CHAPTER **1**

Enterprise Value from Customer Value

Business executives confront numerous uncertainties as they cross into the second decade of the new century. Consider:

- "Free" is a common price point in information industries, such as newspapers or music, leaving firms to find new models for profitability.
- Apart from free, pricing pressure is intensified by the rapid rise of developing economies, which are home to a steady stream of new low-cost providers serving many markets.
- The traditional model of the firm has been joined by other organizational possibilities: quasi-governmental capitalist entities (Thales Group, General Motors, AIG), business ecosystems that link capabilities from multiple organizational "homes" (Apple's iPhone software development network), and dispersed pools of volunteer talent with no revenue streams but category-leading products (Linux, Wikipedia).
- The attractive size of Asian markets is made problematic by cultural issues, language barriers, the wide variation in intellectual property protection, and risks—everything from influenza outbreaks to terrorism and extreme weather.

In short, what firms deliver, how much they charge, how they organize to deliver it, and the constraints under which they do so are all in transition.

Perhaps the only certainty lies in the necessity of serving customers better. As these customers have more complex needs, increased competition of their own, and more suppliers to choose among, successful businesses are returning to the ground truth of profitably delivering value across multiple geographies, in the context of rapid and unpredictable change. Accordingly, an enterprise's financial health is largely a function of the value its customers derive from the seller's products and services.

Aligning the delivery of superior customer value with increasing enterprise value derives from strategy, from operational excellence, and from the *business model,* which articulates the differentiated ways that an enterprise delivers value to its customers. While the term is widely used, we follow coauthor Kagermann's definition:

> *A business model consists of four interlocking elements that, taken together, create and deliver value.*
>
> ***Customer value proposition,*** *including target customer, the customer's job to be done, and the offering which satisfies the problem or fulfills the need.*
> ***Profit formula,*** *including the revenue model, cost structure, margin model, and resource velocity (lead times, turns, etc.).*
> ***Key resources*** *to deliver the customer value proposition profitably, potentially including people, equipment, technologies, partnerships, brand, etc.*
> ***Key processes*** *also include rules, metrics, norms of behavior that make repeated delivery of the customer value proposition repeatable and scalable.*[1]

The great business models have become familiar icons. King Gillette gave away razors to sell an annuity stream of replacement blades. American Airlines pioneered the use of Sabre, a computerized reservations network that became so strategically important it was spun out as a separate entity; Bloomberg's financial information service followed along similar lines. IKEA combined Nordic design, expertise in flat packaging, and large retail footprints to reinvent the furniture industry.

Because it is fundamental to a firm's success, however, changing a business model can be difficult. General Motors' template for labor costs, model changeovers, and brand management dates to the 1960s and did not adapt to new dynamics of competition and consumer behavior. The music industry's bundling of songs into LP records worked for a few decades, but the model failed in the digital era, leaving the labels' economics and practices out of step with the market. Established air carriers' inattention to the low end of the market, and to their cost structures, left them vulnerable to a new wave of budget airlines such as EasyJet, Ryan Air, and Southwest.

With this history in mind, our focus in this book will be on business model innovation, specifically on the role of information technology in driving and enabling changes to the fundamental facets of the business: the offer and customer, the value chain and its players' margin structures, and the ecosystem and the business processes it performs. A particular emphasis will fall on what we call business concepts. Business concepts,

which frequently utilize technology in innovative ways, can be seen as building blocks in the creation or revision of business models.

> The business model determines the value of a company by facilitating the profitable delivery of value to the firm's customers.

Customer Value and Enterprise Value

To see how customer value shapes enterprise value, let's do a thought experiment involving search. Before the World Wide Web, according to Kevin Kelly (founding editor of *Wired*), U.S. searches added up to a staggering 111 billion a year, most of them directory assistance telephone calls, but also counting librarian queries. After the advent of search engines, people appear to be asking more questions: the measurement firm comScore estimated 2 billion searches per day, worldwide, as of December 2007.

In Kelly's admittedly rough estimate, an unnamed Google employee hypothetically and unscientifically values these searches as follows. Let's assume, he says, that

> *1/4 of all searches are really easy ones (like "american airlines") that save the user maybe 30 seconds.*
>
> *1/4 are a little hard and save maybe 5 minutes.*
>
> *1/4 are just wasting time.*
>
> *1/4 are hard ones that lead to substantial savings—like diagnosing your serious disease, or choosing the right college, or the right vacation destination.*
>
> *Suppose it takes 10 searches on average to get one of these "hard" answers, but when you get it, you've saved maybe 3 hours. That averages out to 6 minutes saved/search. Figure average income of $25,000/year, or $12.50/hr. So we get a value of $1.25/search by this metric.*[2]

Assuming the U.S. audience as 1.2 billion searches per day at that $1.25 per search, and Google's market share of roughly 65 percent, that would mean that Google creates $1.5 billion of value for its U.S. users per day.

Now, these are unofficial numbers, and this is only a thought experiment, but even if the numbers are off by a factor of five, that still means that Google creates 25 cents of value with the average search, at a cost to serve in the range of .2 cents. That would represent a 100-fold ratio of customer

well-being to cost, a stunning value proposition by any measure. Google's share price is a direct reflection of both this calculus and the advertising business model that allows it to be converted into revenue.

While stressing the role of customer value in enterprise value may sound like a truism, recent academic research suggests that theory and practice converge. The logic for moving from product or service provision into solution-centric business models is not only intuitive. In the past several decades, accounting-based value of a company's assets has reflected less and less of the stock market capitalization. In fact, as of 2003, the market value of the Fortune 500 was fully six times the book value.[3] If physical capital and similar assets fail to explain the value of a company, the reasoning went, intangibles such as brand equity, goodwill, and intellectual property must be responsible.

A landmark study published in 2004 explored one such intangible, customer satisfaction, which the authors hypothesized was related to increased "share of wallet," improved customer retention and therefore cash flows, positive word of mouth, and other benefits. The research showed that a one point gain in customer satisfaction using standard metrics correlated to a 2.75 percent gain in shareholder value.[4]

More recently, a 2008 study used customer satisfaction metrics as a guide to portfolio creation, and the customer-satisfying portfolio outperformed groups of companies with either low or decreasing customer satisfaction scores.[5] In both cases, positive customer experiences translated both to the bottom line and to stock market performance.

> Our assertion that enterprise value derives from customer value is founded in experience, logic, and quantitative models.

