

RETHINKING BUSINESS MODELS

IN THE GLOBAL HEALTH ECONOMY:
A TOOLKIT FOR INNOVATION

Health Horizons Program

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About the ...

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The Institute for the Future is an independent, nonprofit strategic research group with nearly 40 years of forecasting experience. The core of our work is identifying emerging trends and discontinuities that will transform global society and the global marketplace. We provide our members with insights into business strategy, design process, innovation, and social dilemmas. Our research generates the foresight needed to create insights that lead to action. Our research spans a broad territory of deeply transformative trends, from health and health care to technology, the workplace, and human identity. The Institute for the Future is based in Palo Alto, California.

HEALTH HORIZONS PROGRAM

The Health Horizons Program draws from a deep understanding of health care delivery, consumer behavior, health technologies, and societal forces to identify the important emerging trends and discontinuities in the broad health industry landscape. Then, through strategic forecasting, we help make sense of what these mean for health-related companies over the next three to ten years.

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HHealth costs continue to skyrocket in industrialized countries. Populations are living longer and are subject to a greater number of chronic conditions such as obesity, heart disease, and diabetes. More people are considering the ethical implications of a consumer-based global economy in general (think of global warming and other ecological disasters) and scientific advances in biotechnology in particular (think of the debates on genetically modified foods and cloning). The intellectual property (IP) paradigm of innovation, especially in biotechnology and pharmaceuticals, is failing global health (think of the response to AIDS in Africa).



Meanwhile, advances in information, communication, and sensor technologies are giving us more information about the interrelationships of our economies, our environments, and our bodies and health. They are also enabling us to form dispersed communities in support of common interests—around leisure activities, around intellectual pursuits, around particular health issues. Such communities are ushering in the age of biocitizens—informed, activist individuals who understand themselves as biological entities with affinities to others who share similar genetic or biological afflictions and, in turn, have organized to change funding agendas, research protocols, and the relationships among capital, ethics, science, and access to therapies.

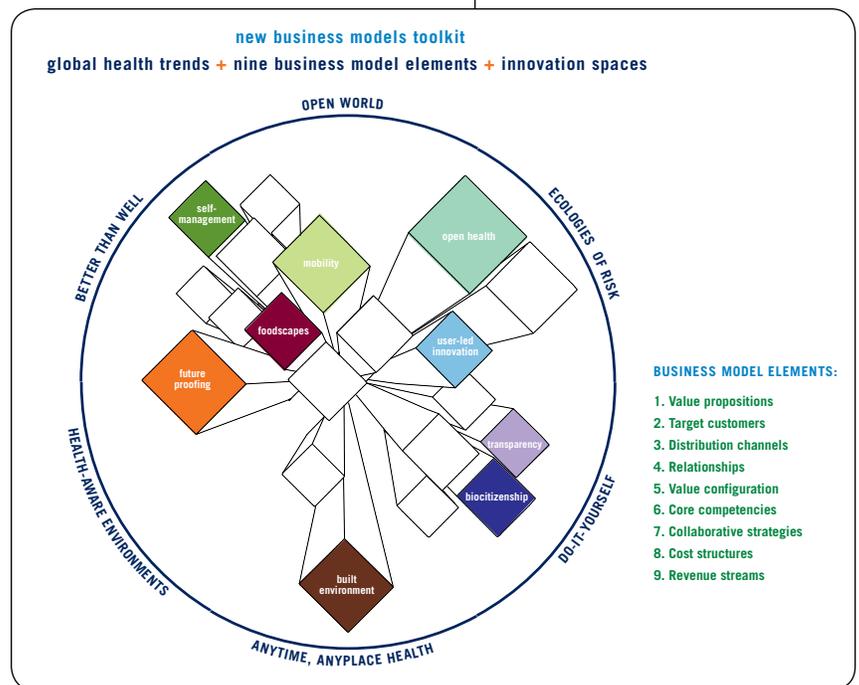
All of these drivers are having a great impact on our understanding of health and health care. Traditionally, health and health care have been based on a strictly defined biomedical model characterized by local doctors and hospitals responding to acute conditions with universal, uniform treatments—bypass surgery or transplants as a response to heart disease, for example. Third parties—insurance companies or the government—usually pay for these treatments. This is a model that has served us well in the last century, especially in the United States. It has led to scientific and medical advances that have eradicated diseases and increased the quality of life of billions of people.

We are at the threshold of transition, however. A new model of health and health care is emerging, one that is both broader and more narrowly focused at the same time. It is broader in that it is characterized by a more holistic understanding of health at the level of interconnected global systems—political, economic, social, biological, and environmental. It is more narrowly focused in that the responsibility for care is shifting from institutions to the individual, and technologies are emerging to personalize medicine to a degree heretofore unimagined.

As the understanding of health expands, consumers are turning to the broader marketplace—rather than just the traditional health care industry—for solutions. We call this broader marketplace the “global health economy,” which we depict in our *Global Health Economy Map of the Decade* (SR-1003). The global health economy encompasses a wide array of business sectors, government agencies, and nonprofits that are not considered “health care” in the traditional model. These include consumer goods, beauty products, computer and information technologies, food, and supplements. Of course, traditional health industries—biopharma, medical technologies, insurance, health care delivery, and so on—continue to play a critical role.

Like all paradigm shifts, the emergence of the global health economy opens the way for fundamental changes and opportunities of all kinds: scientific, market, business, ethical, social. Much of the opportunity for innovation will take place at the margins, where new industries and sectors are combining with traditional ones to create the global health economy. We call these “innovation spaces.” But beware: such opportunities are open not only to traditional industry players but to outsiders, as well. Indeed, external players, unencumbered by the baggage of working in a dysfunctional system, might have a leg up on innovation in the global health economy. The good news is that they may also provide tools and insights for innovation to those within the traditional health care industry.

The bottom line is, in order to take advantage of these fundamental shifts and to meet the challenge of competitors new and old, industry players and outsiders alike must find new ways of doing business—they must forge new business models to bring their innovations to the marketplace. In this report, we present a toolkit for creating these new business models. The “New Business Models Toolkit” consists of: an overview of the key trends of the *global health economy* (Chapter 1); the elements of business models in general (Chapter 2); and descriptions of our *innovation spaces* (Chapter 3). Then, using examples of the toolkit in action, Chapter 4 forecasts likely developments shaping new business models in the global health economy.



Our most recent survey on consumer behavior and health illustrates the wide range of products consumers are purchasing through a health filter (see Figure 1).

This broader health lens is fueling tremendous innovation and the growth of new markets. These innovations spring from a set of particular drivers and the broader trends they are bringing about. We examine each, in turn, below.

DRIVERS OF THE EMERGING GLOBAL HEALTH ECONOMY

Key drivers of the emerging global health economy are:

- The costs of traditional health care are out of control.
- Younger people are out of shape and older people are living longer.
- Ethics and spirituality are influencing market decisions.
- Technology is moving health care out of the hospital and doctor's office.

Health Care Costs Are Out of Control

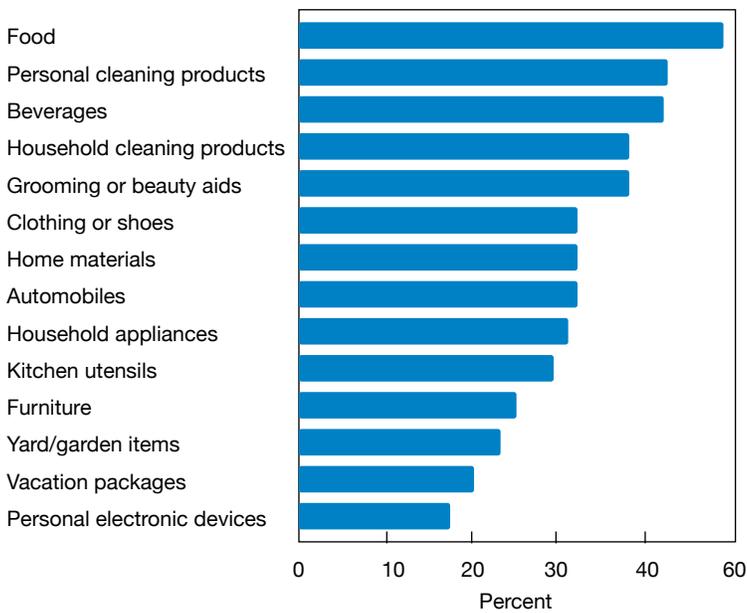
Health care expenditures will reach nearly 20% of the gross domestic product by 2015.¹ But we know that higher per capita spending is not associated with better health outcomes: the United States spends the most on health care but is ranked 37th globally in terms of health outcomes.² As employers continue to feel squeezed

by increasing health insurance premiums (which already exceed the after-tax profits of many Fortune 500 companies), employer-sponsored insurance coverage will further decline, creating a heightened sense of health insecurity. What's more, some 40–50 million Americans will likely remain uninsured.

Without major changes, health care costs are likely to continue to exceed inflation. We'll see more pressure to cut costs and reduce benefits, and some employers will stop offering health insurance altogether. Meanwhile, more cost shifting among different stakeholders such as employers, health insurance plans, and health systems will be the norm, with extreme pressures on individual consumers to do more and pay more themselves.

Figure 1
Health Filters Purchasing
Decisions

Percent who think health benefits are important when making a purchase in ...



Source: Institute for the Future,
American Lifestyle Survey, 2006.



