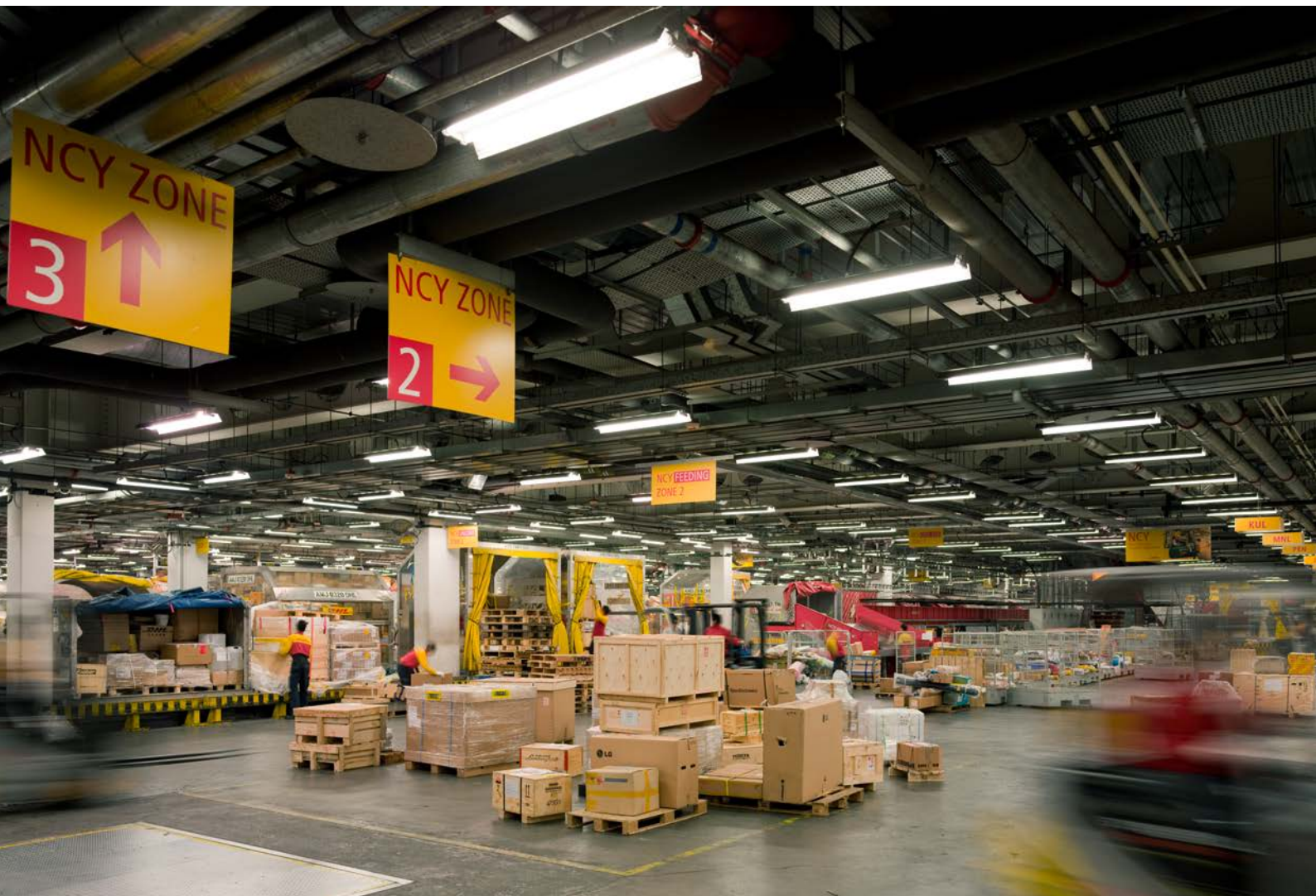
the kind of last-minute scramble for capacity that often results in service failures.

Thus, network and operational agility become key differentiators for best practice technology supply chains. This agile approach revolves around being asset light, but with access to fully qualified capacity when and where it is needed, typically through partnerships with logistics service providers. Supply chains must be able to expand and contract according to market conditions and consumer demand. In high growth emerging markets, companies may need their supply chain capacity to grow 20 percent to 30 percent a year upon market entry.

*“Flexibility and agility are absolutely necessary. Supply chain facilitators need to be able to act quickly instead of having many layers that have to be passed through before the decision is taken.”*

**Consumer Electronics Manufacturer, UAE**

Sales volumes in emerging markets can expand and contract rapidly, and demand is difficult to forecast, given the nature of new markets. Therefore, technology firms must develop effective strategies both to mitigate and to capitalize on the demand volatility. Fortunately, a broad range of solutions is available to address these challenges.