Context

Because of the recent economic turmoil, business model innovation has never been more difficult—or more necessary. Six new or reconstituted macro forces will reshape the global context for business decisions in the coming years.[6]

1. *The changing shape of globalization.* As the world enters the second decade of the millennium, the process of globalization is in flux. China's role in military and economic affairs, while not yet fully clear, will be larger and different from what most observers predicted. Exhibit 1.1
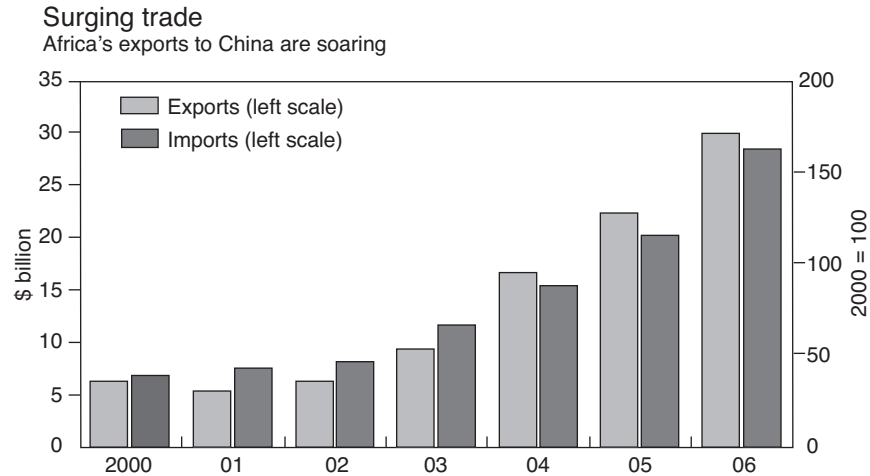
Surging trade
Africa's exports to China are soaring

EXHIBIT 1.1   Increased Trade between Africa and China Comprises One Facet of the Changing Shape of Globalization

Sources: International Monetary Fund (IMF), *Direction of Trade Statistics*; and authors' calculations.

shows but one facet of this expansion: dramatic increases in Chinese trade with Africa.[7] Global problems such as climate change and capital mobility are exposing the limits of existing governance structures.[8] The shift from a bipolar world dominated by the United States and USSR and their associated spheres to a multipolar world has broad implications. Among these are the rise of nonstate actors (whether Doctors without Borders or Al Qaeda) and new trade patterns between the BRIC (Brazil, Russia, India, China) countries and the developing world.
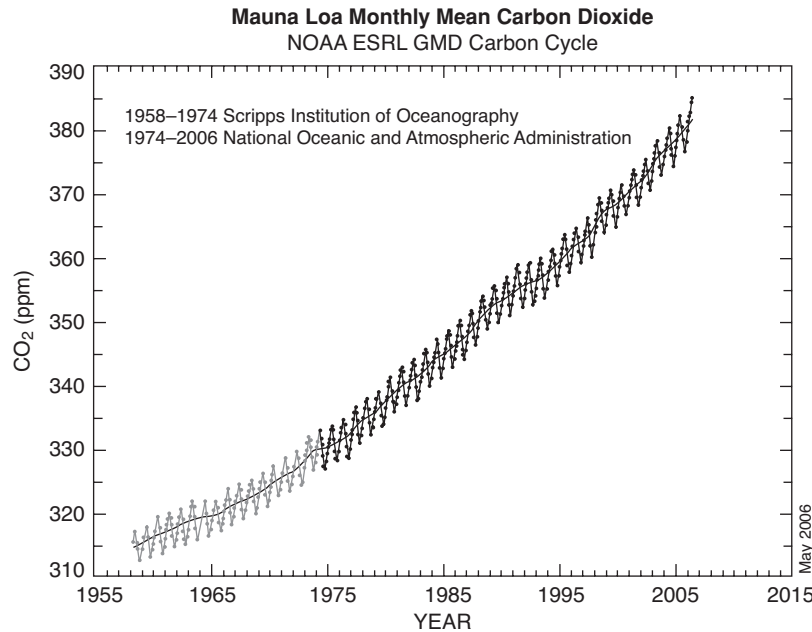
2. *Demographics and urbanization.* The aging of industrial workforces is occurring against the backdrop of a foundational shift to a services-based economy. In addition, cities around the world are growing bigger as agriculture declines in economic impact. Both employer- and employee-managed retirement portfolios have lost substantial value, complicating the demographic picture further. Developing economies typically have much higher population growth, and thus different age pyramids, compared to OECD countries, as Exhibit 1.2 illustrates.[9] Older people consume more health care resources than do younger ones, and those resources are becoming more expensive every year. In addition, elders constitute a distinctive market, one that requires new channels
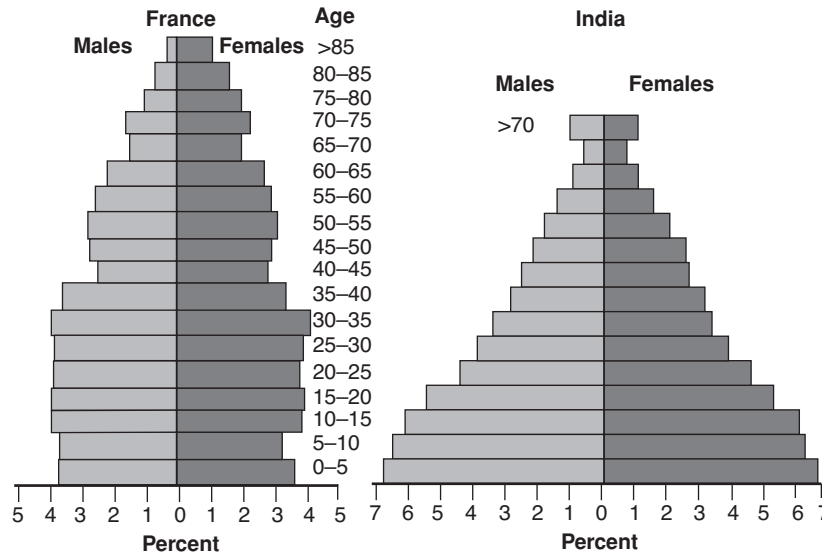
EXHIBIT 1.2   Workforce and Social Welfare Projections in France and India Vary Considerably Because of Demographic Differences, Shown Here on Age Pyramids

Source: Age pyramids available at U.S. Census Bureau, International Data Base (IDB).

to market, more support to make use of products and services, and a variety of aids to handle the growing complexity of modern life.

3. *Environmental concerns and resource shortages.* After the Kyoto protocols were either unratified or frequently ignored, worldwide sentiment regarding the reality of climate change has shifted in light of evidence of the sort presented in Exhibit 1.3.[10] Substantial policy commitments are emerging from many countries, and the cost of these mandates will ultimately fall on business. In addition, critical resources including water and key metals can become scarce for either natural or political reasons. Meanwhile, the countless opportunities that will emerge from greater environmental awareness—whether in the areas of power generation, lighting, packaging, local farming, or many others—could well contribute to a new era of prosperity.

4. *Increased governmental presence.* Financial services scandals, new kinds of infrastructure vulnerability (as in the power grid for example), and new standards for drug and medical device approvals will ratchet up the regulatory burden. Whether in mortgage origination and packaging, end-of-life requirements for electronics, or efforts to increase financial transparency, expect to see governments increase their presence—and

Mauna Loa Monthly Mean Carbon Dioxide
NOAA ESRL GMD Carbon Cycle

1958–1974 Scripps Institution of Oceanography
1974–2006 National Oceanic and Atmospheric Administration

May 2006

Y-axis: CO_2 (ppm), ranging 310 to 390
X-axis: YEAR, ranging 1955 to 2015

EXHIBIT 1.3   By Many Measures Including Readings at This Hawaiian Observatory, Environmental Indicators of Global Climate Change Are Driving Responses by National and International Agencies

Source: National Oceanographic and Atmospheric Administration long-term carbon dioxide readings at Mauna Loa observatory.

thus reporting requirements—in most industries. Finally, stimulus packages in many countries (see Exhibit 1.4)[11] are partially reversing the trend toward privatization of major industries as governments purchase damaged assets. In almost every U.S. industry vertical, the government is competing with, taxing, regulating, and/or subsidizing a given company, shaping the range of strategic possibilities. Other governments play similarly critical roles.