Younger People Are Out of Shape and Older People Are Living Longer

Today, the combination of poor diet and lack of physical activity is the second leading cause of preventable death in the United States, just behind tobacco.³ The growing epidemic of obesity is one of the signs that the health of the human population is in decline and at risk of losing some of the gains in longevity made over the last 100 years or so. Within the decade, nearly half the United States population will have one or more chronic conditions such as diabetes and heart disease or underlying risk factors such as hypertension and high cholesterol.⁴

This trend is not surprising, given the demographics of an expanding older population of baby boomers. But it's not just an increasing number of older people causing the problem. In fact, recent census data suggest that baby boomers are likely to age with better health than previous generations.⁵ Yet chronic diseases are still expected to increase overall because of obesity among the younger cohorts. This trend is expected to consume any savings realized from the better health of the older boomer population.⁶

Ethics and Spirituality Are Influencing Market Decisions

From stem cells whose extraction doesn't destroy the embryo, to eco-friendly products, and ethically produced cosmetics, there is a groundswell of interest in the multitude of ethical viewpoints through which the public is purchasing goods, thinking about health, and driving public policy. Consumers can now visit eco-friendly dentists and access counseling services provided by ethicists. In the wake of numerous corporate scandals, the field of business ethics has gone from a business school elective to a growing commercial enterprise. Debates are arising concerning genetically modified organisms (GMOs) and the environmental and human/animal costs of industrial agriculture. End-of-life decisions are becoming increasingly complex as science and technology, and ethical and spiritual values come together to redefine the meaning of death and life.

In popular culture, we see examples of the convergence of spirituality and health in the proliferation of popular media such as Martha Stewart's *Body+Soul* magazine, which brings together Buddhist practices, Chinese medicine, and Hindu dimensions of spirituality. From prayers for healing to yoga and tantric practices, the spiritual dimension of health is also on the rise in the global health economy.

Technology Is Moving Health Care Out of the Hospital and Doctor's Office

The digital infrastructure and sensor technologies are evolving such that connectivity is embedded in objects and spaces. This will reshape both the way clinicians deliver care and the way patients will take increasing responsibility for their own health.

Already a movement toward the personal health record points to increasing data mobility that will push care further out of traditional clinical settings and into the community, the home, and other contexts. Also, a wide range of personal health technologies such as glucose and blood pressure monitors, home dialysis machines, and home defibrillators, as well as cheaper diagnostics tools, are coming onto the market with the aim of helping their users make better health decisions.

At some point, monitoring may become constant. We will spend less time in hospitals and doctors' offices because we will, in a sense, carry them with us constantly. That brings up an important ethical issue: will we have a choice about monitoring in the future? With insurance companies, for example, some individuals might agree to a certain kind of monitoring in exchange for discounts, or to confirm compliance with treatment. But if all insurance companies require all their clients to be monitored as a condition of coverage, then a big privacy debate will heat up.

MAJOR TRENDS IN THE GLOBAL HEALTH ECONOMY

The basic drivers give rise to the six specific trends we identify in our *Global Health Economy Map of the Decade*. These trends point directly to the innovation spaces at the intersections of the industries making up the global health economy: beauty, food, biopharma, medical technology, consumer electronics, and information. We will examine these innovation spaces in Chapter Three. First, it is important to understand the underlying trends:

- Open world
- Ecologies of risk
- Do-it-yourself engagement
- Anytime, anyplace health
- Health-aware environments
- Better than well

Open World | From markets defined by boundaries to markets defined by flows

Expanding global patient populations, internationalized labor resources, and the globalization of biomedical innovation and production will create a market environment defined by flows of knowledge, human resources, and capital rather than by regional, national, or geographic boundaries. In this world, cooperation rather than competition will be the impetus for innovation, producing opportunities not only for new forms of value creation but also pathways for addressing global health's most pressing dilemmas of equity and access.

Ecologies of Risk | From institutional to individual risk management

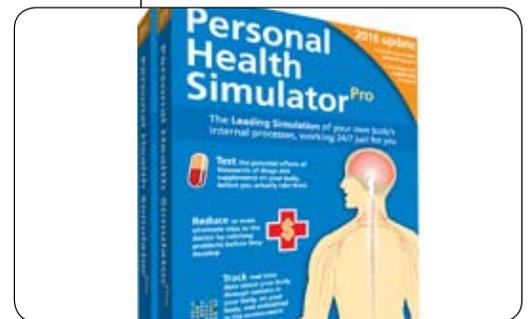
Individuals in the United States have relied on government and other institutions, such as their employers, to provide them with an array of benefits that protect them from a wide range of risks, including retirement, career and professional development, health and well-being, even the education of their children and the old age of their parents. This assumption of risk by large institutions is quickly fading as governments and other institutions can no longer (or choose not to) sustain this role. Individuals must now take on a whole ecology of risks themselves—for example, behavioral risks, environmental risks, genetic risks, the risk of finding access to quality care. As the role of institutions in health and health care declines, people will have to turn to the marketplace, tap into social networks, and rely more on themselves to mitigate these risks. The implication is that people must now view risk more broadly, not in isolation, but in relationship to each other without the intermediation of large institutions.

Do-It-Yourself (DIY) Engagement | From passive patients to co-creators of health and health care

Traditionally, physicians have guided patients through the care-seeking process by assessing symptoms, making a diagnosis, identifying a treatment, and defining an ongoing health management plan. Now, however, patients have become more active consumers of health care and are expected to take on more of the health care process for themselves. As a result, they are assuming much more responsibility, not only for the financing of their care but also for its management.

Consumers are responding to this burden of empowerment with three do-it-yourself behaviors—self-agency (acting on one's own behalf); self-customization (adding value to products or services by altering them or using them in new ways); and self-organization, (leveraging the collective intelligence of social networks and ad hoc communities). New media and technologies (such as MyFoodPhone) that facilitate greater engagement in health and health care will further enable these do-it-yourself behaviors.

Institute for the Future
Artifacts from the Future*



* For more on The Artifacts from the Future on pages 9–11, see the *Global Health Economy Map of the Decade* (SR-1003).

Anytime, Anyplace Health | From traditional clinical settings to expanding points of care



Cost-pressures, the unbundling of the hospital, preferences for noninstitutionalized care for the aging, and new communication and diagnostic technologies are expanding care settings and pushing care out into the community, into the home, and into different times and places in the course of everyday life.

As a result, models for care delivery are evolving in several directions. With convenience as a factor, some major retailers are following MinuteClinic's lead and jumping into health care. Longer term, care will evolve from the focus on episodic treatment of symptoms in the clinical environment to more continuous monitoring and prognostic assessment in the course of one's daily activities. Expect an evolution toward a model of personalized medicine that is no longer bound to traditional clinical venues or doctor-patient relationships.

Health-Aware Environments | From computing to sensemaking



The technology infrastructure is moving off the desktop and into the physical world. Everyday objects, places, and even human beings are becoming embedded with computational devices that sense, understand, and act upon their environments. Many of the things and places that we'll encounter in daily life will literally be aware: sensing, tracking, observing, and monitoring our physical, social, and health states.

This kind of awareness will be driven by technology developments in three areas: semantic processing, or ways for constructing meaning out of data and datasets, which will allow objects to respond to their environments or users intelligently; sensors in all kinds of materials (clothing, car seats, embedded in our skin) that mimic the ability to see, hear, smell, touch, and taste in the physical world; and wireless connectivity including applications like Bluetooth, self-configuring sensor networks, and other wireless technologies that will link people, places, and things 24/7.

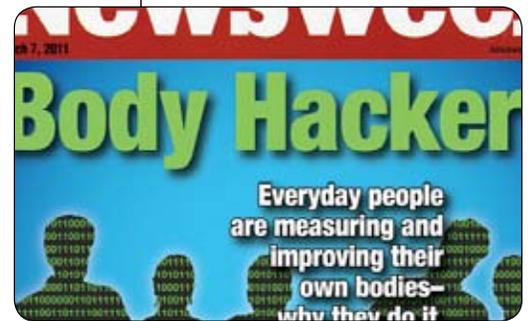
Better Than Well | From therapy and treatment to enhancement and extension

Self-improvement practices are growing more extreme as people turn to technology to reinvent their bodies, minds, and identities. The body is the new frontier as people experiment with digital, pharmacological, biomechanical, and medical tools to alter, enhance, and extend their bodies in profoundly different ways. No longer limited by natural talents, capabilities, or even physical features, people will soon have the bodies (and minds) of their dreams.

For many, this path is a matter of creative expression. For others, it's about health and wellness. For some, it's about aging successfully. And for yet others, it's about being better than human. Already, we see people tinkering with their biology more directly—a process that has come to be called “body hacking”—and new communities are emerging around these activities. For example, individuals have long taken steroids and stimulants to improve athletic performance, while others are turning to off-label uses of drugs to improve concentration and cognition or to alter their moods and personalities.

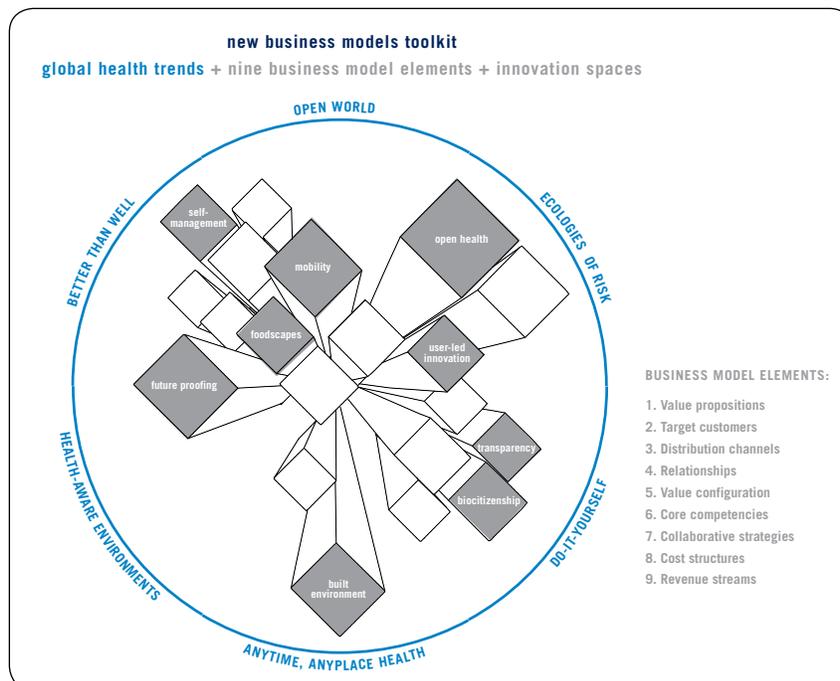
TOWARD THE TOOLKIT

Understanding the drivers and trends creating the global health economy is one tool in our toolkit for innovation. But how can businesses use these drivers and trends to create value? That is, what opportunities do these drivers and trends provide for innovative new business models? Before we can answer that question, we need to explore the nature of business models themselves. Indeed, the elements of business models as defined in the next chapter are another tool in our toolkit.



