

Notes on

# ***The Innovator's Dilemma:*** ***When New Technologies Cause Great Firms to Fail***

Clayton M. Christensen  
Cambridge, Massachusetts: Harvard Business School Press, 1997

## **Introduction**

Companies stumble for many reasons: bureaucracy, arrogance, tired executives, poor planning, short-term investment horizons, inadequate skills and resources, and bad luck. Sears and DEC received accolades at the exact time when they were ignoring trends and making the wrong decisions on the future. *The Innovator's Dilemma* has three main findings:

- *Sustaining* technologies are different than *disruptive* technologies
- The pace of progress often precedes the market's awareness of the need
- Structures of companies color the choices and investments they make

**Sustaining** is incremental improvement of established technologies. **Disruptive** is a new concept of value. Managers faced with disruptive technologies fail their companies when they let organizational forces overpower them.

Christensen proposes **Five Principles of Disruptive Technologies**:

1. Companies depend on customers and investors for resources. Customers drive internal decisionmaking because companies are resource-dependent.
2. Small markets don't solve the growth needs of large companies. Large companies are not interested in small emerging markets, and they wait too long.
2. Markets that don't exist cannot be analyzed.
4. An organization's capabilities define its disabilities.
5. Technology supply may NOT equal market demand.

## **Part One: Why Great Companies Can Fail**

1. **How Can Great Firms Fail? Insights from the Hard Disk Drive Industry.** Disk drive disruptive technologies were straightforward – NOT breakthroughs. Most simply packaged existing technologies in unique architectures for new applications.
2. **Value Networks and the Impetus to Innovate**
  - (1) An organization built to reflect the components of its product has organizational inability to accept or develop disruptive products.
  - (2) An organization that accumulates skills and knowledge needed for one product stumbles when those skills and knowledge are irrelevant in a new product.

*Neither* of these two theories explains the disk drive industry.

An organization's culture defines value. Disk-drive performance was measured in capacity, speed, and reliability by corporate IT. But ruggedness, power consumption, and size by PC manufacturers. Overhead costs influence what innovations are deemed profitable.

- a. Disruptive technology is developed inside established firms
  - b. Marketing people poll existing customers. Management shelves project.
  - c. Established firms improve existing products.
  - d. New companies form. New markets are created for new products. Frustrated defectors from established firms start new companies.
  - e. New entrants move upmarket.
  - f. Established firms jump on the bandwagon late. "The most formidable barrier is that they did not want to do this."
3. **Disruptive Technological Change in the Mechanical Excavator Industry.** As mechanical excavators changed to hydraulics, an entire population of manufacturers was wiped out.
  4. **What Goes Up, Can't Go Down.** Leading companies migrate easily to high-end markets. Moving downmarket is difficult because improved financial performance prevents down market development.

## Part Two: Managing Disruptive Technological Change

### Successful managers:

- Embedded projects in an organization that found customers
  - Embedded project in small organizations that sought small wins.
  - Planned to fail early and inexpensively: trial and error.
  - Used resources of the larger organization, but not the company's values or cost structure.
  - Marketed to new customers and markets. Did NOT search for technology breakthroughs.
5. **Give Responsibility for Disruptive Technologies to Organizations Whose Customers Need Them.** Resource dependence (Pfeffer & Salancik) theorizes that external forces – customers – control decision-making far more than executives. Managers proposing new disruptive technology can (1) Try to convince the company, or (2) Create an independent organization. Option (2) works best. What customers will we serve? What business model will we follow? These CANNOT be different answers within the same company.
  6. **Match the Size of the Organization to the Size of the Market.** Followership in sustaining technology does not affect market share. Followership in disruptive technology can be fatal to market share. *Therefore leadership in disruptive technology creates enormous value.* Johnson & Johnson comprises 160 autonomous companies, each of which can introduce small disruptive products such as disposable contact lenses.
  7. **Discovering New and Emerging Markets.** Because markets for disruptive technology are unknowable, managers should plan to learn and discover, NOT plan and execute. Many management skills are inappropriate, and can paralyze a firm. Agnostic Marketing: no one, not the firm or the customers know how a disruptive technology can be used. New markets are not understood, therefore they are inaccurately termed high-risk.

8. **How to Appraise Your Organization's Capabilities and Disabilities.** An organization is defined by its resources (people), processes, and values (RPV). New organizations spawn new processes aligned to new requirements. When integrated into the larger organization, these processes are subsumed. New resources, especially people, plugged into old processes and values, do NOT constitute a change-capable organization.

RPV model explains why GM's investment in robots and engineers were meaningless when laid on top of a flawed automobile development process. Processes are very hard to change because they are tied to internal organization structure AND the current process works just fine on existing projects. Commissioned stock brokers do not do on-line trades.

9. **Performance Provided, Market Demand, and the Product Life Cycle.** As products change, the metric changes. For disk drives this was capacity, then size, then reliability, then cost. Generically, functionality (possibly along multiple functions) reliability, convenience, and price. Customers move from one step the next based on oversupply.

The weaknesses of disruptive technologies are their strengths. These are not technological issues, but marketing to new needs. Disruptive technologies are simpler, cheaper, more reliable and more convenient than established technologies.

10. **Managing Disruptive Technological Change: A Case Study.** How can managers succeed when faced with disruptive technological change? A case study on the electric automobile shows that major automakers do not see a market. Innovators need to find a customer need, a niche, develop the marketing, and create a new distribution model.

#### 11. **The Dilemmas of Innovation: A Summary**

- First: Market progress is separate from technology progress. Customers do not always know what they need.
- Second: Innovation requires resource allocation which is extraordinarily difficult for disruptive technologies.
- Third: Disruptive technology needs a new market. Old customers are less relevant. Disruptive technology is a marketing problem, not a technological one.
- Fourth: Organizations have narrow capabilities. New markets enabled by disruptive technologies require very different capabilities.
- Fifth: Information required to make investment decisions does not exist. Failure and iterative learning are required.
- Sixth: It is not wise to always be a leader or always a follower. Disruptive innovations reward leaders.
- Seventh: Small entrant firms enjoy protection because they are doing things that do not make sense to the industry leaders.

*The Innovator's Dilemma is an important and fascinating study on the relationship between organizational culture and the ability to innovate. New organizations innovate easier with disruptive technologies because they are not tied to outdated values or organizational norms.*