5. *Digital trust.* Various digital connections have made possible new kinds of relationships and arrangements, but they have also opened the door to innovative forms of fraud, data loss (see Exhibit 1.5), and other violations of trust such as electronic voting machine miscounting. Search technologies, which have become ubiquitous, are generally taken as objective when in fact their results reflect multiple agendas. At both the consumer and business-to-business levels, watch for new forms of trust to be required and enforced.
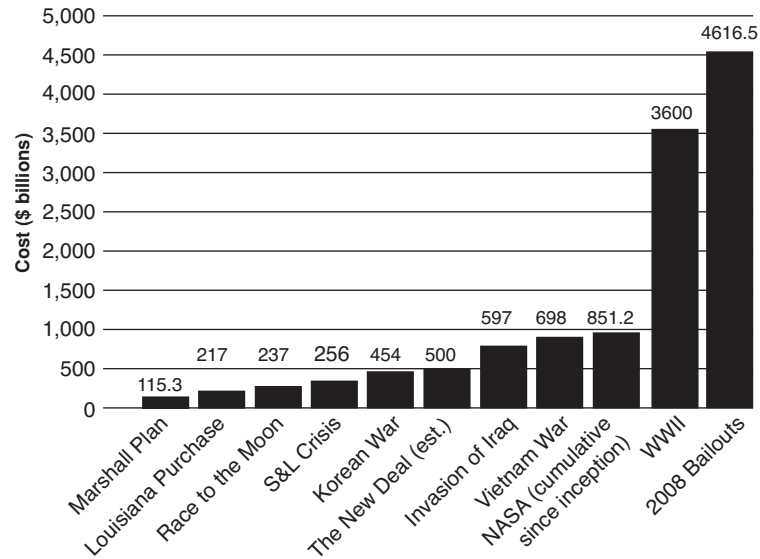
EXHIBIT 1.4   The Scale of Governmental Intervention Is Rising

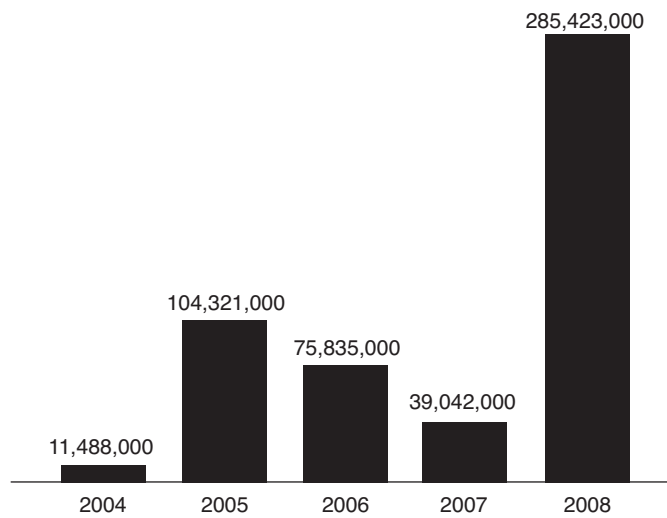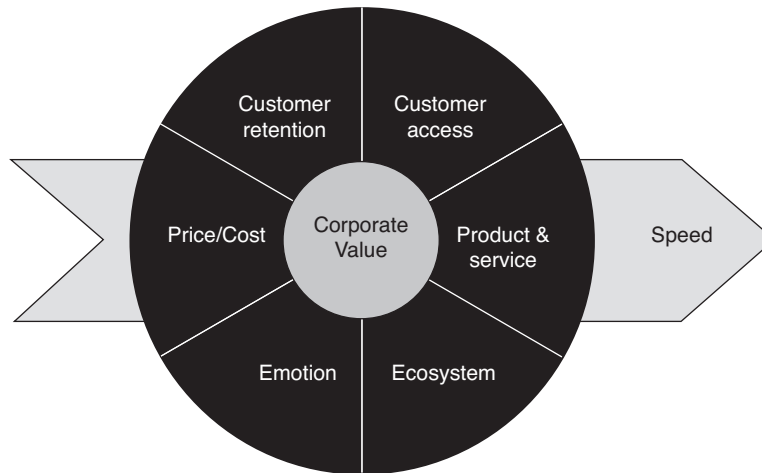*Source:* Exhibit based on data from Bianco Research.

EXHIBIT 1.5   Commercial Firms Investigating Data Breaches Saw a Sudden Upturn in Compromised Data Records in 2008

Source: Verizon Business 2009 Data Breach Investigations Report, p. 32.

EXHIBIT 1.6 Corporate Value Derives from Both Market Relationships and Internal Processes, and Both Tangible and Intangible Factors

6. *Risk management*. Whether in the 2008 terror attacks in Mumbai, the rogue trader at Société Générale, or AIG's missteps with collateralized debt obligations, we have seen the substantial impact of insufficient attention to risk. While the pendulum may swing too far in the opposite direction, almost every business activity will operate under increased scrutiny as the practice of risk management in its many forms is intensified.

Shaping a Response

Ample evidence suggests that the factors determining customer value (see Exhibit 1.6) are in flux. Our CEO studies,[12] numerous detailed case studies, and analyses by other authors verify that the market rules are being rewritten by many factors, including:

- Blurring enterprise boundaries
- Product commoditization
- Volatility and interconnectedness of financial markets
- Personalization of electronic services
- Intelligence in products
- Actionable knowledge about customers, markets, and products
- Transparency in the value chain

We conclude that after 2010 the following factors will be crucial for customer value and, by association, drive market success and enterprise value. At the same time, the world is moving fast and complexity is increasing, so the converse of each statement is also worth considering: opportunities continue to emerge, but each one also carries risks that cannot be overlooked.

Product and Service Integration

In selected markets, an intelligent enterprise understands the needs and problems of its customers and, when appropriate, offers them leading services at any time and in any location. It presents itself not as a company that sells products, but as a solution provider that delivers comprehensive services for its customers' unique processes.[13] Aircraft engine manufacturers, whose process is capital intensive, not only sell engines but also have started operating them for the customer as a monthly service, paid as a monthly expense.[14] The need for new pricing models presents both upside potential and operational challenges across the enterprise.

Caveat: Making the transition from product manufacturer to solution provider requires that an enterprise reinvent its business model from the foundation. Margin structure, balance sheet analysis, and financing can be problematic. Sales forces need new compensation models, and the cultural shift to solution selling can be wrenching. Finally, risk management becomes a newly required core competency as customers for product-service hybrids differ from their product-centric counterparts.

Customer Access

An intelligent enterprise finds target customers worldwide, beyond its traditional region and industry. It knows the customers, their requirements, and their decision makers. A family hotel in Denmark reaches customers via the Internet that it could not access through print advertising, tour operators, or travel agents.