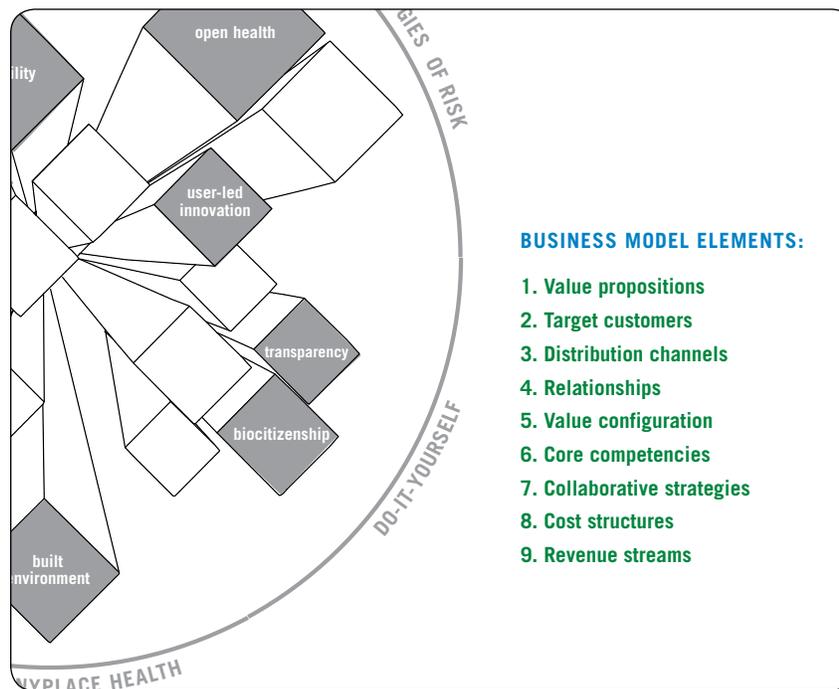
The global health economy not only includes the traditional health care delivery system but also a wide range of products and services from sectors not traditionally associated with health or health care, including beauty products, food, consumer electronics, retail, travel, and financial services. In our *Global Health Economy Map of the Decade*, we highlight several key trends that intersect with these industries to create new opportunities for innovation.

Statistics from most health departments or ministries of health tend to capture data only from the traditional health care sector. Because the global health economy encompasses a far broader range of industries, these numbers often miss the true breadth of economic expenditures on health. The global health economy is much greater than the dollars spent on health care alone. Indeed, just about any sector that affects the health and well-being of individuals and communities can be considered a part of the global health economy.



2 | Nine Elements of a Business Model

The most important tool in the toolkit for innovation in the global health economy is the framework of a good business model broken down by its elements and applied to the map's innovation spaces. In this chapter, we break out the critical elements of the business model at the core of the toolkit.



WHAT IS A BUSINESS MODEL?

Quite simply, a business model consists of what a business does and how it makes money doing those things⁷—it tells the story of how the enterprise works.⁸ For example, MinuteClinic’s business model might be described as retail health care. Business strategist Alexander Osterwalder provides a more specific definition of a business model:

A business model is a conceptual tool that contains a set of elements and their relationships and allows expressing the business logic of a specific firm. It is a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams.⁹

The term “business model” became a buzzword during the Internet boom, when it was used to add a shine of credibility to a lot of half-baked ideas. The concept nevertheless maintains its utility—it helps us to assess whether an idea is good enough to build a business on.

ELEMENTS OF A BUSINESS MODEL

Synthesizing the work of many authors, Osterwalder proposes the following nine components of a business model. We view these as central for players in the global health economy.

- 1. Value propositions** are the unique products and services offered by the company. Value is determined by differentiation—how a particular product or service offers something competitors do not. That value may be in cost reduction, in an enhanced experience, or in new solutions to problems. Value propositions can be articulated through multiple channels, including product features and mixes, service offerings, network externalities, partnerships, location, convenience, price, or reputation. Value propositions can also be linked to market timing, as in the case of first-mover advantages.
- 2. Target customers** are those who pay for the value proposition. Customers may be end-users or intermediaries in the value network. There may be multiple customers for a given product or service (for example, in the case of pharmaceuticals, physicians as well as their patients), though not all may pay directly for the value they receive. Customers may be defined as individuals, businesses, markets, or market segments. Within the value network, the target customer is the one whose needs the value proposition is most closely designed to meet.



3. **Distribution channels** are the means a company uses to deliver the value proposition to target customers. Distribution channels include physical supply chains for tangible goods, people networks for services, or digital and analog media for information and knowledge exchange. Distribution channels can also include marketing and promotional mechanisms that increase awareness of products and services.
4. **Relationships** are the ways in which companies and their customers interact. These can be completely opaque, where customers know nothing about the company that produces the product or service they consume (as in the case of the packaging company Tetra Pak) or transparent to the point where customers are engaged in co-creating or co-distributing products and services.
5. **Value configurations** are how an enterprise arranges its activities and resources to create customer value. Value configurations refer principally to operational resources, but imply strategic decisions about which aspects of its products or services to emphasize. A manufacturing company may emphasize design and style over materials and durability, for example, or configure its operational resources as a reseller and not engage in production.
6. **Core competencies** are the capacities and skills necessary to execute the business model. These capabilities may be technical, creative, or organizational. Core competencies can include factors external to the organization, such as location or access to environmental or transportation resources. Capabilities encompass organizational infrastructure as well as its human assets.
7. **Collaborative strategies** are the networks of relationships companies form to commercialize their value propositions. Partner networks can incorporate elements of the external value chain and include a company's relations to suppliers, distributors, and customers. The partnerships a company forms reflect decisions about its internal value configurations, and what kinds of cooperative agreements will provide the resources necessary to deliver its goods or services.
8. **Cost structures** outline the financial consequences of the resources needed to implement the business model and deliver value to customers. Cost structure is described as a proportion, such as the cost of materials to labor, of fixed to variable costs, of debt to earnings, and so on. For example, General Motors spends more on health care per car produced than on steel.
9. **Revenue stream** describes the means by which a company makes money. There are three basic revenue models: one-time sales of products or services, fees based on how much a customer uses a product or service, and revenue from after-sale service of products. Business models are often based on a combination of revenue streams.

HOW ARE BUSINESS MODELS CHANGING?

A business model is a simple framework for answering the questions: how do we make money and sustain the business? What is the economic logic that will let us provide value at the right price? In classic business terms, models have had to do with a linear value chain. The question was: where on the value chain can the enterprise best accomplish its goal? Contemporary business models are moving toward value webs that link multiple enterprises to create customer value. New business models can bring innovation to any point of value creation, whether framed as a linear chain or an interdependent network.

The availability of cheap and accessible information technology is enabling a revolution in business design innovation across industry sectors. Reductions in coordination and transaction costs and an increase in information bandwidth are enabling the emergence of value webs that challenge the notion of a linear value chain. Decreased costs of conducting business are leading to the blurring of industry boundaries and the new ways of doing business we describe in the *Global Health Economy Map of the Decade*.

These webs consist of networks of technical, human, and information resources that result in the value associated with a product or service. The pharmaceutical industry provides one example (see Figure 2).

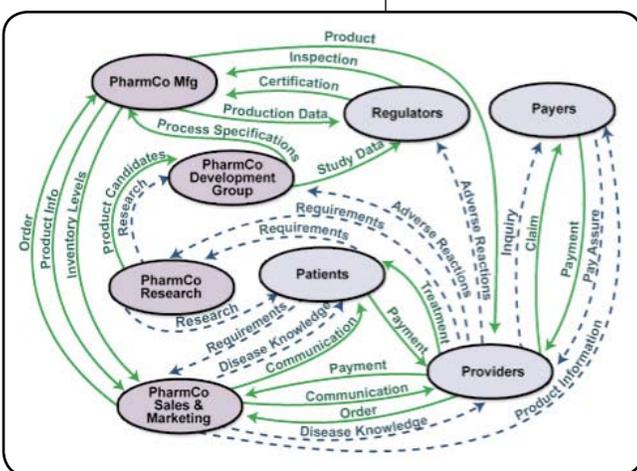
The objective of value webs is to maximize the benefits for all elements of the network. In the post-industrial economy, exchange of knowledge within the network may be as valuable as actual financial exchanges, so the network becomes a primary means for bringing ideas and innovations to the market.

That said, both tangible and intangible values are exchanged within a value web. Tangible value includes goods, services, and revenues. Intangible value includes knowledge and the benefits of being part of the network.

As boundaries blur in the global health economy, the main unit of analysis may be shifting from industry sector (e.g., health, consumer electronics, or transportation) to the business model (e.g., for-profit, hybrid, B2B, or peer-to-peer (P2P)). Apple's iTunes Web site is one example. The purpose of the Web site is not only to sell music downloads, but also to increase sales of iPod MP3 players. The business crosses industry sectors including software, online retailing, consumer electronics, and

entertainment, while the business model has been designed to enable implementation of this value web.

