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Changing Health Care Business Models and Costs

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Abstract: Changing the health care system has universal support in principal, but has proven contentious in practice. This paper draws upon the theories and publications of three leading business thinkers, and the frameworks they developed for applying business practices to the health care industry: Drs. Clayton Christensen, Robert Kaplan, and Michael Porter of Harvard University. It reviews the disruption theories of Christensen as he has applied them to the health care industry, and connects them with medical costing recommendations of Kaplan and Porter. Two possible disruption possibilities for clinical care and venue are presented.

INTRODUCTION

The challenges of affordable health care in the United States are well publicized. Debate involving the Affordable Health Care Act of 2010 played out for nearly a year, and barely civil confrontations among groups with differing opinions were shown to millions on television. Even now there is an entire political segment intent on repealing the act. Health care costs exceed 17 percent of GDP and continue to rise (Kaplan & Porter, 2011, p. 4). Net healthcare spending by the Federal government alone from 2012 to 2021 is currently estimated at more than a trillion dollars (Elmendorf, 2011). Everyone agrees that the health care system needs re-engineering, but there is no consensus for a re-engineering process. The process that has come closest to consensus is the application of efficiency and effectiveness tools of industrial improvement to the health care industry. This has proven to be a very difficult undertaking. The health care system is so vast, and touches so many people and organizations that those that benefit from the status quo will be very reluctant to support reform unless they judge that their positions will not be compromised. There are substantial legal consequences for unsatisfactory patient outcomes. Physicians, insurers, lawyers, legislatures, and businesses must agree on a framework for reform, and their interests will not necessarily coincide. This paper discusses a framework proposed by Christensen, Kaplan, and Porter dealing specifically with applying the patterns of industrial innovation to health care.

From Niche Markets to Mass Consumption

Historically, the products and services of emerging industries were available to an elite group that had means of access. Early in the development of telephones, photography, automobiles, air travel, and computers only individuals or organizations of substantial wealth could afford them, but eventually these industries were made accessible to large numbers of people through technology, business model innovation, and value networks (Christensen, 2009, pp. xix-xx). With industrial maturity, dependence upon highly trained intuitive experts gave way to dependence on processes and systems. Innovations augmenting or replacing intuitive experts improved consistency, increased prediction, and lowered costs. And multiple innovations disrupted existing systems competing on the basis of simplicity, affordability, and accessibility (Christensen, 2009 p.6). An example of a highly successful process innovation is Henry Ford's assembly line, which made automobiles available to mass markets. Development of an industry is highly reliant upon business models and value networks. Clayton Christensen (2009, pp. 9, 180) describes both. A *business model* consists of the following components:

1. *Value proposition*: product or service that helps customers do jobs they want to get done

2. *Resources*: people, property, equipment, facilities, technologies required to deliver value propositions to customers
3. *Processes*: habitual ways of completing repeatable tasks successfully
4. *Profit Formula*: Required revenue and margins to deliver the value proposition

A *value network* is the context of a business model, linking suppliers, customers, and channels to satisfy customer needs. Industrial transformation cannot occur through technology alone. Technology innovations must be framed in business models and value networks. Christensen makes a distinction between two types of innovations: sustaining and disrupting. Advances that drive performance improvement as measured by historic customer perspectives of value are sustaining innovations. They help market-leading organizations continue to improve their products and services to their best customers. But the people and institutions that benefit most from sustaining innovations are market leaders because sustaining innovations support existing business models and value networks. Disruptive innovations are often less capable than their sustaining counterparts in delivering features and functions, but they are simpler and more affordable. When they enter an industry, they are not sufficiently robust to appeal to the main customer base, but they attract a group of new customers who are either over-served by the offerings of market leaders or cannot afford products and services of leading companies. A simplified Christiansen disruptive innovation model is shown in Figure 1 (Christensen, 2009, pp.4-7).
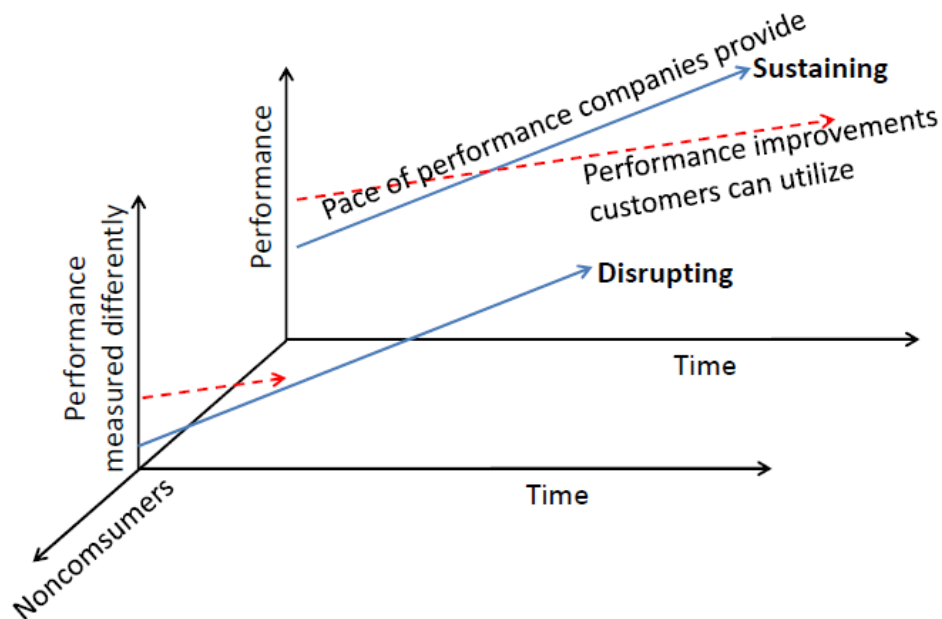