Caveat: Borderless competition both increases market access and exposes formerly local concerns to global competitive pressures. Currency changes are a simple example. More critically, the hypothetical hotel in Denmark now must compete with not only other properties in its town and nation, but also vacation destinations worldwide.

Customer Retention

An intelligent enterprise strengthens its partnership with a customer by building up expertise in the customer's specific area then using IT

applications to support cooperation. The customer benefits from low transaction costs and in turn accepts the higher switching costs for moving to a different supplier. A retail bank may get its customers used to convenient Internet services so that they find it difficult to move to a different provider.

Caveat: Lock-in behaves differently in the age of the Internet.[15] When proprietary solutions stop delivering added value, customers can share experiences in online forums and defect if necessary. Furthermore, competition can often come from outside the traditional domain: eBay stunned the credit card industry by acquiring PayPal and functioning much like a bank.

Ecosystem

If a company's product is part of a broader solution for the customer, its success depends on the quality of the partner companies which together form the ecosystem. The more complicated a product or service becomes, the more specialists a customer needs. In other words, a customer no longer focuses on just the individual product but on the supplier's entire ecosystem. For instance, a skier is not looking for the best ski lift but rather the best ski resort complete with hotels, ski schools, restaurants, and more: accordingly, the resort must bundle offers that come from a network of suppliers and contractors, presenting a single face to the customer.

Caveat: Managing partners in an ecosystem is an entirely new discipline compared with running a functional or geographic group in an enterprise.[16] If a firm in a company's or a competitor ecosystem is acquired or sold, for example, the ripple effect could be significant. Operating in a networked environment means both gaining access to more capabilities but also being influenced by more parties. The size and quality of a company's ecosystem may define part of its market value: the number of application developers aligned with a given platform, and the caliber of independent financial advisors who represent a given investment, matter both to customers and investors.

Less powerful players within an ecosystem may lose brand equity, for example: both Intel and Microsoft were better recognized than many hardware manufacturers and computer retailers. Alternatively, a unique assemblage of capabilities may enable an ecosystem or brand to transcend its members: airline alliances such as Star or Skyteam are one potential example.

Emotion

Customers enjoy working with a company because it offers a specific brand, reliability, and convenience. A customer purchases from a particular manufacturer because he associates a certain image with the brand, appreciates

the service crew's reliability, or has come to rely on the convenience, ease of use, or trustworthiness of the company's IT-driven interfaces. Employee loyalty, shareholder confidence in management, and trust in trading partners are other examples of the place of emotion.

Caveat: Only a few brands have proven adept at maintaining emotional bonds at scale. Compare Disney to Vivendi in entertainment, or Volkswagen to GM in automotive. A company's internal perception of its brand is often not that of its customers or the market at large. The emotional connection to a brand can also be impaired by poor usability, lack of availability, and errors in online interactions.

Costs

Companies sometimes opt for high production volumes in order to better allocate fixed costs, especially research and development. They move facilities to cost-saving locations and coordinate global production activities in seamless, lean processes. Particularly in information-rich settings, marginal costs in many cases approach zero.

Caveat: In an age of tight credit, preservation of working capital can be more important than amassing excess inventory. Understanding the total cost implications of a given decision, such as plant expansion, adding sales channels, or opening a new geography, can be challenging in many companies that lack sophisticated financial systems.

Price

A company understands the value of its products and services and also knows what alternatives are available to the customer. It uses an intelligent revenue model to find the best long-term price. The manufacturer of a humidity sensor bases the price of the product on whether it is being sold as a series part for a large-scale production car, as a discrete product for an electrician, or as a spare part for a plant operator. As we have seen, new pricing models will apply to solutions rather than products. Dynamic pricing, long practiced in the airline industry, is moving to more products and services, whether parking spaces or tickets to sporting events.

Caveat: Many markets, such as pharmaceuticals, have become substantially more transparent in the past 15 years. Charging higher prices for a device based on its application only works if customers fail to do research, or if the supplier adds sufficient value to the customer relative to the demands of the device's use: brand, price, and customer experience must reinforce each other. Finally, given the extreme volatility of such commodities as copper, "long-term" prices aren't what they used to be either.

Speed

Speed dictates how long a company holds the prize for the best business model. Speed in this context refers not only to delivery speed, but to how quickly an enterprise recognizes market changes and responds with an innovative business concept. In some industries, time to market is less important than time to volume, which implies economies of scale and potentially market share improvement. Many examples like that of the music industry verify that the swiftness with which a business model is implemented can be more important than the model itself.

Caveat: Speed is one thing, jumpiness another. Knowing the fundamental facets of the company, its industry, and its business model will prevent executives from chasing fads in the name of speed.

To summarize, many business models beyond 2010 will be characterized by solution offerings rather than product offerings, new routes to customers, close customer relationships, ecosystems, convenience, more flexible price structures, and rapid transformation.

Business Models, Business Concepts, and the Role of IT

The innovativeness of the business model is more important than the innovativeness of the products. This finding was the result of a study in which the Economist Intelligence Unit surveyed 3,700 executive board members and senior managers from European, Asian, and American companies.[17] New research published in 2008 confirms the assertion.[18]

We argue that business models in turn require a sophisticated *operationalization* of several parts, what we call business concepts; they turn abstract theory into measurable actions. Examples include:

- Handling a sales order within 24 hours
- Being accessible around the clock to customers worldwide over the Internet
- Manufacturing goods in different countries but managing processes centrally
- Coordinating global research and development activities
- Accommodating the regional needs of customers on all continents and still leveraging the economies of scale that a global market leader can provide

> Business models are built by combining business concepts.

What distinguishes an enterprise in 2010 from an enterprise in 1970? More "intelligent" business concepts. All the examples of business concepts mentioned above were unheard of in 1970. Why? Because competition has become stiffer? Because people have become more intelligent or work harder? These reasons may explain some of the changes. Other explanations include deregulation, global logistics, and new materials and production procedures. But the key trigger for most new business concepts is information technology.[19]

An effective corporate information environment instantiates the skills and intelligence of the company's people, serving as a persistent institutional memory. New technologies for search and data exploration as well as enterprise social networking can find either answers or people with answers. In addition, an organization's electronic intelligence (in the form of processes, databases, and visualizations, for example) "amplifies" human intelligence. Such an environment has several distinguishing characteristics, all of which bear on the enablement of effective business concepts:

- Electronic intelligence does not depend on a particular person (for instance, in product catalogs, customer databases, or maintenance manuals).
- Interactions through search, visualization, and other mechanisms allow humans to manage the scale and complexity of modern information environments.
- Effective corporate information environments record data faster (often in real time), cheaper, more reliably (automatically), and in more detail (for instance, clicks in a webpage or temperature data for the manufacture of silicon wafers).
- Effective environments route data immediately and to any location (such as stock market data or traffic information).
- Effective environments store huge amounts of data (such as orders, articles, and performance data) for any desired period of time.
- Effective environments have extremely powerful processing capabilities and can generate new value and insight by combining existing data (for example, delivery date determination, salary schedules, or product simulation).