Figure 2
Exchanges and Interactions
Between a Pharmaceutical
Company and External
Stakeholders



Source: Verna Allee Associates,
http://www.vernaallee.com/value_networks/Understanding_Value_Networks.html



INNOVATION AND NEW BUSINESS MODELS

Often enterprises think only in terms of creating innovative value propositions, but businesses can be built by innovating with any of the nine elements, as the following examples show:

- CDs provided a different *value proposition* from LPs, within the same general business model. MP3 files provide a new value proposition, as well as opportunities for innovation within the other eight categories.
- Businesses such as Whole Foods Markets and Elephant Pharmacy are tapping into an exploding *target customer* segment for health-focused foods and cosmetics.
- Both traditional industries (like airlines) and new industries (online retailers) are exploiting the Web as a *distribution channel*.
- Inkjet printer manufacturers realized early on that the biggest value of their businesses is the ongoing *relationship* established with customers for replacement cartridges.
- Toyota's challenge to GM as the world's number-one car manufacturer is due to in part to its *core capacity* for flexible and efficient manufacturing processes.
- Swedish engineering powerhouse ABB has gained industry dominance by building a worldwide network of *strategic partnerships* that span the length of its value chain, from sales and marketing to technical and services support for its clients.
- Wikipedia has built the world's largest encyclopedia of knowledge with a *cost structure* that relies on voluntary participation to keep expenses to a minimum.
- Google's innovative *revenue model*—built on targeted online advertising—has led to a market capitalization twice as big as Ford Motor Company and McDonald's combined.

THE GLOBAL HEALTH ECONOMY WILL INSPIRE NEW BUSINESS MODELS

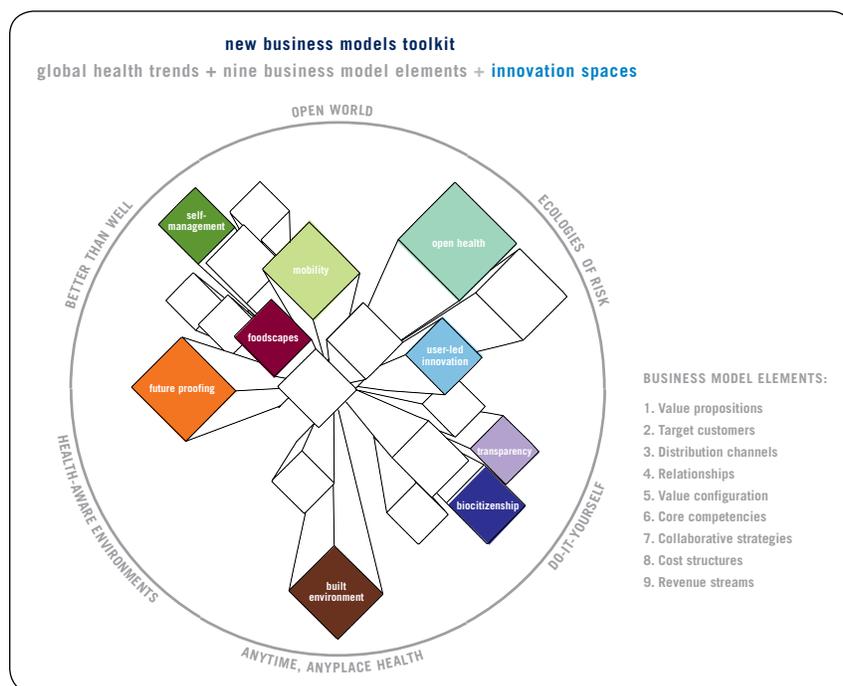
New business models arise when an external change (innovation) in the environment opens up fundamentally new ways of doing business, not just new opportunities to sell the innovation. In the realm of medical technology, for example, doctors can use the electronic medical record as an efficient way to track, store, and access their patients' information. However, a "personal medical record," co-created and managed by patients, would enable more personalized, portable medical care. Put in the hands of the patients themselves, the personal health record could be a platform for P2P-created health services as well as for customized public health.¹⁰ This is the kind of business model we're concerned with in this report—those that will fundamentally change the way business is done in the realm of health and health care.

COMPLETING THE TOOLKIT

So far, we have identified the drivers and trends of the global health economy and examined the basic elements of business models. In the next chapter, we'll explore some of the hot zones on the map of the global health economy, where technologies, social trends, and business models are converging to create new opportunities — what we call innovation spaces. We have identified a set of innovation spaces that span the map, but readers certainly may identify others of greater relevance to their own companies.

3 | Innovation Spaces in the Global Health Economy

In this chapter, we examine the third key component of our toolkit—innovation spaces in the global health economy. What do we mean by innovation spaces? In our *Global Health Economy (GHE) Map of the Decade*, we illustrate the intersections and boundary markers of a great many trends, developments, and emerging phenomena in the global health economy. Innovation spaces reflect the blurring of boundaries in this context. The *GHE Map* cuts across industries such as beauty, food, biopharma, health care delivery, medical devices, consumer electronics, and user-generated information media. While these categories are important organizational schema, they are becoming fragmented and blurred. There is no longer a neat divide between cosmetics, food, and biopharma, for example. We can have diets that make us look better and use biopharma products for cosmetic purposes. The consumer electronics industry is increasingly encroaching on medical devices, as the recent iPod/Nike venture or the EQLife stores for women and wellness indicate. Retail and health are coming together in surprising ways, as well—witness the growth of retail clinics such as MinuteClinic, QuickHealth, Farmacia Remedios, and ReadClinic.



This reconfiguration of boundaries is the essential characteristic of the global health economy, and it allows for the creation of new innovation spaces. Here are the nine innovation spaces we have deemed most important for this discussion:

- Open health
- Self-management
- User-led innovation
- Biocitizenship
- Transparency
- Mobility
- Foodscapes
- The built environment
- Future proofing



Open Health

The traditional health care system has the hospital at the center and is designed to efficiently manage acute illness in an episodic manner. The system has also borrowed from assembly-line types of production that have not been entirely successful at producing expected health outcomes.

The realization that the dollars spent often don't correlate with outcomes is rapidly changing the policy landscape in ways that may create opportunities for players outside traditional health and health care.

At a bureaucratic planning level, health care has been driven by big institutions with a focus on mass production of health. Such institutions lack the flexibility of a more decentralized, bottom-up approach. Rather than working within traditional frameworks, companies can design services on more of an open resource model, beginning with the economies of caring and support. We've seen open source models work in the software sector and increasingly in biopharma. It is now time to experiment with these tools in the global health economy and in other sectors as well.

Open health and cooperation mean new paradigms for producing health outcomes.¹¹ Distributed knowledge creation tools, for example, can be used to create dispersed support communities that build on the "wisdom of crowds," as put forth by James Surowiecki,¹² as well as the personal experience of a wide range of people in the management of chronic diseases. La Familia Medical Center in New Mexico is a great example of patient-to-patient self-management of diabetes. As



part of the *Promotora Model* of collaborative care, the patient is put in charge of his or her illness through diet and exercise, rather than through dependence on insulin. Collaboration through peer-to-peer mentoring is already a guiding principle of groups such as Alcoholics Anonymous and Weight Watchers. Peer-based communities and peer-to-peer production methods have been useful in developing the social supports that can enable behavioral change.

The U.K. Design Council has brought these insights home to health care. The Council has applied Howard Rheingold's notion of smart mobs¹³ to the health care arena by creating Activmobs, which enable people to organize social networks for group exercise, disease management, and social support. By utilizing the tools of cooperation, they have developed a system for the co-creation of health services with individuals and communities that begins with what the people are experiencing rather than the traditional top-down hierarchical structures.

Cooperation is paying off in the biopharma industry as well. From Innocentive's innovative platform for solving difficult scientific questions by posting them on the Web so scientists can try to solve them, to the Tropical Disease Wiki at Duke University that is a platform for collaborative research on neglected diseases in developing countries, there are now over 100 public-private partnerships focusing on global health products and services. Almost all of these use some form of a cooperative paradigm. As the blockbuster era in the biopharma market is rapidly coming to a close and IP regimes are looking antiquated and uncompetitive, biohacking as a hobby is emerging along with an interest in synthetic biology and alternative practices to industrial life sciences. As political science professor Steven Weber observes, brace yourselves for the coming IP bubble to burst, and the biopharma business models as we now know them to become extinct.¹⁴ It seems likely that some form of open source research will move in to take their place.



Self-Management

A recent survey in the United Kingdom indicates that nearly 80% of health care is produced at the level of the household, not the clinic or hospital.¹⁵ Such treatment comes in the form of parents caring for children, spouses or siblings caring for each other, and children caring for elderly parents.

This trend will continue as demographics point to an increasing number of aging individuals with one or more chronic diseases. Because the hospital and physician are at the center of a system designed primarily to treat acute illnesses in an episodic manner, the rise of chronic diseases that require ongoing care threatens to undermine the financial sustainability of traditional health care. Globally, systems have been slow to respond.

