



INSTITUTE OF
HEALTH ECONOMICS
ALBERTA CANADA

DISRUPTIVE INNOVATION

**ANALYTICAL FRAMEWORK AND
BACKGROUND STUDY**

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OUTLINE

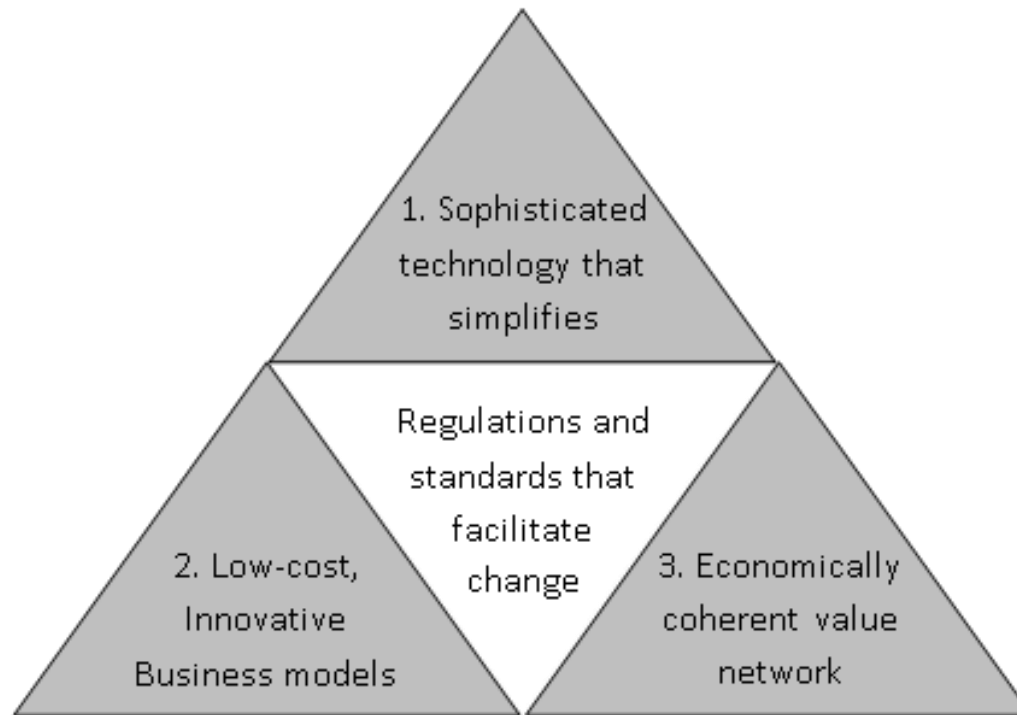
- The Innovators Prescription (Clayton Christensen et al, 2009)
- Literature review on 'disruptive' or 'game changing' innovations
- Illustrative examples from the past or present

CHRISTENSEN'S "TECHNOLOGY"

- "Technology" in Christensen et al (2009) is defined broadly, including not just machines or devices but methodology, scientific knowledge and anything else affecting the way production is carried out
- Technological (or methodological) enablers allow problems to be addressed on smaller scale, with lower costs, and with less human skill than was historically needed

ELEMENTS OF DISRUPTIVE INNOVATION

Figure I.1 Elements of Disruptive Innovation



Christensen et al (2009) p. xx

WHAT MAKES AN INNOVATION DISRUPTIVE?