This organizational intelligence in the form of processes, software, customer databases, and other such elements has become so important that the IFRS7 require parts of this intelligence to be evaluated and shown in financial statements. Financial Accounting Standards Board (FASB) disclosure standards remain different, however.

The euphoria surrounding the Internet at the end of the nineties and the ensuing hangover brought on by a series of broken promises were followed by a systematic and more market-oriented search for new, IT-based business

concepts. The recession has intensified the quest for enterprise IT value: new technologies and management practices have forced pragmatism to be the byword of the entire industry.

Business managers are not concerned with IT per se, but they are concerned with new business concepts based on IT. Unless managers understand what a new business concept can bring to customers and their own company, they cannot make sound investment decisions.

> The answer to the market's challenges is to be found not in IT but in the business model that uses the IT.

Case Study: Apple

The history of Apple in the first decade of the twenty-first century encapsulates many of this book's key messages. Time and again, CEO Steve Jobs and his leadership team have combined key elements of strategy and execution to reinvent both Apple's business model and an entire industry sector. In doing so, the company's success during a turbulent period illustrates both the necessity and the impact of business model transformation.

Context

In a garage not far from where Bill Hewlett and David Packard got their start, Apple Computer began operation in April 1976. Founded by Steve Jobs and Steve Wozniak, the company helped launch the hobbyist movement that later helped drive the rise of the personal computer. The Apple II sold more than 100,000 units, after which the company went public in 1980.

In contrast to the IBM PC architecture, Apple embraced a proprietary model in which the company supplied both hardware and software. In 1984, this approach helped create the Macintosh, an elegant combination of design and usability, featuring the first widely commercialized WIMP (windows, icons, mouse, pointer) user interface. The proprietary operating system slowed the development of compatible application software, however, and the huge investment in the Mac was perceived to have failed to pay off, so Jobs was removed from operational responsibility by Apple's board in 1985, and he left the firm shortly thereafter.

From Jobs' departure until 1997, Apple hired three CEOs, each of whom directed a different corporate strategy and positioning. With the launch of Windows 3.1 in the early 1990s, meanwhile, the Microsoft-Intel platform achieved a considerable increase in ease of use compared to the command-line DOS interface that preceded it. Then in 1995, Microsoft capitalized on, and helped drive, the rise of the consumer Internet with the launch of its

Windows 95 operating system, which included support for remote dialup, TCP/IP networking, and CD-ROM drives.

Thus when Jobs rejoined Apple in late 1997, the company had experimented with high-volume low-margin products, an early PDA called the Newton, and a return to high-margin products including Internet appliances and servers. Apple also supported, for a time, third-party "clones" that licensed the Mac operating system. None of these moves succeeded: Jobs' predecessor as CEO, Gil Amelio, had lost $1.6 billion in about two years at a time when many tech firms were thriving. Global market share was 3 percent.[20]

At a major technology conference a month after Jobs returned as CEO, Michael Dell was asked what he would do to fix the many problems at Apple. His response illustrates the severity of the situation: "What would I do? I'd shut it down and give the money back to the shareholders."[21]

Jobs and Apple in the Twenty-First Century

Upon his return, Steve Jobs put in place a number of building blocks for later success. With the launch of the self-contained iMac in 1998, Apple returned to the themes of simplicity, ease of use, and striking visual design that had been the hallmark of the original Mac. In addition to commanding higher margins, the new generation of Apple products interoperated with both PC hardware (via USB) and software in the wake of a $150 million investment by Microsoft that also came with a commitment to maintain its Office suite for Mac OS and other applications.

Just as important, the company underwent a house-cleaning in back-office and supply-chain processes. Product lines were discontinued. Vendors were rationalized, distribution channels were pruned and moved into higher-volume retailers, and manufacturing was moved to third parties. Apple launched direct-to-consumer web commerce in 1997. Perhaps most critically, R&D spending was ramped up and internal lines of communication were simplified.

In 2001, Apple opened its first retail store and by 2009 there were 255 worldwide. Public and critical response was extremely positive. New customers could experiment with the products, while a "Genius Bar" provided hip and accessible tech support both pre- and post-purchase. Along with a series of well-designed products, the stores' architecture reinforced Apple's reemergence as a culturally "cool" brand. A string of strong branding and advertising campaigns also succeeded in differentiating Apple from the Microsoft environment.

Later in 2001, Apple launched the iPod, a high-margin version of an MP3 music player. The "ecosystem" around the iPod began to take shape about a year and a half later, however, with the introduction of the iTunes

Music Store for Apple hardware and, six months later, for Windows users. Sales of iPods skyrocketed after the release of the Music Store, with gross margins for the hardware of 30 to 35 percent.[22]

Throughout the following years, Apple (eventually changing its name from Apple Computer in 2007) rapidly refreshed the iPod product line, making some smaller, others with large hard-drive capacity, some with video, and still others without any user interface apart from a "play" switch. Competitors appeared from Dell, Microsoft, and storage manufacturers such as SanDisk, but Apple's franchise became the dominant worldwide leader, with a peak of 90 percent global market share as measured by dollar volume.[23] Nearly 200 million units had been shipped as of mid-2009.

After a failed attempt by Motorola to include iPod functionality in a mobile phone, Apple bundled its music player into a handheld computing platform somewhat misleadingly called the iPhone, which came to market in 2007. It quickly became a major force in the global smartphone market, representing 1.1 percent market share as a premium-priced product competing against traditional voice-only devices in markets around the world.

In mid-2008, Apple built further on the iPhone/iTunes ecosystem with the unveiling of the App Store, a marketplace for third party software developers to end users. In only 9 months 37,000 applications became available, most of them free downloads. Some applications became huge moneymakers for both Apple (which kept 30% of the sale price) and independent software developers. One developer, Ethan Nicholas, taught himself the necessary coding skills using online documentation and wrote a tank shooter game that earned him $600,000 in one month—after taxes—and a reported $900,000 in total before the release of version 2.0.[24]

Business Model Innovation at Apple

ENTERPRISE VALUE FROM CUSTOMER VALUE   Less than 10 years after Michael Dell recommended shutting down Apple, the company's market value eclipsed that of Dell in early 2006. Three years later, the ratio of market capitalization was over 5:1 in Apple's favor. The company has created customer value with such emotion-driven factors as good design, ease of use, and powerful branding. Dell, meanwhile, competes in increasingly commoditized markets, having lost its advantage in personalization: the build-to-order model that customized desktop PCs does not create as much advantage in laptops. Now constituting the majority of the market, laptops and netbooks are primarily built in bulk overseas and have few customization options.

Apple also creates customer value by seamlessly blurring products and services with both the iPhone and iPod product lines. These digital hybrids typically commend higher margins than either products or services

considered independently. Under Jobs during both of his CEO tenures, Apple has also consistently led the industry in innovation. The instant download model at 99 cents (and up) created unmatched convenience for customers who want a song, movie, iPhone application, podcast, or other content without having to go to a store or wait for physical goods to ship. That same model created a viable, legal alternative to peer-to-peer file-sharing networks such as Napster.