The current system is fundamentally not designed for the realities of the present. Reimbursement policies are slow to respond to innovations or provide the proper incentives for fostering the development of smart homes for aging more comfortably. We're all familiar with the perverse incentives in the health care system that prevent patients, providers, and payers from aligning around prevention rather than after-the-fact treatment of diseases. Individuals are responsible for more of the costs of health care and paying for an inefficient system that does not provide value in many cases. As a result, over 50% of bankruptcies in the United States are due to health crises.¹⁶

Harold DeMonaco, of Massachusetts General Hospital, argues that health players need to help patients manage their chronic illnesses in far more effective and efficient ways.¹⁷ He uses the contrasting examples of the management of diabetes and congestive heart failure. In the case of diabetes, we trust patients to use simple glucometers to measure glucose levels and then inject themselves with a potentially deadly drug, insulin, without a doctor's supervision. However, in the case of congestive heart failure, typically treated with a diuretic (a much less risky drug than insulin) in conjunction with up to seven other drugs, the patient must be under the supervision of a physician. By using simple scales to measure weight gain and adjust the dosage of the diuretic, much better (that is, better outcomes) and less expensive care can be provided. The right combination of diagnostics and drugs can improve the self-management of illnesses, so that better outcomes can be attained with lower costs.



user-led
innovation

User-Led Innovation

The notion that innovation emerges from small, closed design groups within a firm is coming under increasing challenges in practice. In his recent work on democratizing innovation,¹⁸ MIT professor Eric von Hippel (Head of Innovation and Entrepreneurship Group, Sloan School of Management) studied the important role of lead users in innovation. Von Hippel observes that lead users come from outside industries or industry segments and are passionately engaged with real world problems. They move out in front of other users or the industry in general, and rework products for their own needs. Take the iPod, for example. Apple's designers developed the iPod as a digital music player, but once users began experimenting and using the iPod as a storage device for all kinds of information beyond the original intentions of the designers, a host of products (such as podcasts) were developed for the iPod by those outside of Apple.



The point is, companies that track lead users can find new innovations. Von Hippel has estimated that 3M alone has achieved more than \$100 million in sales through lead-user innovations, for example, in their development of inexpensive surgical drapes and infection-control technologies used in surgical wards.



Biocitizenship

We have been referring to patients in the health arena as consumers for the past 10–15 years, and we now hear a great deal about consumer-focused health care in virtually every health policy debate. But the market-based language of consumerism may blind us to another important political–philosophical change in the way people see themselves in relation to health and health care. This is the phenomenon of “biological citizenship” or “biocitizenship.”

In the narrow sense, biocitizenship refers to an identity forged by a common biological trait or condition in response to which citizens form a group to make political demands and challenge authorities for redress.¹⁹ The most commonly cited example is the case of the Chernobyl survivors demanding aid and assistance from their government after exposure to radiation.²⁰ Another example is the AIDS activists of the 1980s and 1990s, who educated themselves to become experts on AIDS and radically shifted research priorities to spawn the development of anti-retroviral drugs when the government and industry were viewed as too slow in responding to the AIDS crisis.

In the broader sense, biocitizenship refers to the way in which an individual’s understanding of himself or herself as a unique biological entity with shared biological afflictions with others begin to act on the basis of these affinities to press for rights or access to drugs, the ecological commons, the health care system, or the right to the conditions that produce good health. These are not passive consumers hankering for pre-determined choices of “consumer-directed health care.” Or, as Nikolas Rose refers to it, we are dealing with “the politics of life itself.”²¹

Indeed, how we think about ourselves and the meanings of our bodies and health is changing due to the rise of genomics, personalized medicine, and alternative forms of healing. As we begin to understand more about our biologies, we are developing new ways of thinking about identities and affinities. Already, new types of affinity groups are forming, such as the Hepatitis C Society of Canada and the Manic Depression Fellowship in the United Kingdom, to support the development of new therapies for such diseases.

Biocitizenship plays out in numerous ways in various spaces in the global health economy. For example, in the late 1990s, we witnessed a major global public policy debate over IP, the World Trade Organization, and access to anti-retrovirals (ARVs) in developing countries where HIV rates had reached alarming levels. The biological changes that ARVs facilitated brought about a shift in political discourses that caught supporters of the WTO and the biopharma industry by surprise. Major transnational political movements mobilized against the IP regimes that the WTO and biopharma industry supported and have been steadily chipping away at the global IP regime. ARVs are no longer viewed as biopharma's distinctive property but rather as global public goods.

We are seeing increasing evidence of biocitizenship in the form of affinity groups in the United States as patients—biocitizens—are challenging the right of health plans to deny coverage of expensive, potentially life-saving or life-extending biologicals for terminal or severe cancers, for example. Other examples include the well-known activism of parents with children with autism or cystic fibrosis who fight to raise funds for new research and cures. In food, we're seeing more citizen movements addressing safety, health, and the obesity epidemic by focusing on schools and sustainable agriculture. Increasingly, citizens around the world are being forced to think more about their responsibilities to know and understand new technologies, including biotechnologies, and to vote on policies in the context of societal risks.



transparency

Transparency

Over the last several decades, we have seen the mainstreaming of a range of social movements, such as environmentalism, that have sought to create more open systems of information about industries and public risks, such as sources of pollutants. Other groups have focused on patient rights, for example, and have opened up physician–patient interactions. From more informative product labels to demands for fair trade and the end of sweatshops, the notion of transparency has been brought front and center in many industries.

New and old technologies fuel the drive toward transparency. Combining the reach of the Internet with strategically located air-quality or noise-level sensors and diagnostics makes the causes of environmental harm far more transparent. Such technologies go a long way toward reconfiguring debates on the environment and health as they are doing in London and other parts of the United Kingdom.

New media technologies are driving the trend toward openness and the complexity of conflicts of interest that can make or break trust and branding in the broader marketplace. IBuyRight is a good example. Consumers will be able to use their camera phones to access at the point of consumption data about products, such as how the product was created and the company's track record on ethics and values.



This may fundamentally change the way people buy goods and services, enabling more consumers to put their money where their values are. Companies will no longer have sole control over the public information circulating about their products and services. Expect a new wave of consumer-generated media to continue the drive toward transparency. Certification and surveillance regimes for agriculture, for example, are being created with the goal of making agricultural production processes more transparent by revealing the social relationships that go into food and agricultural production.

Those companies that are proactively enhancing transparency and building trust may find new business opportunities and innovative strategies that can build markets and create new types of businesses, as the examples of eBay and Amazon.com show. These companies are built on reputation systems that aim to make the transactions of online buying and selling more transparent.

In health and health care, achieving transparency is made more difficult by the *information asymmetries* in the system. While many refer to the health care arena as a market, it is not a true market in some ways. The assumption that perfect competition demands equal access to information about the market is not true for health care. For example, most patients do not have accurate market information on quality of care and outcomes associated with particular providers and health plans.

This is about to change. Services such as BestDoctors.com or Preferred Global Health will assist patients in finding the best providers in a large geographical region or in the world for their particular conditions. No longer will the competitive playing field be thought of as a local matter of reputations of hospitals in a given city, but rather the field could be defined by region, state, nation, or even the world.²²

The drive toward transparency is making the boundaries of the firm more porous. If information is power, then some of the power is moving away from the firm as consumers come to have more information available to them. This has profound consequences for how we think about everything from risk management to marketing and regulatory affairs.

Mobility



mobility

Mobility in the digital age has many facets, from the physical mobility of goods, populations, and individuals enabled by transportation technologies to the digital mobility created by information technologies such as the Internet and its vast infrastructure. All of these kinds of mobility are coming together to radically transform the cartographies of health—the way the global health economy can be mapped to the actual geography of the planet.

Automobiles, for example, are no longer simply just for transportation. They can be made into mobile health environments with new medical technologies such as heart and glucose monitors and communication technologies that can keep them constantly in touch with health care providers. What's more, as growing numbers of American retirees travel widely or move to places like Mexico, they are going to want mobile forms of health insurance. Mobility is also affecting the global supply of human resources for health. As communication technologies become more secure and sophisticated, and air transportation grows less expensive and provides greater access around the world, health care consumers no longer have to limit their health care choices to their immediate geographic regions.

In the interstices of these transformations, there are opportunities to create new business platforms. From mash-ups using GoogleEarth to the increasing use of geographic information systems (GIS) software in health planning, new cartographies of health are emerging. At IFTF, we've been studying the "geo-spatial web" for several years—the way in which more data is being coded with spatial coordinates and more spaces are encoded with other types of data, creating geo-coded data that are available on mobile devices.

As the ability to see the connection between place and health becomes more visible, we may find the meanings of places overlaid with notions of health or disease. Already we have geographical imaginations populated with healthy and not-so-healthy places. Think of spa towns, such as Sedona, AZ, with their experiential dimensions of particular landscapes and their links to health. Alternatively, communities that lack adequate health services or have been adversely affected by environmental pollution can become known as unhealthy places—just about everyone knows the implications of Chernobyl, Love Canal, and Bhopal.

Regions can also become known for their expertise in particular medical or surgical specialties and become innovation hubs for biomedical research and medical treatments. Southern Sweden has become a leader in innovative functional foods.²³ As clinical trials go global, some countries like Iceland and China are advertising their "bioresources," such as their populations' genetic codes, that may be of interest to biopharma companies in need of clinical trial participants.²⁴

Powerful new GIS modeling work is enabling better understandings of social networks, spatiality, and health that can assist in health planning and the understanding of the spread of disease. During the SARS epidemic, the combination of the Internet and SMS (text messaging) demonstrated how bottom-up mapping and collective intelligence gathering could work to produce informal maps of the spread of the disease in Hong Kong. Similarly, new media technologies are allowing citizens to understand the source of environmental pollution in their locale through services such as PlanetHazard.com.



We've known for years that there is a geographical dimension to physician practice patterns that reflects the location of training centers and specialist networks. What we may see in the near future are services that spread the knowledge of these spatial variations to a wider audience, combined with health outcome measures. This combination may well provide a new way of thinking about markets, health outcomes, and the inequities in health care access. Companies with insights into these new cartographies of health may be able to create new business models and services to help citizens mitigate risk and achieve the best health outcomes.



Foodscapes

The notion of foodscapes helps us understand the relationships of food, health, agriculture, and sustainability in the global health economy.

The term “foodscapes” borrows from Arjun Appadurai’s work on ethnoscap²⁵—the flows of tourists, immigrants, and refugees that characterize global migration. We’re characterizing foodscapes as the assemblage of cultural grids, political economies, risk modalities, the changing conceptions of health and the body, the technologies used to produce, transport, and distribute food, the globalization of the food chain, and the ideologies and identities that structure the way we think about food and eating and their relation to health.