Figure 1   Simplified Christensen Disruption Model

Performance of products or services is plotted on the vertical axis and time on the horizontal axis. The non-consumers axis in the third dimension permits different customer planes for sustaining and disrupting innovations. The sustaining section of the chart contains the main customer base while the disrupting portion includes new customers who were either non-consumers or over-served former consumers of products and services offered by market leading companies. An important contention of the model is that companies can provide performance at a faster rate than customers can use. In other words, there is a time lag between the availability of performance features and the ability of customers to use improved performance features to their advantage. The simplified model does not show the multiple customer segments and distribution curves of the full model, but the concepts are clear: performance outpaces the understanding of how to use it, and disrupting innovations provide less performance than market leading products and services, but they apply to a different set of customers with different business models and value networks. The performance pace of disrupting products and services also increases at a faster rate than performance utilization. If performance in the disrupting plane is capable of satisfying the needs of the main customer base of the sustaining plane, the entire industry changes.

Movement from Intuition to Precision

When industries first emerge they are highly dependent upon intuitive experts who operate on heuristic rules based upon their experience and training to solve problems that are either completely unknown or ill-defined. These experts are always in short supply and are highly compensated. Intuitive experts drive investigations into the systems and components of the problems they confront. With time, intuition is replaced with process understanding. As more is understood about systems involved in these industries, processes are created to deal with challenges regularly confronted in activates needed for the effective system operation. The movement from intuition to process understanding is always dependent upon the recognition of systemic relationships and component interactions. Often, specialized equipment is needed to reveal operational systems. Microscopes are needed to understand bacteria, and computer assisted laboratories gradually open understanding of genetics. In the words of Herbert Simon (1966, p. 27): "Leeuwenhoek and his microscope, Galileo and his telescope, Lawrence and his cyclotron, and so on. God is on the side of the highest resolution". When systems are sufficiently understood to achieve a desirable outcome, effective problem-solving measures can be incorporated into processes, and dependence upon intuitive experts is greatly reduced.

Hospital Business Models

Hospital business models were created when medical practice was considered an intuitive process only accessible to highly trained experts. They have evolved to include many standard processes resulting from complete (or nearly complete) understanding of groups of illnesses and therapies. Those standard processes add value to patients in two important ways:
1. Products and systems can be reliably applied to effect cures
2. Precise measurements can be defined and tracked so continuous improvement in effectiveness and efficiency becomes possible.

But the commingling of both standard processes and intuitive treatments creates an unwieldy organization. Christensen (2009, p.75) describes the hospital business model:

> The organizational paradigm of the general hospital coalesced in an age of intuitive medicine. The entire hospital was essentially a solution shop. But today's hospitals are substantially different. As technological and scientific progress enabled standardized processes and treatments for precisely diagnosed disorders, hospitals commingled value-adding process and solution shop activities within the same institution – resulting in some of the most managerially intractable institutions in the annals of capitalism.