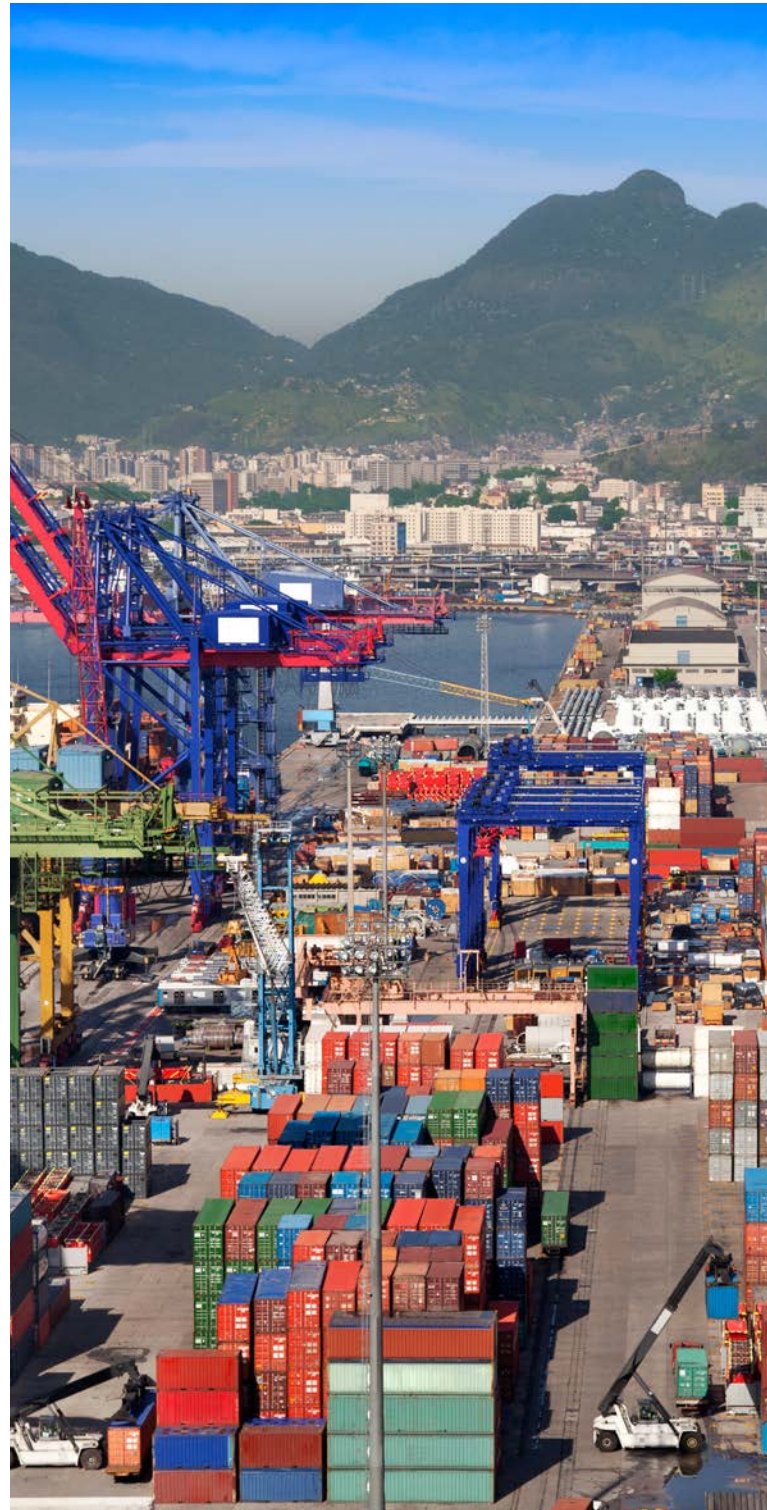
These include improved forecasting techniques, joint planning and collaboration and postponement solutions. Postponement solutions involve delaying the customization and configuration of products as late as possible, so that they can be redirected away from markets that suffer last minute downward fluctuations in demand.

As technology companies work to manage these risks in emerging markets, a growing number are realizing the potential value of adopting a multi-user environment that helps reduce costs and produces economies of scale. In this model, technology companies share supply capability and capacity in a multi-user warehousing environment provided by a third party logistics service firm (3PL).

### Prioritizing compliance and quality from the start, rather than low-cost quick fixes

Unlike developed markets, emerging countries offer complex risks associated with local regulatory compliance including: tax laws; sanctions and embargoes; health and safety regulations; business disruption; IT security; data protection and environmental regulations. Additionally, bribery and corruption is a real concern for international companies entering emerging markets. Western governments are increasingly using extra-territorial powers, in addition to local anti-corruption laws, to sanction companies for corrupt practices committed abroad. By engaging in corrupt practices or cutting corners on compliance in order to drive through the bureaucracy, even the most respected brand can be damaged. With so many aspects to consider and so many new and changing rules to understand and follow, prioritizing compliance and quality from the start, rather than using low-cost, quick fixes, will enhance brand value while minimizing regulatory risk.