There is much more involved than simply making food products healthier. When we add the notion of global sustainability, we get a very complex picture, and are often confronted with ethical dilemmas: do I choose the organic beets because they are healthier for me or do I pass them over because they’re from Chile and the carbon footprint to ship them to the United States is greater than if I were to buy locally-grown “regular” beets? It will become increasingly challenging to navigate such a complicated and globalized foodscape in which markets are also fragmenting at the same time. We will have to learn to map these contradictory and complex trends and analyze them to become innovators in the food and health innovation space.

Many diets, such as vegetarian, vegan, “eat local,” or “slow foods,” have a political basis. Food is an important social differentiator and something that brings like-minded people together. Think of religious sanctions on food as well as debates about genetically modified organisms (GMOs). There are larger symbolic meanings to food, ways in which memory, identity, politics, and food come together.

We see very different public health cultures in different countries. There are different relationships between ministries and the populace, and global policies must be implemented in local contexts. For example, in China, in the realm of public policy, the ministry of health can have very little effect on rural public health infrastructures. Similarly, in the realm of nutrition, different countries have different food

pyramids—some heavy on grains and starches, others on vegetables and fruits, and yet others on protein. Food pyramids are not universal, and such things need to be taken into account when determining both public policy and business strategy.

We now live in the world of participatory media and user-generated content and we get our information from a wider range of media, including satellite TV, radio, spoken word, newspapers, and the Internet. This creates a broad mediascape that will have important implications for food politics. There is now far more information available about companies and products beyond their own marketing and labeling that consumers can draw on to make purchases based on their own values and health goals.

These examples have a dramatic effect on the role, both symbolic and practical, that food plays in globalization. It should come as no surprise that an intimate commodity such as food would move to the center of globalization debates as we have seen in WTO riots. Indeed, food is at the center of many debates about the affect of globalization on national, regional, and local identities.

The notion of foodscapes has become even more complex as the gap between food and health has narrowed over the last decade. Our foodscapes have begun the transition from a productionist paradigm to an ecologically integrated approach to food provisioning. Changes in how we think about food politics and governance will play an important role in determining the foodscapes of the future.



built environmnet

Built Environment

The growing international obesity and diabetes epidemics have become major public policy stories in the health arena since the 1994 World Health Organization (WHO) report *Global Strategy on Diet, Physical Activity, and Health*. This has increased attention to lifestyles and the impacts of environments on health. Since the 1980s, the WHO-sponsored Healthy Cities movement has focused on ways to integrate urban planning and health. Insights from experiments such as these are gradually moving into the mainstream.

A great deal of research²⁶ demonstrates the negative consequences of suburban sprawl on health. In most cities, transportation policies, parking regulations, infrastructure investment, and zoning laws promote unhealthy lifestyles by encouraging automobile use rather than walking or cycling.²⁷ The built environment can also affect the level of air pollution, which has been shown to play a role in cardiovascular disease.²⁸ Increasing land-use density, mixed-use zoning, and infrastructures that promote active transportation can actually make cities healthier.²⁹ The Healthy Cities movement has demonstrated how urban design that creates vibrant social



ecologies can also reduce crime rates, which may enable the elderly to walk more and maintain healthier lifestyles, in this way lowering chronic disease rates.³⁰

One recent example sheds light on how built environments can contribute to health outcomes. During the 1995 heat wave in Chicago, nearly 700 people died between July 13–20. Eric Klineberg conducted a “social autopsy” of the deaths and discovered that those who died were more likely to be African-American, male, and live in neighborhoods with higher crime rates and greater isolation. Latinos experienced lower death rates due to their neighborhoods having more lively social ecologies and commercial districts.³¹

Porto Alegre, Brazil, provides an interesting example of the growing demand in Western society for more compact, multi-modal neighborhoods and more active transportation environments—in other words, healthier communities. When a leftist government took control in the wake of the dictatorship and decided to find a way to make local government more transparent, it opted for a participatory budgeting program where citizens could vote on how local funds would be spent. The business community initially rebelled, but several years later, when tens of kilometers of roads through slums were paved, educational outcomes improved, and water and sanitation access increased, an influential business journal in Brazil voted Porto Alegre as the Brazilian city with the best quality of life.³²

Design is also helping to produce healthier, less stressful environments in the home and workplace. Ecological design, a new way to think about the built environment and health, is becoming an important business at the nexus of health, design, and the environment. In the last year, several hospitals have begun to use ecological design to create green hospitals.³³ One approach is to increase the number of sensors in the built environment, which will change the way we think about the connections between space and health and make these connections more visible.



future
proofing

Future Proofing

In the last decade, new ways of thinking about health have moved beyond the narrowly defined biomedical models. The rise of green movements, for example, has pushed a more ecological notion of health into the mainstream. We are growing concerned not only about personal health but also about the health of the planet—and how the two are interconnected.

Central to this ecological view of health is the notion of “future proofing.” Borrowed from the field of data protection, where it involves the choosing of proper formats to make sure that data can be read in the future, the term future proofing has taken on a more general meaning: to anticipate future developments of any kind in order to minimize negative consequences by taking action now.³⁴

Many individuals are beginning to think about the connection between health and the environment, with the goal of future proofing their health risk. In response to the greater availability of information about the risks we face, people are using more diagnostics for environmental toxins in the home, choosing less risky chemicals, thinking about the interactions between genes and environments, and turning to genetic diagnostic tests to learn about their propensity for disease. This kind of ecological thinking is behind much of the interest in “wellness” today. As a result, all kinds of new markets are emerging in the global health economy, including those for organics and eco-friendly goods and services.

At the same time, in developing countries, there is a growing understanding of the need to think ecologically about the control and spread of infectious diseases. A large number of emerging and re-emerging diseases such as SARS are zoonotic illnesses that move from agricultural contexts to animals and humans and require a broader lens for prevention and control than many standard epidemiological approaches. From the link between hybrid maize and malaria epidemics in Ethiopia to the growing link between agricultural productivity decline and HIV in the Horn of Africa and southern Africa, it is clear that biomedical models are limited in their explanatory potential. From problems such as these, we’ve seen the rise of disciplines such as ecological public health and medicine and cross-disciplinary research on HIV becoming more popular.

Future proofing has an important community component. Indeed, the Internet is enabling new media applications for support and information, such as blogs, video web logs (vblogs), and podcasts that can be accessed not just from desktop or laptop computers but from handheld devices such as iPods and smart phones as well. Such applications allow people to build powerful new social networks to share information about risks and aid them in their future proofing.

Lime.com, for example, is a multi-channel service of radio, Internet, podcast, television, and community forums that provides information about all things green. Its motto is “healthy living with a twist.” Kaiser Permanente’s “Thrive” campaign on wellness is another example—even the produce supplied to hospitals in the Kaiser Permanente network is local, organic, or sustainably farmed. New online services from Green Grocer, Organic Express, and Wal-Mart will deliver organic produce directly to consumers. Financial tools are entering the health arena, as well—tools that can assist individuals not only to finance their health care but also to manage risk, both medical and financial.

Healthy aging taken on as a “project” may be the most common manifestation of future proofing. Any aspect of living—genetic makeup, nutrition, exercise, social status, financial planning, architecture, or environment—can present risk or prevent



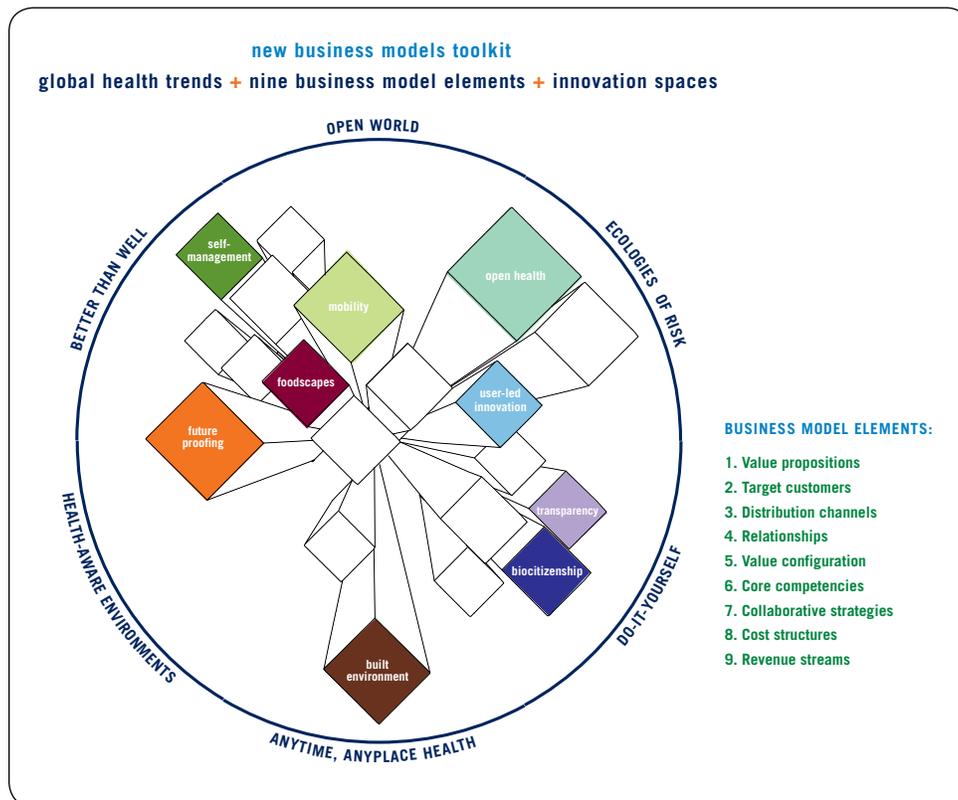
risk to varying degrees as we age. The project of managing the risks of aging begins at birth (if not before, with the increasing prevalence of in utero testing). For example, there are now banks for placental tissues in the event a child will need stem cells for interventions in the future.