CUSTOMER VALUE FROM THE CUSTOMER PROCESS   When Apple introduced the iPod, MP3 files were widely available on peer-to-peer file sharing networks; compact disc sales had already begun their long decline. A variety of players, beginning with Diamond Multimedia's Rio, had come to market. But Apple reinvented both the music management metaphor and the physical form factor, the latter with a careful mix of design cues. The white case is actually clear over a white base layer, for example, and the case has no visible screws or fasteners.[25]

The net effect of so many careful decisions was to make music an entirely new experience: distinctive white earbuds made it private rather than public (and a fashion statement on the subway and metro), the digital format (albeit a proprietary one in some cases) made carrying a large music library simple and portable, and the software made it searchable, or random, and easily managed. Apple simplified the consumer's process of buying songs out of millions available via iTunes. In short, the iPod addressed and arguably improved the whole of the customer's music- and, later, spoken-word-listening experience. The iPhone later did the same for a much broader set of needs and behaviors.

MORE CUSTOMERS AND MORE FOR THE CUSTOMER   The iPod trained millions of customers to use the iTunes interface, to dock their devices to a computer, and to combine physical products with value-adding updates and downloads via the Internet. While the introduction and the commercialization of an entirely new product type is traditionally a very challenging task, the iPhone's launch was considerably facilitated by a sizeable market ready to explore and maximize the product's utility.

Podcasts, movies, and videos could be delivered through the same interface and management layer as was used for music. Porting iTunes to Windows shortly after introduction overcame some of Apple's historically limited market share by acknowledging the dominant platform. Finally, the iPod shortly became a platform in and of itself as newer models maintained compatibility with older ones. Each one of these management decisions served to increase both the addressable market and the value a given customer could choose to purchase.

Contrary to other suppliers like Diamond Multimedia, Apple could reach out globally using its existing sales channels. Additionally Apple distributed its products via big retail chains. Apple also increased the share of wallet at its customers selling not just a music player or a phone, but music and other content, games, and other applications.

INNOVATION AND PERSONALIZATION TRUMP COMMODITIZATION   Following the success of the iPod, numerous competitors introduced devices with better specifications and generally lower prices. None have gained a foothold as Apple continued to innovate on the basic product, with new capabilities, colors, shapes, and capacities. None of the competitors' music management applications has dented iTunes, proving that in some product categories, effective design and a strong brand can help sustain premium pricing.

Enabling customers to gain access to a vast selection of songs gave Apple the power of the so-called "long tail" of Internet content: while a small number of hits attract very large audiences, an effectively infinite number of obscure tracks are available for audiences of any conceivable niche taste.[26] With thousands of songs on any given device, the odds of any two iPods being identically used are nearly zero.

Thus each iPod is by definition personalized: not only are person A's playlists different from person B's, the metadata regarding last played, most popular, and other aspects of a given file will be unique as well. Finally, Apple has managed the supply chain well enough to allow personalized engraving on the back of many iPods, enhancing their attractiveness as gifts.

SILENT COMMERCE   iPods and iPhones are manufactured in China, available via multiple retail channels, and can be custom-engraved at the factory. The integration of the products with value-added services is nearly seamless, allowing the devices to continue to address customer needs as those needs change: the product capability has expanded from music to podcasts to videos to software applications and data services all on the same billing and fulfillment platform.

The best supply chain is no supply chain. Comparing Apple's available music downloads to any physical store highlights the difference: zero physical inventory means no stock-outs, no excess stock to sell at a loss, no merchandise damaged in transit, no product returns, and no delay in meeting customer demand.

In the physical manufacture of iPods, the company is equally astute. Apple has managed its suppliers expertly, negotiating not only the rights to an extensive music catalog but locking up a large percentage of the market for various components: in mid-2005 Apple reportedly bought 40 percent of Samsung's total output of flash memory, which both cut supply and raised prices for competitors.[27] That deal later came under investigation, so

Apple prepaid $1.25 billion for future purchases of flash memory from five suppliers in late 2005.

Such long-term planning translates into lower component prices and therefore higher margins at the same time that it avoids product shortages. Product launches are typically handled extremely smoothly, with few stock-outs and little excess inventory of previous models to be sold at discount.

STRATEGY-COMPLIANT MANAGEMENT The Harvard professor Michael Porter has long contended that the essence of strategy lies in a unique combination of activities that create a differentiated value proposition.[28] Apple's experience shows the truth of this assertion: the market contains competing devices, most with lower prices; competing music services; and competing music management software applications. But nowhere can customers obtain a smoother integration of device, user interaction, and a wide selection of easily navigable content.

As good as the products are, the management of the iPod and later iPhone franchises may be more impressive still. For over eight years, no product release has failed to meet expectations. Products have launched in timely fashion, quality issues have been minimal, and the consistency of branding from billboards to television commercials to product packaging to the products themselves has been exemplary. Thus every functional area at Apple from R&D to manufacturing to marketing to supply chain has played a role, and played it at a sustained, high level of execution.

In addition to its own significant margin and revenue contributions, the iPod has served as a "halo" product and served to reinvigorate the company's desktop and particularly laptop franchises. Computer sales for fiscal 2007 surpassed $10 billion, a 40 percent increase over the previous year, or roughly three times the sectoral growth of 14 percent.[29] Such performance makes Apple a rare beneficiary of the often-promised "synergy" that so often fails to emerge from corporate strategy.

VALUE CHAIN REDESIGN As of the mid-1990s, music was sold on physical media in music stores and big-box retailers and played back on consumer electronics consisting of a compact disc player, amplifier or receiver, and loudspeakers. Radio served as a means by which listeners could discover new music, which was bought at physical retail outlets on physical media.

Less than 15 years later, that model has been transformed. Music is moved over the Internet, stored on hard drives, and played back either through headphones, computers, or MP3 player peripherals. Bands are discovered by search or word of mouth. Virtual inventory and broadband distribution make iTunes' "logistics" more efficient than any supply chain.

Apple has been central to this redesign, whether in its assembling of the iPod design and engineering team, its management of offshore

third-party manufacturing, its ecosystem of contributors such as the Gracenote system that automatically fetches CD song track data upon loading, or its negotiation of contracts with music labels. Podcasts have reshaped broadcast radio, the iPod has contributed to the slow adoption of satellite radio, and the iTunes music store has helped displace music retailers. At the same time, Apple's high-profile stores and online presence have altered existing models of electronics retailing.

Most recently, the App Store has reinvented the role of third party software developers in the wireless industry, forcing the likes of RIM, Microsoft, and Nokia to scramble in response. For music, television shows, games, and other forms of content as well as for entire categories of devices, Apple has forced fundamental change on several industry sectors.

IT'S ROLE IN BUSINESS MODEL TRANSFORMATION   Perhaps the highest tribute to Apple's IT organization is that it is invisible. Unlike Airbus, whose A380 super-jumbo jet was delayed by incompatible CAD data, Apple shares electronic design documents effectively and securely across numerous partners. The iTunes music store runs reliably, never having logged a major outage. Billions of micropayments are handled at a scale unmatched anywhere else on line via an enterprise resource planning (ERP) backbone, and the multitude of transactions are handled seamlessly from an audit and accounting perspective. The high-profile commerce site has never been hacked at scale or suffered a data breach of any magnitude. Logistics and procurement are executed at a high level, contributing directly to brand reputation, sustained margins, and enterprise value.