In addition to these business challenges, there is also a high risk of organized crime in some emerging markets such as Mexico, Brazil and parts of India and Africa.





For this reason, technology companies should find partners who are capable of leveraging sophisticated and effective security techniques to mitigate these risks.

*“There are considerable security concerns within Mexico, particularly for north-bound trucks. Insurers will limit the value that can be on a truck at any given time, but will adapt their price based on the level of security on a given vehicle – this can range from hidden GPS systems to having armed guards present on a truck.”*

**Luis Erana, President Technology and Service Logistics Americas, DHL Supply Chain**

With such strong consequences for making the wrong decision, technology companies must choose wisely when forming partnerships for emerging markets, including carefully evaluating whether local providers have the adequate capabilities to meet customer requirements and fulfill contractual obligations. The selected logistics and supply chain partner must not only meet the company’s own standards on compliance but also meet the legal standards required by the regulatory systems of the different countries in which they are active. This is essential in terms of maintaining brand value and avoiding the risk of harmful and costly litigation. Ultimately, companies may find that it is worth paying a premium for a service that guarantees strong performance around compliance, security and reliability in order to mitigate the significant and varied risks.

## Avoiding a “one size fits all” market approach

One of the most significant challenges facing technology companies in emerging markets is coming to terms with the diversity of consumers, infrastructure and supply chains that exists both between different countries and within individual countries themselves. This is in stark contrast to developed markets, where supply chain arrangements can reflect the largely homogeneous nature of capabilities and infrastructure.

There is no “one size fits all” approach to supply chains in emerging markets as every country has its own challenges and opportunities. Therefore it is essential that technology companies tailor their supply chain solutions to the specific challenges of the individual markets. For instance, transport infrastructure is severely lacking in Brazil but well established in key parts of China. Bureaucracy can be extremely difficult to overcome in markets such as India and Nigeria, whereas problematic customs systems are the major issue in Brazil.



*“Overcoming challenges and supply chain complexity in high growth markets such as India should not be underestimated. Considering the poor infrastructure with long waiting times crossing borders between states, along with the fact that each of the 28 states has different tax structures, proves that an established supply chain model in developed markets will not work there. An OEM who wants to grow their business in this market needs deep local knowledge and talent.”*

**Oscar de Bok, CEO APAC, DHL Supply Chain**

Emerging markets usually exhibit extreme discrepancies in wealth and service requirements. While the lower income population requires a low-cost supply chain to serve their needs, the upper and middle class have converging standards with developed markets regarding their high level of service requirements.

With that in mind, it is no surprise that end-customer requirements (and as a result the supply chain requirements) can be as advanced and demanding in emerging markets as they are in developed countries. A good example of this is in Brazil, where demand for consumer electronics is increasing both among the highly affluent segments and the middle class in the run-up to the Brazil 2014 World Cup and the 2016 Olympic Games. These groups, although residing in an emerging market,

demand the installation of satellite devices at the same speed and with the same service levels as customers in developed countries.

Companies must recognize that there are often vastly different supply chain requirements depending on which customer groups are being served. These unique consumer challenges require companies operating in emerging markets to create a supply chain that can not only be tailored to local policy, infrastructure and demand, but can also leverage the benefits of standardizing core supply chain elements in order to avoid duplication and achieve overall cost-effectiveness.

### Driving success

Consumer demand for technology goods in emerging markets has increased dramatically in the last decade and will continue to ramp up. Combined with the fact that emerging markets in Asia-Pacific (particularly China) are by far the largest manufacturers of technology products in the world, it is clear that emerging markets will play a key role at both ends of the global technology supply chain.

For the technology sector, capturing its slice of the \$30 trillion emerging market growth opportunity will require developing a scalable, flexible supply chain that meets the regulation and policy standards of every local market and is precisely engineered to support the divergent needs of these highly individualized markets.

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## About this paper

Strategic consultant, academic and co-author of three books, **Lisa Harrington** offers a global supply chain perspective.

At the Robert H. Smith School of Business, University of Maryland, Lisa is Associate Director of the Supply Chain Management Center and Faculty Lecturer on Supply Chain Management. She also is President of the lharrington group LLC, a firm providing strategic consulting services across global supply chain strategy, operations and best practice.

Lisa's articles have appeared in Fortune, Industry Week, The Economist, Inbound Logistics, The European Business Review and many other publications.

**Dr. Jan Thido Karlshaus** is Vice President, Global Technology Sector at DHL Supply Chain. In this role, he is responsible for leading the growth agenda and strategic development for DHL Supply Chain's Technology sector activities globally. He joined Deutsche Post DHL eight years ago as Head of Corporate Strategy. Prior to this he has spent more than a decade in strategic management consulting advising automotive and high-tech companies on growth strategies and supply chain management.

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