The turn toward future proofing may have unintended market consequences. As in the case of the placental tissue, economies are emerging around materials that were once waste products, for example.³⁵ As the boundaries blur in the broader health economy in this way, expect niche players to provide consumers with new products and services that build on the drive for future proofing and a more ecological vision of personal and public health.

AN ESSENTIAL PART OF THE TOOLKIT

Recognizing these nine innovation spaces—and others that you may identify and add to your toolkit to customize it based on your industry or sector—is critical to using the New Business Models Toolkit. These spaces span the spectrum of the global health economy and offer different opportunities for different players. It is in these innovation spaces that new business models will emerge and will have great impacts on health and health care as we know it. In the next chapter, we present our forecasts of the new terrain.

Our “New Business Models Toolkit” takes the basic elements of a business model and applies them to the innovation spaces that are being produced by the drivers of the global health economy. The new business models that result will be poised to take on the fundamental changes and disruptions in the global health economy that we think are going to occur in the innovation spaces. What might those changes and disruptions look like? Our forecast attempts to answer that question. It also reveals examples of our toolkit in action—how some organizations are leading the way in developing new business models for the global health economy.



FORECAST

Health consumers will become empowered and will co-evolve new business models with global health economy players

The dynamic between providers of health care and health services and consumers is rapidly changing. Health values have traditionally been characterized in terms of provider and individual patient within a narrowly defined medical treatment model. As health costs and decision making shift from institutions to individuals, end users are assuming greater power for defining where, when, how, and at what price products and services are delivered. In short, greater consumer empowerment and discretionary decision making are introducing market forces to what had been a sector dominated by nonmarket incentives. This opens up opportunities in innovation spaces such as “Open Health” and “Self-Management.”

Boston’s Renaissance Health is building a patient-centered health care model that focuses on preventative care and wellness, and emphasizes the importance of developing lasting *relationships* between physicians and patients. Its *value proposition* relies on the effective use of e-mail, direct phone access to physicians, online health records, and other information technology and educational tools to help patients proactively manage their health. Unlike concierge or boutique medical practices that charge thousands of dollars for their services, Renaissance’s *revenue stream* is based on a cooperative or health club membership structure—it charges \$55 or less per month. Renaissance encourages its clients to work in partnership with their “personal care teams” to reduce visits while improving outcomes.

As end users within the health value network (providers as well as consumers) are forced to find solutions to their needs on their own, we will see opportunities emerge in the “User-Led Innovation” and “Self-Management” innovation spaces. *Relationships* between health businesses and consumers will become more dynamic and intimate, and lead users will be tapped as sources of innovation. Businesses that are adept at identifying lead users will need to construct business models designed to co-evolve with them. We already see large health plans like Humana and Kaiser Permanente responding to insights gained from listening more carefully to users of their services, which are resulting in programs built around incentives for greater member engagement and partnerships for preventive health strategies.

When Ben Singer decided to open Farmacias Remedios, a small chain of “Mexican pharmacies” in the San Francisco Bay Area, he wanted to offer his *target customers*—the area’s many Latinos—a *value proposition* that would differentiate his business from his competitors. In Mexico, pharmacists interact with customers and provide services that



aren't found in American drugstores. Singer gives his customers a pharmacy experience that reminds them of home, including a walk-in medical clinic operated by QuickHealth. He is attaining a healthy *revenue stream* while addressing the needs of working-class Latinos, who tend to lack health insurance and access to affordable care. As the company matures, his business model is co-evolving with his customers.

In addition to redefining relationships with lead users, companies are also recognizing the emergence of broader social networks as new sources of value and markets in their own right. As the health economy expands to encompass an ever-broader range of interactions, services, and goods—many outside traditional health care—self-organizing social networks are emerging to help make sense of the increasing complexity and to reinforce group affinities. These networks are establishing new criteria for defining value—that is, new value narratives. In addition to the usual cost-benefit equation, the new value narratives incorporate concepts such as trust, convenience, affordability, quality of life, equity, responsibility, ethics, and sustainability.

Social networks are but one aspect of Revolution Health, a Web site launched in early 2007. Backed by AOL founder Steve Case, Revolution Health offers users the ability to create their own “health pages” and to share their stories with others in the community. The company seeks to transform how people approach their overall health and wellness, and to put individuals at the center of their own health care. This, its *value proposition*, is to offer people more convenience and control over their health care decisions. Revolution Health's *revenue stream* is based on advertising, as well as on a premium membership structure that provides a series of telephone-based services that help people obtain answers to their health questions and offers assistance with settling health insurance claims, as well as scheduling appointments and much more. The company has engaged in *collaborative strategies* with more than 50 companies and a number of leading health nonprofits.

As business models co-evolve with lead users and turn to social networks as new markets and sources of value narratives, companies will need to develop new ways of interacting with consumers who are no longer passive recipients of goods and services, but active, and even interactive participants, in ways not fully under the company's control. To differentiate themselves, companies must learn from lead users and follow the shifts in their needs and values.



FORECAST

The competitive field of play will change as outside business models enter the health arena, open environments are embraced, and global resources flow

Some of the most intriguing innovations in health at the moment are coming not from new treatments, drugs, or research, but from outside business models entering the health sector. As traditional health business models fragment and evolve, companies from outside the health market will introduce new competitive pressures by configuring business model elements in innovative and unexpected ways. These new players may be able to create uncontested market spaces that they can control in the health economy.

Businesses outside the health sector don't accept the perceived wisdom that the health industry operates under a unique set of competitive rules. According to business professors Michael Porter and Elizabeth Teisberg, the health care industry has traditionally operated under "zero-sum competition," where market value is divided or even eroded among competitors, who succeed by shifting costs and limiting access.³⁶ New entrants from outside the health market are accustomed to operating under "positive-sum competition." Positive-sum competition is grounded in expanding rather than dividing total market value. While traditional health sector players compete by shifting costs to consumers and restricting access to services, outside players are creating new venues and channels that increase access and utilization of resources. This paradigm shift toward positive-sum competition may provide a key advantage for outside companies over those of traditional health players in innovation spaces like "Transparency" and "Self-Management."

The big box retailer Target recently debuted Target Clinics—in-store, walk-in health clinics that charge relatively low, fixed rates for common medical services, such as flu shots, strep throat checks, and ear infections. Target's *value proposition* is based on convenience, accessibility, efficiency, and affordability. The *target customers* are likely to be working, uninsured patients who will save time and money by not going to the local hospital emergency room. Patients also may be more likely to use these clinics, which are staffed by nurse practitioners and physician assistants, because they do not have a primary care physician to turn to. Between Target Clinics and Clear Rx, an innovative pharmacy offering, Target is positioning itself to become a trusted partner for its customers. It is taking its *core competency* as a successful and trusted retailer and applying it to the world of health services.



With retail clinics and online medical references already offering alternatives to visiting the doctor's office, it seems likely that outside business models will seriously disrupt the traditional health care economy. What will happen when other consumer-driven companies like Estée Lauder, Sony, or McDonald's decide to en-

ter the health space and apply their consumer market acumen to delivering the right health services to the right people at the right time, while monitoring compliance and response as diligently as they currently track consumer purchases?

Steven Weber has observed that open environments are fundamentally redefining the way in which knowledge products such as pharmaceuticals and biotechnology are produced.³⁷ As the pipeline for novel drug therapies thins, the cost to bring a wholly new therapeutic molecule to market can exceed \$1 billion.³⁸ In other sectors, such as software, open source platforms are demonstrating that it is possible to lower the costs and reduce the risks of developing highly complex products.³⁹ In the “Open Health” innovation space, public–private partnerships provide an example of a new business model that has adapted the open source model to develop drugs for neglected diseases at much lower development costs.

The Institute for OneWorld Health is an innovative, nonprofit pharmaceutical company that has partnered with hospitals, universities, pharmaceutical and biotech companies, government agencies, and nongovernment organizations to develop effective and affordable medicines for infectious diseases in the developing world. OneWorld Health has leveraged its *core competency* of pharmaceutical product development by partnering and collaborating with industry and researchers, securing donated intellectual property, and utilizing the scientific and manufacturing capacity of the developing world. Its *collaborative strategies* have already led to the approval of a cost-effective injection to treat visceral leishmaniasis, the world’s second most deadly parasitic disease (after malaria); other drugs are in the pipeline.

Within the health landscape, open environments will extend beyond pharmaceutical R&D to include global flows of labor, knowledge, and finance. For example, in 2005, one-quarter of U.S. physicians were foreign-born,⁴⁰ and the demand for increased home-based health care is being facilitated by an ongoing surge in immigrant home health workers.⁴¹ The current market capitalization of publicly traded immigrant-founded venture-backed companies in the United States exceeds \$500 billion, and many of these companies are concentrated in the life sciences.⁴²

The global flow of human resources, technical knowledge and expertise, and production capacity will be a two-way street. Public and private investments in life science R&D in emerging centers for biomedical research such as China, India, and Singapore are on the rise. With the capability of conducting control trials in populations many times the size of those available in the United States or Europe, and in less restrictive regulatory and public opinion environments, overseas research centers are quickly developing the experience and capacity to become sources of leading-edge scientific innovation in the very near future.



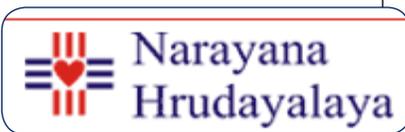


Singapore has invested \$8 billion in Biopolis, a huge research facility that includes Novartis and GlaxoSmithKline as tenants. The complex, intended to host to more than 1,500 scientists, is part of Singapore’s drive to attract high-caliber researchers from around the world and to expand its scientific infrastructure over the next few years. Its *collaborative strategies* are intended to foster a cooperative culture among the institutions and organizations under its roof. Researchers are able to access state-of-the-art facilities, scientific infrastructure, and specialized services, thereby allowing companies to cut R&D costs significantly and accelerate the development timeline. The opportunity to leverage Biopolis’ infrastructure, shared resources, and existing research capabilities is its *value proposition*, which appeals to many potential *target customers*—both local and international biotech companies, large and small.