The "solution shop" is a business model that supports the work of intuitive experts. It is structured to diagnose and recommend solutions to unstructured problems. Solutions shops almost always charge clients on a fee-for-service basis (Christensen, 2009, pp. 20-21). A value-adding business process (VAP) transforms inputs of resources – people, materials, equipment, information, and capital – into outputs of higher value. Value-adding businesses generally bill customers for results (Christensen, 2009, p.22-23). In many cases, the advantages of precise measurements and quality improvement are difficult to administer in hospital environments because solution shop cost and billing models are applied even when value-adding activities are involved. Kaplan and Porter (2011, p.4) claim that "there is almost complete lack of understanding of how much it costs to deliver patient care." They contend that the inability of the health care system to properly measure and compare costs with outcomes has significantly impeded effective health care reimbursement approaches. And they estimate as much as 36 percent savings by making patients and their conditions the fundamental unit of analysis for measuring costs (Kaplan, 2011). Value-added models are needed to use patients and their conditions to define measurements and determine costs rather than simply relying on services rendered. There is a great deal of work involved in precisely defining the activities and interfaces involved in medical VAPs. Kaplan (2011, p.9) recommends seven steps to create a cost measurement system:
1. Select the medical condition and/or patient population to be examined.
2. Define the care delivery value chain.
3. Develop process maps of each activity in patient care delivery; identify the resources involved and any supplies used for the patient at each process.
4. Obtain time estimates for each process step.
5. Estimate the cost of supplying each patient care resource.

6. Estimate the practical capacity of each resource provider, and calculate the capacity cost rate.
7. Compute the total costs over each patient's life cycle.

If hospitals can continue to collect revenue sufficient to satisfy their governing boards through fees for services, there is little incentive to engage in the hard work needed to define VAPs. Adding to the challenge is the fact that one organization may not control all the components contained in the diagnostic and treatment system, which much be modeled from an integrated perspective even if it is delivered in modular stages. Companies cannot optimize systems they do not own. With ownership and authority spread among many groups, even the creation of treatment process maps can be problematic.

With continued pressure to make health care more accessible and affordable there are two clear paths for health care disruption following the Christensen Model of Figure 1:

1. clinical method of patient care
2. venue of diagnosis and treatment

Clinical Method of Patient Care

With extraordinarily high patient to physician ratios and substantial costs associated with physician time, it is possible to apply the historic elements of market disruption to clinical practice -- simplicity, affordability, and accessibility. With well-defined VAPs, the highly expert intuitive skills of physicians would not be required to treat precisely defined illnesses. Medical judgment could not be completely removed from the treatment process without unacceptable risk, but the judgment of physician assistants and nurse practitioners could adequately manage standard therapies, and consult with more highly trained physicians when needed. An added benefit of patient interaction with less expensive medical professionals is the potential of more time with patients. The medical system is treating people, not just blood tests, X-rays, or ultrasound images. Kriel (2000) is critical of medical systems that rely too much on equipment and tests and not enough on relationships between patients and health care providers. Physician assistants and nurse practitioners fit best into VAP business models. Adding an additional business model, facilitated networks, to the VAP model offers potentially more benefit to patients through information network sharing among health care professionals.

Diagnostic and Treatment Venues

Hospitals are complex organizations capable of dealing with the most esoteric of health problems, but they are not organized to deliver standard therapies efficiently and effectively. Venues capable of disrupting hospitals include clinics, physician's offices, and perhaps even patient homes eventually. Technologies are available now that make all of these venues viable, although we have not yet established how to take advantage of those technologies. In addition to the need for solid VAP business models, key factors in implementation include appropriate risk management and well defined and managed processes.

Political Challenges

One reason health care is so hard to reform is that there are many powerful players influencing the industry. Politicians, physicians, lawyers, corporations, and insurers care about the way health care is designed and implemented, and they are likely to oppose changes that they believe will negatively affect their interests. We can expect that hospitals will fight disruptive models that threaten to take away profitable business from their solution shop cost and billing practices, since changes in clinical practice and treatment venues will quickly affect a portion of their main customer base. A favorable political and legal climate can promote disruptive practices and support people and organizations pushing for change. Tort reform is a particularly sticky area, since doctors and politicians often point to defensive medicine as a significant contributor to overall health care costs (Searcey, 2009). It is hard to see how the political will needed for change can emerge in the emotionally charged and highly partisan legislature that exists at the current time in our nation's capital.

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