

THE GLOBAL GRID

The global economy is becoming increasingly interconnected, and innovative businesses are harnessing the power of this network.

Over the past two decades, globalization and digital technology have combined to create vast, complex networks that weave themselves through every economic and social activity. Money, goods, data, and people now cross borders in huge volumes and at unprecedented speed. Since 1990, trade flows have grown 1.5 times faster than global GDP. Cross-border capital flows have expanded at three times the rate of GDP growth. Information flows have increased exponentially.

These networks form a global communications and information grid that enables large-scale interactions in an instant. Within this digital fabric, old boundaries begin to blur; cross-border capital flows also become information flows; and just-in-time supply chains also serve as just-in-time information chains. Case in point: only one in ten US dollars in circulation today is a physical note—the kind you can hold in your hand or put in your wallet. The other nine are virtual.

On this grid, trillions of large and small transactions synchronize instantly. The striking thing about the recent economic downturn wasn't just the rapidity of the decline but the fact that so many seemingly diverse markets plunged at once. By the end of 2008, the volume of trade had fallen by more than 10 percent in more than 90 percent of OECD1 economies. Why? Trade declined everywhere because, increasingly, products are made everywhere. These days, a typical manufacturing company relies on more than 35 different contract manufacturers around the world to provide the necessary parts for its goods, which for some companies, such as auto and airplane manufacturers, can range in the tens of thousands. No wonder that over the past 40 years, trade in intermediate goods as a percentage of total trade has doubled.

These interconnections are even more pronounced in capital markets. Who would have imagined that Iceland's financial system might collapse when mortgages in Las Vegas went belly up?

Such complex adaptive systems create their own organizing dynamic. In the absence of direction from a single center, they grow, evolve, interconnect, disrupt, and—quite important—heal themselves. Even as capital flows temporarily shut down during the crisis's darkest days in the winter of 2008–09, for example, the global information grid kept growing. Estimates by Cisco Systems suggest that in 2009, global data flows expanded by nearly 50 percent. In China alone, more than 150 million new people connected to the Internet last year, giving that country a

digital population almost as large as the world's biggest social-networking site, Facebook. And last year, Facebook's user base more than tripled, to upward of 400 million members—a population that would make it the world's third-largest country.

Alongside this relentless advance in digital connectivity, the financial crisis has underscored the commitment by most countries to maintain market-based economies and free flows of capital and trade—though the precise shape of new regulations remains to be determined. On average, governments across the globe have passed three protectionist measures a day since the advent of the crisis, but they haven't added up to much: less than 1 percent of global trade has been affected by these rulings.

Meanwhile, links form in new directions. Trade flows between China and Africa, for example, have been growing by 30 percent annually, creating robust commercial networks that barely existed a few years ago. Similarly, Asia has supplanted North America and Europe as the Middle East's largest trading partner. Transactions between emerging markets are on the rise. The Indian wireless operator Bharti's recent bid to acquire Kuwait-based Zain's African assets could create a global wireless giant that would reach across more than 20 countries in South Asia and Africa.

Every company is now a global company—and the most innovative ones are building the global grid into their DNA

Innovative businesses will grow by harnessing the interlocking power of these new grids. Some will be disruptive newcomers like Skype. Formed less than seven years ago, and lacking any network infrastructure, Skype nonetheless ranks as the world's largest carrier of transnational telephone calls. Even if companies eschew such radical business models, they need to think strategically about how to use these new networks to advance their existing business models. Techniques such as “near-shoring,” “crowd sourcing,” and sophisticated labor arbitrage help companies efficiently build products, source ideas, find employees, deliver services, and reach customers efficiently.

As an English nurse orders medicine on a wireless electronic tablet, she links her hospital up to the global information grid, which will help innovative businesses grow and become increasingly international.

Similarly, companies that can figure out how to capture winning positions in the global supply chain will thrive. Japanese companies have mastered that strategy as no others have. In 30 different technology sectors with revenues of more than \$1 billion, Japanese companies control 70 percent or more of global market share. They have done so by creating an array of “choke

point” technologies on which much larger industries depend. Mabuchi Motor, for instance, makes 90 percent of the micromotors used to adjust car mirrors worldwide. Nidec makes 75 percent of the world’s hard-disk drives. Japanese companies own nearly 100 percent of the global market for the substrates and bonding chemicals used in microprocessors and other integrated circuits.

The information grid makes every company, no matter how small, a global company. Even individual proprietors now sell to customers around the world via sales platforms such as eBay or Alibaba. Snapproducts, a US-based product-development company with fewer than 40 employees worldwide, uses virtual sourcing to supply US retailers with an array of low-cost seasonal and basic products: summer flip-flops, Christmas decorations, beauty products, socks—more than 50 million pairs in the past three years. The company marries a high-touch, customer-centric design process with low-cost production; it collaborates with retailers to predict fickle consumer trends and then designs and sources products in collaboration with a range of low-cost manufacturers across Southeast Asia. This approach provides retailers with rapid sales on high-margin products and allows Snapproducts to deliver year-over-year growth rates as high as 400 percent, without ever taking ownership of inventory.

Your customer is tweeting—how will you answer?