The global flow of patients and medical services will continue to become more commonplace as regional health care hubs sprout up throughout Southeast Asia, the Middle East, Mexico, and Eastern Europe. These “Centers for Clinical Excellence” are often staffed with U.S.-trained physicians and are accredited by the Joint Commission International. Their outcome indicators for complex interventions—from cardiac care to orthopedic surgery—are frequently equal to or better than their U.S. counterparts, at a fraction of the cost.⁴³ Meanwhile, U.S. based insurers are beginning to approve reimbursement for offshore treatment.⁴⁴

Technology is also changing the context for clinical care. The tele-health industry will continue to grow as tele-radiology, -pathology, and -cardiology develop into standardized forms of patient-provider or provider-provider communications across national borders. Nighthawking, which refers to the outsourcing of radiology services during the evening in the United States, has become increasingly common in recent years.⁴⁵ Radiology will continue to become an outsourced profession, as global networks of physicians are able to provide near-immediate interpretation of digital images taken on the other side of the globe 24/7. Tele-cardiology may be the next big area of growth in telemedicine.

India’s Narayana Hrudayalaya (NH) has become one of the largest telemedicine centers in the world. Domestically, its *target customers* are the 70% of India’s population who live in rural areas, many of whom suffer from heart disease. NH has taken advantage of Bangalore’s biggest assets (IT) to make its *core competency* (cardiac care) technologically viable and accessible remotely. NH’s *collaborative strategies* have led to the development of a telemedicine system that consists of computer hardware integrated with customized medical software and diagnostic instruments, all connected to its main hospitals via technology that has





no geographical barriers and doesn't require a telephone line. This set-up enables transmission of patients' medical records, including images, and provides a live two-way audio and video link between patient and specialist. NH negotiated the price of each remote electrocardiogram machine from \$2,000 to \$200, and an Indian manufacturer has promised machines for \$40 each.

If several thousand cardiac care patients in India can be treated remotely via high-definition telemedicine, there is little to prevent a similar model from being repeated in the West. The health value chain that defines where, how, and by whom care is delivered is being completely restructured. As scientific and clinical expertise become globalized and connected by high-speed, high-capacity data networks, existing health players will recognize that current geographically bound business models offer little in the way of competitive advantage.

FORECAST

Market constraints will lead to hybrid public-private business models and emerging markets will show the way

All markets operate under constraints of some kind, and health markets are no different. Constraints come in many stripes—economic, technological, political, or social—and affect both supply and demand. Yet ample examples exist of organizations that have proven themselves to be not only sustainable but also even profitable under extreme limitations. Hybrid models combine different business models to overcome market challenges that neither model can address alone. The resulting innovative new business models can be used to reconfigure constraints as opportunities.

Hybrid models create push-pull mechanisms that make it possible to construct viable business models in marginal, emerging, or unproven markets. Push mechanisms are enabled by philanthropic and public-sector investments to reduce development risks, and can come in the form of subsidies, grants, tax or regulatory concessions, or licensing of public-sector IP. Pull mechanisms include bulk procurement or purchase guarantees, consumer financial incentives such as microloans, or support for cooperative mechanisms to seed economic markets.

Hybrid business models will help reframe market failures as viable markets for health goods and services. Hybrid models, including public-private partnerships (PPPs), product development partnerships (PDPs), and mixed for-profit/not-for-profit organizations, are demonstrating their capacity to reduce the costs and risks of developing products and services where needs exist but economic markets may not.



Most victims of tuberculosis are poor, so over the last 30 years, there has been little incentive for pharmaceutical companies to invest in new treatments—the high costs of bringing new drugs to market dwarfed the profit potential. However, the pharmaceutical firm, Sequella, has employed a hybrid business model that relies heavily on *collaborative strategies* to substantially lower the costs and time required to develop a line of novel TB diagnostics and therapies. It has enjoyed a successful public–private partnership with the National Institute for Allergy and Infectious Diseases, one of the National Institutes of Health. It has also partnered with PATH, an international nonprofit committed to finding sustainable solutions to poor health worldwide, to conduct clinical trials of Sequella’s innovative diagnostic patch for TB in the Ukraine.

Hybrid models offer the promise not only of lowering development risks but also of streamlining product development by making efficient use of multiple resources.

An important question is: what happens if highly efficient hybrid development models move from neglected diseases to mainstream pharmaceuticals? They could represent a major disruption for companies whose margins are justified in part on the high cost of private R&D and IP protection. Furthermore, there is talk within the biopharma industry of getting back to the mission that founders of the largest pharmaceutical manufacturers claimed from the outset—to improve the public’s health. Indeed, some claim that the focus on the market has stifled innovation and decreased public support for the industry.

As the investment versus outcome indicators in the United States health system remain off-kilter, business model innovations designed to address resource constraints and hard-to-reach populations in the developing world are becoming increasingly relevant for the United States. Innovation flows that have traditionally moved from north to south are being redirected by successful, financially sustainable enterprises operating under what seem to be impossible constraints. University of Michigan business professor C.K. Prahalad proposes that the rigid constraints under which these emerging enterprises operate are, in fact, a principal reason for their success.⁴⁶ He suggests that embracing constraints of the sort faced by health providers in India—where 80% of the population is unable to afford health care, the physician-to-patient ratio is over 600 times lower than in the United States, and 70% of the population is living in rural or semi-rural areas—has led to the creation of businesses that are setting global benchmarks for cost, quality, and delivery of health services. The numbers posted by Indian firms suggest that significant value can be captured even in marginal markets where the firm is operating under tremendous constraints.

Narayana Hrudalayala (NH), discussed above, is a private corporation that became profitable three years after its founding in 2001 and performed over 7,500 cardiac surgeries and 60,000 outpatient consultations in 2004. Its high volume of surgeries performed at low cost allows NH to provide many of its services for free. NH Cardiac Care delivered a 19% gross margin and 19.5% return on capital employed in 2004.

The founder of Aravind Eye Care recognized an underserved market in India's 20 million blind. Today, Aravind is the world's largest provider of cataract surgery. From April 2006 to March 2007, its five hospitals performed more than 240,000 surgeries and treated more than 2.3 million outpatients. Aravind's cross-subsidization model allows it to treat 60% of its patients for free, yet it showed a 54% gross margin in 2004 and a 16.2% return on capital. Aravind's success has been driven by efforts to cut costs (it costs about \$10 to perform a cataract operation), increase efficiency, and build markets. Its Aurolab medical products division is a leading global manufacturer of high-quality, low-cost intraocular lenses, 75% of which are exported around the world.



THE TOOLKIT IN ACTION

In this chapter, we have explored our forecasts through the lens of the elements of a business model to demonstrate how our toolkit for creating new business models is designed to address the challenges and opportunities in the evolving global health economy. The health care marketplace is transforming, and in the global health economy the top-down approach of traditional health care players will no longer work. Both new and old players will need to open themselves up at every level—with their customers, with their partners/competitors, with the public sector.

New business models arise when an external change in the environment opens up fundamentally new ways of doing business. Harvard business professor Shoshana Zuboff suggests that the economy itself is undergoing a fundamental change as it shifts from a capitalism of mass consumption to one in which individual, almost customized, consumption predominates.⁴⁷ This is a world in which people are attempting to acquire more control over the quality of their lives and are pursuing what Zuboff terms “psychological self-determinism.” Unfortunately, the business models of most health companies are still based on mass production at the lowest prices, a model that fails the “new breed of educated, self-aware, activist consumer in greater need of self-actualization.”⁴⁸

Conclusion: All About Value

Zuboff's new form of capitalism is "distributed capitalism," whereby influence and power is shared by a globally dispersed, networked group with many support networks. Under this rubric, many different industries can work collaboratively to create unique value and assets for customers. Similarly, Michael Porter and Elizabeth Teisberg suggest that future innovation will take place in a system where "the locus of competition shifts from 'Who pays?' to 'Who provides the best value?'"⁴⁹

As we look forward to the next 5–15 years, innovations will emerge as much in the components of the business model as in the innovation spaces. These will come not only in the form of "what" the innovation space will be (foodscapes, open health, future proofing) but also in "how" it is provided (retail health, outsourced care, new categories of providers). Indeed, a good deal of the innovation will be in how familiar tools are applied. This may mean looking at models from outside the health care industry for inspiration; it may mean designing solutions based on outcomes rather than precedents; it may mean inverting the relationship between system and user.

Much creative innovation is coming from emerging economies. Health systems in countries like India, China, Brazil, and Mexico have always struggled with resource constraints, collapsed infrastructures, and demographic challenges. Yet despite these constraints, entrepreneurs in these countries have developed business models able to deliver world-class health care to broad populations in economically sustainable ways.

Innovative business models will target the unique value narratives of each stakeholder in the health value web, whether payer, provider, or consumer/patient. Future innovations will extend the locus of innovation beyond the individual to include families, communities, and affinity groups in addition to the traditional demographic, cultural, and economic segments. Health delivery models will begin incorporating the sort of value narratives that have made companies like Whole Foods, The Body Shop, and Southwest Airlines the successes they are.

By exploring our forecasts through the lens of our "New Business Models Toolkit," we wanted to illustrate how new business models can be created to address the challenges and opportunities in the evolving global health economy. Successful businesses will be those that let go of unsuccessful old models and face the challenge of going down an innovative path with no clear guarantee of success. Organizations that recognize that breakthrough solutions will take a ground-up reframing of how we do business will be those that succeed in recognizing and capturing the value of opportunities that emerge in the global health economy. We hope the conceptual toolkit set out in this report will send you in the right direction.

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