Considering how many of Apple's peers have suffered one or more of these types of mishaps, the company's performance should in part be credited to its robust IT processes and infrastructure.

Realizing the Information Vision: The Technology Dimension

Enterprise value depends in large measure on how quickly a company identifies and realizes a superior business model's four elements. To reiterate, these are:

1. The customer value proposition
2. The profit formula
3. The key resources
4. The key processes

This list begs the question of what has prevented companies realizing "more intelligent" business concepts in the past and what leads us to expect they will achieve them in coming years.
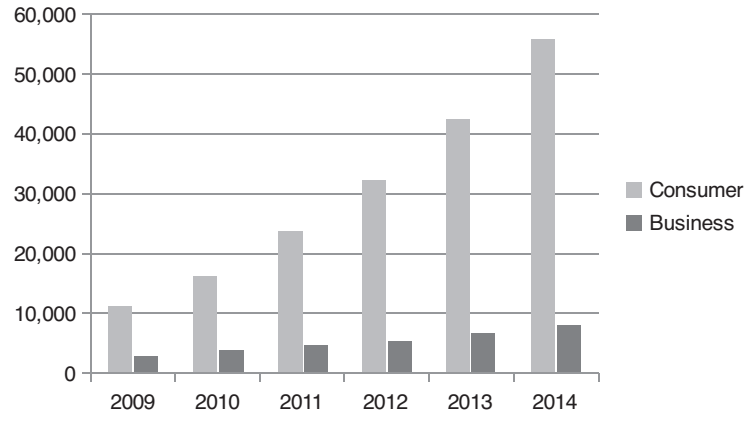
Note: The unit of measurement is petabytes per month

EXHIBIT 1.7   The IP Traffic Projection for 2009–2014 Is One of Many Indicators of Growing Information Overload

Source: Cisco.

Barriers

People's skills and attitudes, regulatory constraints, managerial skills, and not least the complexity of the organization usually present the highest barriers. Amid the many well-known management strategies, very few prescriptions address exactly how to surmount these obstacles. This section deals only with those barriers in the information and technology domains where we expect a progress to come from technological developments.

- *Information overload*. Data is accumulating at many points in an organization: enterprise databases, documents in office software, datasets for technical design and realization, data from intelligent devices, floods of e-mails, voice mails, and management broadcasts in multiple forms. In particular, Internet access to almost any information outside of the company has caused an information overload (see Exhibit 1.7)[30] that has already been described in detail and lamented in many places.[31] As organizations grow in size and complexity, managers find themselves spending more and more of their limited time coordinating activities in discussions and meetings.

  Recently, there have been a growing number of reports about organizations at risk of choking on their communication and information overload. The symptoms include missed opportunities and risks, misjudged priorities, inflexibility, long working hours, and employee burnout.[32] One major company in the consumer goods industry saw

its volume of data increase more than seven-fold in five years, from 34 terabytes to 250 terabytes. Let us put this in context: To digitize all the books in the U.S. Library of Congress in text format without graphics, it is generally accepted that around 20 terabytes of storage would be required.[33]

■ *Information deficiency*. The fact that people are simultaneously crying out for more information in the midst of such reported overload almost sounds absurd. But it is true that many processes could be accelerated and countless inefficiencies avoided (relating to inventory levels or targeting the wrong customers, for instance) if capturing data were not so expensive, if companies could access all data recorded somewhere electronically already, and if the significance of existing data were clear to all involved.

The final three barriers share a common thread, in that they all contribute to unmanageable system complexity:

■ *Stand-alone systems*. Islands create integration gaps—situations in which *people* form the interface between IT applications, say by entering an email into the order entry system or by copying product information from an article database to a product catalog. Integration gaps slow down the flow of information, render processes more prone to error, and increase the complexity of procedures because people have to make inquiries and resolve problems.

The CEOs we surveyed saw harmonizing stand-alone systems as the most urgent task of the coming years; "silos" still impede the creation of a uniform business process platform. Best-of-breed approaches, where companies take the best solutions from different vendors' software packages, entail persistently high outlay for machine interfaces and integration gaps, which is why many organizations look for flexible application architectures wherever possible (see Chapter 8). Many new business concepts start with integrating processes and applications or enabling cooperation between them. Their goal is seamless, real-time processes without borders.

■ *Inadequate networkability*. This term refers to the ability of any number (m) of suppliers to speak the "same language" with any number (n) of customers at the interfaces between processes and systems. Heterogeneous worlds have particularly serious implications when enterprises start to collaborate electronically. For instance, an automotive supplier has to adapt to the development and production practices of the individual vehicle manufacturers, mastering multiple collaborative processes and different IT applications: many inter-organizational interfaces are one-off efforts, unique 1:1 mappings. But different manufacturers

demand different collaborative development processes, to which serial 1:1 efforts do not scale. Inadequate m:n capabilities loom as the biggest hurdle on the way to more efficient inter-enterprise processes, and to date IT is only of limited use in addressing the issue.

- *Insufficient flexibility.* Many companies complain of losing flexibility. Process and office software can present barriers, for example, if customer data cannot be changed in different IT applications in parallel without becoming inconsistent. If the outlay required to standardize article data stands in the way of an enterprise-wide product catalog, potentially artificial budget priorities may impede the pursuit of agility.

Enablers

A small number of basic information technologies (including ERP and the Internet) have enabled the level of information intensiveness we know today along with the associated economic changes. Joining these are a few technologies (like social software and content management) currently migrating into enterprise adoption, while another group of new technologies (such as the "Internet of things" made possible by cheap sensors, or new forms on information display) is about to be realized on a broad scale.

"What is the next big thing?" The answer to this question is clearly expected to be a new information technology that will revolutionize the world. But rather than look for a single breakthrough, we believe it is the integration of these technologies that is likely to provide the main impulse for business model change, as demonstrated by the business concepts described in the next chapters of this book. Enterprise IT is getting closer to the Apple model: technology should "just work" and be transparent to the user, who is trying to solve a business problem rather than learn to use a complex system.

SECOND GENERATION SOA   Starting in 2002 or so, vendors invested heavily in the development of service-oriented architectures (SOA). This effort involved systematic approaches to standards-based interfaces across operating environments, applications, and data in both technology organizations and business processes. The ideal of SOA was simultaneously to deliver the cost and efficiency benefits of standardization and to support the need for flexibility required by local change and rapid adaptation. Interoperable, reusable services would be made available to support agile development of new capability, all the while enforcing management mandates including security, performance, and cost of ownership.

While much progress was made in realizing the potential of SOA, it was often regarded with disappointment.[34] In common with all other technology innovations, SOA did not provide a "silver bullet," solving challenges

of cost, performance, flexibility, and robustness. As the name suggests, an "orientation" required many changes to mindsets, budgeting, expectation management, and other behaviors in and across enterprises. Few products could deliver the promised benefits without the more subtle and difficult changes to code-writing, data-handling, and business processes: no enterprise has ever purchased a realized architecture, much less an orientation.