The global grid’s most important impact on business over the next decade may come from the disruptive changes in consumer behavior that it will spur. These changes may well overshadow the radical pricing transparency, ubiquitous information availability, and massive new networks of engaged consumers that we have already witnessed. Recall that 15 years ago, less than 3 percent of the world’s population had a cell phone and less than 1 percent was online. Today, those numbers are 50 percent and 25 percent, respectively.

These technological changes are altering behavior that was once thought impossible to shift. For example, Americans now spend 30 percent more time reading than they did a decade ago, thanks to the explosion of text messaging, e-mail, and social networking.

The complex digital networks that form the current global communications and information grid have brought mobile phones and Internet access to nearly every corner of the world.

What’s more, these readers also write. More than 15 million Americans (or 10 percent of the US workforce) now post online product reviews every week. Aside from recommendations by friends, US buyers now rate online user reviews as the top influencer of their buying decisions—

nearly twice as influential as old-style advertising. Traditional media companies know just how large a hole this behavioral shift has blown in their bottom lines.

But it's not just Big Media's problem. Companies everywhere are struggling both to capture the benefits of this always-on, user-driven world—and to contain the damage it can cause. Product problems can become global issues overnight, putting a premium on constant monitoring. Viral networks also help inflame nationalist passions around formerly isolated incidents. (Carrefour learned that lesson when negative remarks made by French politicians promoted an overnight boycott of its Chinese stores in the run-up to the 2008 Beijing Olympics.) In such situations, speed and agility in crafting a response can make the difference between successful crisis control and enormous economic harm.

Imagine the power of four billion connected minds—are you prepared for the innovation about to be unleashed?

The spread of mobile broadband will multiply these challenges and opportunities. Users of the iPhone surf the Internet 75 percent more than do users of regular cell phones, and more than half use their phones to watch video. In just three years since the iPhone's launch, developers have created more than 200,000 applications, and this is only the beginning: nearly 50 percent of all new mobile phones purchased in developed markets are now Web-enabled smartphones. That rush of new Net surfers includes a growing number of emerging-market users too: in China last year, more than 100 million people logged on using the country's new 3G network, which is why global mobile data usage rose 2.5 times in 2009.

The global grid's interconnectedness can bring volatility as well as stability to the marketplace. Stock traders in São Paulo were no more immune to the financial crisis than their counterparts in New York were.

Emerging markets are where the information grid's influence may be most profound. The explosion of mobile networks is giving billions of people their first real entry point into the global economy, helping them become more informed consumers, connecting them with jobs, and providing much better access to credit and finance. The economic impact is tangible: every 10 percent increase in cell phone penetration in India corresponds to a nearly 0.6 percent rise in national GDP.

Kenya shows how the future might unfold: just four in ten Kenyans have cell phones, yet half of all users—or one in five Kenyans—now make purchases via mobile-payment systems. Kenya's largest employer is txteagle, an SMS-messaging company, which provides jobs to more than

10,000 Kenyan citizens by doling out “microwork”: small tasks that can be accomplished over mobile networks.

A world where not just everyone but also everything is connected opens up radically new possibilities

Increasingly, people plugging into the planet’s digital nervous system will be joined by inanimate objects in a phenomenon we call [“the Internet of Things.”](#) At present, more than 35 billion “things” are connected to the Internet—sensors, routers, cameras, and the like—but this phenomenon is just getting started. More than two-thirds of new products feature some form of smart technology.

For example, John Deere tractors now deploy GPS guidance systems to apply fertilizers to cropland precisely, reducing farmers’ costs and increasing annual yields. The Dutch start-up TomTom has created systems of “smart” traffic lights that improve traffic flows. Nortura, Norway’s largest food supplier, uses radio-frequency identification (RFID) technology to trace chickens from the farm to the store shelf, helping to monitor optimal refrigeration temperatures throughout the supply chain. Kraft and Samsung have partnered to develop the Diji-Touch, a Web-enabled vending machine that allows real-time updates of rich-media images of products for sale. The stakes are high: as objects and devices connect online, some estimates suggest that at least \$3 trillion of current spending could be disrupted.

Expect a bumpy ride—a connected world will be a volatile world

A profound tension remains at the core of this expanding global grid. In theory, all this interconnectedness is supposed to increase stability by helping to diversify risk. But while the ability to diversify risk has risen, so has the ability to identify and channel resources instantaneously toward or away from opportunities. The global financial crisis painfully underscored how interconnectedness can actually amplify the impact of a particular shock, so the key will be to focus on building in greater redundancy and resilience. In the meantime, we should not be surprised if the years ahead bring long stretches of stability—the payoff from a larger and more resilient system that is still subject to bubbles and powerful shocks.

The next few years in particular may well be bumpy as a massive deleveraging process rolls through many Western economies. The eurozone will prove especially tumultuous as structural imbalances get worked out between savers, such as Germany, and debt-laden countries, such as Greece, Ireland, Portugal, and Spain. It’s important to note that these bumps will occur across all markets—capital and currency markets, trade markets, and labor markets.

In response, businesses should strive to improve their peripheral vision by gaining a better understanding of the full range of areas where disruptions could emerge and by scanning the horizon for potential shocks. Volatility is here to stay

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