

The Fourth Factor of Production

Helping Caregivers Work Smarter Instead of Harder

THANKS TO A BOOK WRITTEN in the early 19th century, economics has an unflattering reputation as the dismal science. Thomas Robert Malthus' characterization of my profession reflected his belief that economic analysis tends to lead to dismal conclusions, such as the inevitability of famine, poverty and war because populations tend to grow faster than their food supply.

Mr. Malthus did not say that being an economist was devoid of comfort. Studying economic activity can be fun when it produces a theoretical model that explains how a system works and provides guidance for avoiding dismal outcomes. The current popularity of *Freakonomics*, for example, has made economics appealing to a large audience of people who would not have expected to enjoy reading a book about a so-called dismal science.

Consequently, healthcare IT professionals should not be afraid of production theory, which has been a core economic concept for 200 years. It is an appropriate way to introduce the articles in this issue, which apply more recent economic concepts, such as ROI and the operational impact of incentives.

Applying production theory to healthcare in 2007 does not necessarily lead to an unpleasant conclusion. Indeed, the analysis that follows suggests that information technology is essential for avoiding dismal outcomes for healthcare over the next few years.

FACTORS OF PRODUCTION

Beginning with the Industrial Revolution in the late 1700s, the Scottish philosopher Adam Smith and his contemporaries set the stage for evaluating economic wealth by considering three factors of production: land, labor and capital. Land

and labor are self-explanatory. Capital was defined as factories and machines that were operated by labor. Modern references to capital, as in the phrase "access to capital," share the same meaning. Cash and credit do not have intrinsic economic value; they only become productive when invested in factories and machines.

In the mid-20th century, economists began to consider a fourth factor of production—information. They observed that nations or enterprises with equal endowments of land, labor and capital did not necessarily produce equal wealth. All other things being equal (a favorite saying of economists), economic theory indicated that the entity with better data and information would achieve superior results. The meteoric rise of companies like IBM and Hewlett-Packard in the 1950s and 1960s validated information as a fundamental factor of production.

The production factors model sheds light on healthcare's problems and prospects in the first decade of the 21st century. Land can be quickly removed as a factor. Some hospitals may not be ideally located, because their customers have moved to another part of the market area, but nobody is worried about a shortage of land on which to build hospitals.

On the other hand, labor is a problem for today's producers of healthcare services. Professional caregivers of all types are in short supply, creating serious and well-known bottlenecks, such as bed closures and emergency room diversions. The normal economic response would be to increase the supply of labor, but creating new health professionals takes considerable time and money.

Even if money were not an obstacle, the lag time between expanding the capacity of educational programs and graduating competent caregivers ranges from five years for nurses to 10 years for physicians. Providers do not have the luxury of waiting this long to solve the immediate problems caused by the shortage of qualified labor. A quicker fix is needed.

Improving capital is an option, in theory, because new medical buildings and technologies can be acquired much faster than new caregivers. However,

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most American providers do not have the financial resources to build and equip a better production facility. Investment capital will be even harder to access because providers have little or no ability to raise capital by raising prices. A few providers, perhaps 1-in-4, have a realistic capacity to meet short-term capital needs through long-term debt.

To compound the problem, the two traditional payors (governments and employers) are unlikely to increase their inflation-adjusted payments for healthcare in the foreseeable future. Payors will continue to shift financial responsibility to consumers, who are largely unprepared

to meet the financial obligations suddenly thrust upon them. The net result, rising receivables from insured patients, just adds to providers' difficulty in borrowing money to solve the problem.

INFORMATION AND THE BOTTOM LINE

In light of current constraints on labor and capital in healthcare, the only viable solution is to increase production of the existing workforce.

Production theory offers two possible paths to increasing output-per-worker. The old approach involves giving workers more money to work more hours. It is not applicable in healthcare today, because caregivers are already working at, if not dangerously beyond, capacity. At this level, more hours could mean more errors and more risks to patients.

The new approach is giving workers more information to work smarter instead of harder, applying the insights of Peter Drucker, W. Edwards Deming, Crosby, Arro and other visionaries who pioneered the use of information to identify more efficient ways for combining land, labor and capital. Unfortunately, healthcare managed to avoid the information revolution that transformed leading industries in the United States and Japan after World

War II. American hospitals and doctors were operating in 2000 pretty much the same way they operated in 1950.

The good news is that information has proven its transformational value in healthcare during the past few years. Even better news is that information is relatively available and affordable in provider organizations. It is not free, but management information can be produced faster than labor and more cheaply than capital. Economics 101 clearly shows why information must be factored into the production equation.

The critical challenge for today's healthcare IT leaders is to develop vision and skills for financing investments in information technology with the money IT will save by eliminating waste in healthcare. This task will not be easy, but it will be worth the effort. On the other hand, the alternatives without healthcare IT are dismal. **JHIM**

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