In the credit and jobs crisis following 2008, IT budgets were cut dramatically, customer expectations changed (sometimes overnight), and corporate priorities were focused on essential matters of economic survival. In this environment, many facets of SOA proved their worth: sound data structures, well-designed code, and flexible architectures paid off in M&A spinouts or combinations, budget discipline, and competitive nimbleness. New technologies, including software as a service, mashups, and cloud computing, built on many SOA premises. As the economy improves, the lessons will persist, and what might be called "deployed SOA," often in the form of services-based business suites, will continue to deliver competitive and operational benefits.

MOBILITY   The ability to capture and process data where it originates or is used would radically change many processes. The price/performance ratio of technology for mobile communications, or "mobility" for short, is improving at a rapid pace, and contributing to national economic competitiveness across the globe (see Exhibit 1.8). The Apple iPhone, RIM BlackBerry, and several Nokia devices currently lead a pack of highly capable handheld mobile computing platforms, but in addition to smartphones, netbook PCs represent another fast-growing market segment poised to drive, and capitalize on, mobility.

SENSORS, NETWORKS, AND "THE INTERNET OF THINGS"   Distributed systems can perform many tasks, mimicking an animal in their collective capability. Inexpensive sensors (analogous to eyes or ears) can measure temperature, noise, vibration, dampness, geographic position, color, odor, pressure, weight, and radiation. Data about events in the physical world can now be recorded in a form that is more detailed, timely, reliable, and economical than ever before; processing at the edge of the network (like a spine or brain) can often perform basic association and sense-making at the point of collection. Actuators (electronic nerves) can implement automatic decisions without delay and without human intervention, for instance to preempt traffic lights or to control heating or brake systems. Networks (the system's voice) can tell other entities what is happening or what to do.

Connected sensors and processors are rapidly increasing the functions of technical devices, most notably in cars, but also in measuring devices, lamps, sneakers, and medical apparatus. While most of the technology
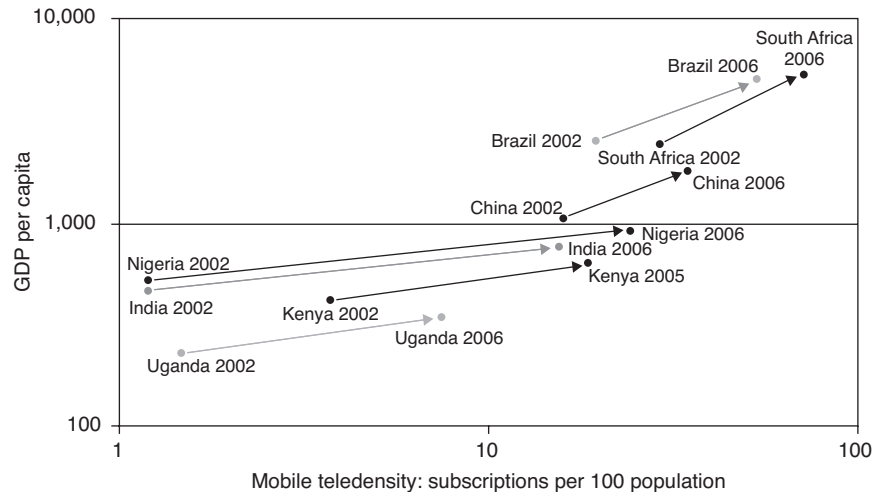
EXHIBIT 1.8 Increases in Mobile Phone Adoption Often Coincide with Increases in Economic Well-being in Developing Nations, Accelerating the Trend toward a "Flatter" World

Source: United Nations Millennium Development Goals Indicators, http://unstats.un.org/unsd/mdg/Default.aspx.

for embedded systems (sometimes called ubiquitous computing) is already available today, it is still too expensive for many applications. Miniaturization, standardization, changes in basic technology, and above all, the large quantities produced (at some point sensors will be made by the billion) will make an almost infinite range of applications profitable in the coming years. At the same time, considerable work remains to be done at the level of standards and applications to make all these billions of devices work properly and work together.

CLOUD COMPUTING   The combination of cost and environmental concerns related to low server utilization in data centers, better network infrastructure, and economies of scale in the management of very large data centers is leading to greater interest in offsite computing resources, provided by the likes of Amazon, Google, IBM, and Microsoft. Rather than invest in the capital required for a server cluster or data center, small and medium enterprises in particular may find it more economical, with lower investment risk, to pay for computing commodity cycles with operational budgets. Large companies, on the other hand, may realize many of the same benefits with well-managed data center consolidations that might result in so-called "private clouds."

A simple definition has been offered that states "Cloud computing is on-demand access to virtualized IT resources that are housed outside of your own data center, shared by others, simple to use, paid for via subscription, and accessed over the Web."[35] As this definition is refined, businesses of every size will find benefits in increasing efficiency, lowering cost, and reducing environmental impact by utilizing various styles of cloud computing, whether in software as a service, hardware virtualization, or third-party provision of commodity computing cycles.

KNOWLEDGE MANAGEMENT, INCLUDING WEB 2.0   Data warehouses, content management solutions, search engines, and applications for teamwork are gradually beginning to meet at least some of the high expectations regarding the way existing knowledge is used and how the information overload is managed. The field of analytics and visualization is advancing in particularly promising directions: such technologies as exploratory search, 3-D, and animation make large volumes of data more easily accessible and consumable.

In addition, so-called "enterprise 2.0" solutions exploit the same power of crowds that has proven itself in Wikipedia, delicious, YouTube, and Flickr.[36] Information markets, corporate social networks, automated document discovery, touch and gesture interfaces, and other tools are reinventing enterprise knowledge management.

NEW APPLICATION AREAS   The primary use of the new technologies mentioned earlier is not in business processes, but in products and services for the intelligent home, entertainment (from TV to games), health care, retired people, traffic management, vehicles, and location-based services. Many companies are finding new business areas for these IT applications. As more and more enterprises begin to use the new IT applications in their processes, there will be a greater need for integration and networking capabilities.

Checklist

☐ Who in your sector exploits the potential of IT most consistently to enhance its business?

☐ When did you last check whether new IT developments would enable you to revamp your business model?

☐ Do you offer the right products and services for the value chains with the most potential?

☐ Which three value chains will determine your business five years from now? Is your enterprise positioned in the right value chains?

☐ Do you have globally standardized business processes?

☐ Do you know the profit margin generated by your key customers?

☐ Can you get all the information about a customer and your activities with them—globally, up to date, and in real time?

☐ Do you know which customers you are about to lose and why?

☐ Do you recognize changed market conditions faster than your main competitor? How quickly can you respond to your competitors' marketing campaigns?

☐ How long does your company need to get a product off the drawing board and onto the shelves? What is the quickest you could manage?

☐ How long does your organization need to integrate a unit it has taken over?

☐ How mature is your information architecture compared to your toughest competitor's?

☐ How many processes and systems do you use for processing orders?

☐ What are the critical success factors for your business? Which key figures do you use to assess your achievement of objectives?

☐ Are your managers aware of innovative business concepts in their sectors?

☐ Does IT drive sufficient innovation in your business?

☐ Who is responsible for the quality of the three most important business processes?

☐ Is your company aware of its IT-related duties?

☐ Do you, as a manager, deal with the right IT issues?