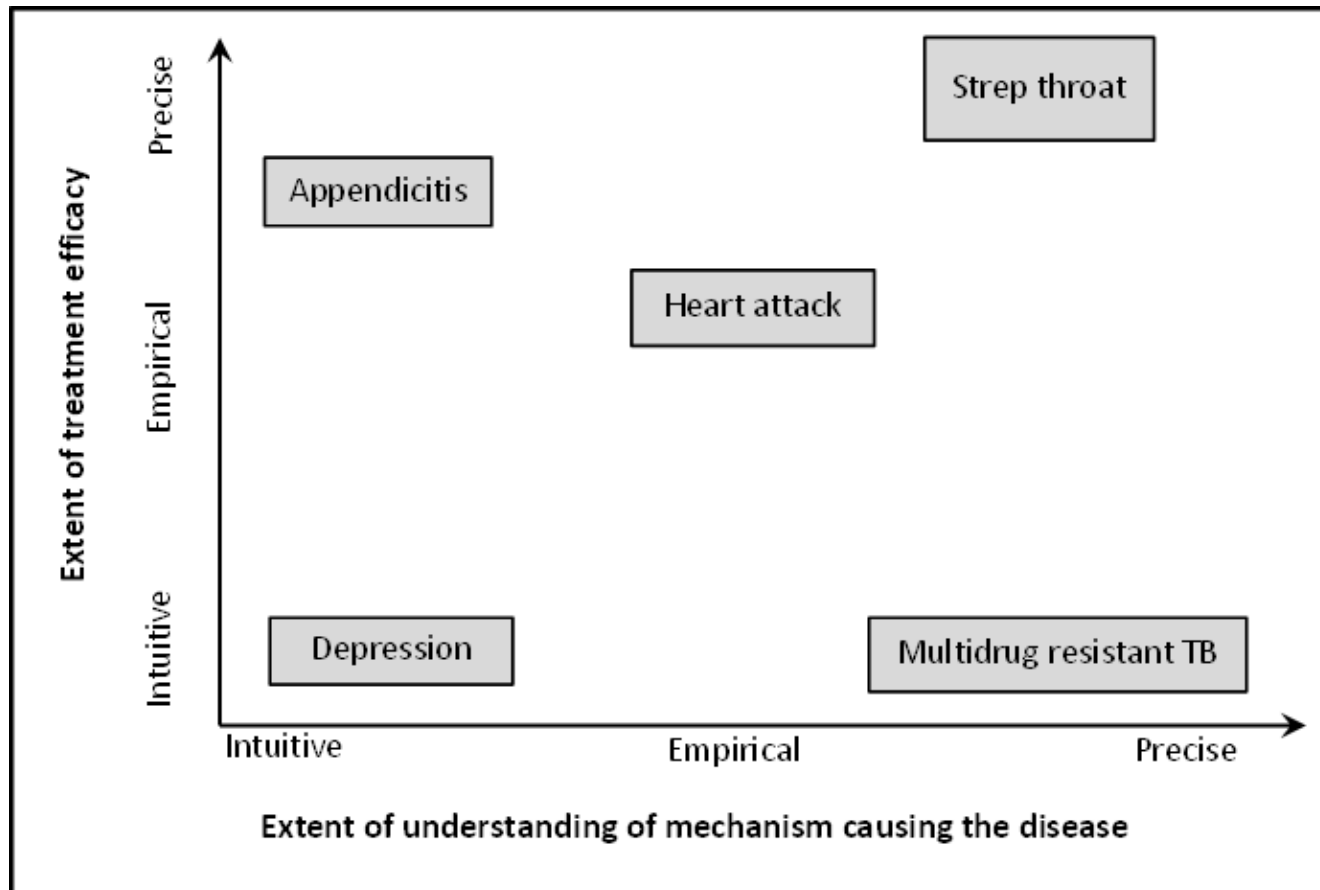
- It is not just the magnitude of the advance
- If it works to sustain the existing business model, it is not disruptive
- A change in business model from the existing one to a new one which is more efficient and/or better addresses the demands of consumers is the key

TYPE OF MEDICAL CARE - CONTINUUM

- Precision medicine is the ability to precisely diagnose the cause of a patient's condition rather than just the physical symptoms. It allows for standardized therapy that is predictably effective.
- Empirical medicine is where data is amassed to show that certain ways of treating patients are, on average, better than others
- Intuitive medicine is where highly trained and expensive professionals diagnose and treat medical problems through intuitive experimentation and pattern recognition

TYPE OF MEDICAL CARE - CONTINUUM

Adapted from Figure 2.4 Current Map of Common Conditions



Adapted from Christensen et al (2009) p. 63

TYPE OF MEDICAL CARE - CONTINUUM

- *“If regulators, policy makers and executives do not seek business model innovation for diseases that move toward the upper right region in this chart, the potential returns, in terms of reduced cost and improved accessibility, for society’s massive investments in science and technology, will be small.”*
(Christensen et al, 2009, p. 64)

TYPES OF BUSINESS MODEL

- Solution shops are structured to diagnose and solve unstructured problems using highly trained experts. *E.g., diagnostic work in general hospitals.*
- Value added processes generally take incomplete inputs transforming them into complete outputs of greater value. These procedures are possible after a definitive diagnosis has been made. *E.g., laser eye surgery.*
- Facilitated networks are enterprises where people exchange things with one another. *E.g., web-sites to connect people living with a chronic disease.*

LITERATURE REVIEW

- Published and gray literature
- Time range from 2001 – 2011
- Disruptive innovation in health care (even if that was not the specific terminology used by the authors)
- Excluded technological or clinical innovations that did not have implications for the organization of health services (i.e., the business model)

TYPE OF ARTICLE

- Conceptual articles that attempted to extend, modify, supplement, replace or critique the Christensen analytical framework 20%
- Articles that described specific innovation(s) that were disruptive or likely to be disruptive 60%
- Articles with general commentary or advice re: disruptive innovation 40%

WHAT IS DISRUPTED

- Hospital care 25%
- Physician outpatient care 50%
- Pharmaceuticals 7%
- Medical/nursing education 5%

CLINICAL ACTIVITY PRIMARILY AFFECTED

- Diagnosis 15%
- Treatment 25%
- Prevention 1%
- System integration 15%

AREAS FREQUENTLY MENTIONED

- Hospital care and surgery
- Primary care
- Diagnostic imaging
- Personalized medicine (genomics)
- Information/communications technology

EXAMPLE: RETAIL CLINICS

- May be located at a mall, a drug store or retail store and are generally staffed by nurse practitioners. Take patients as walk-ins and offer to treat a specific list of common ailments.
- ‘Disrupt’ one aspect of primary care physician practice: straightforward diagnosis and treatment of disorders
- Near precision medicine end of spectrum
- Value-added process model using rules-based diagnosis and treatment

EXAMPLE: LASER EYE SURGERY

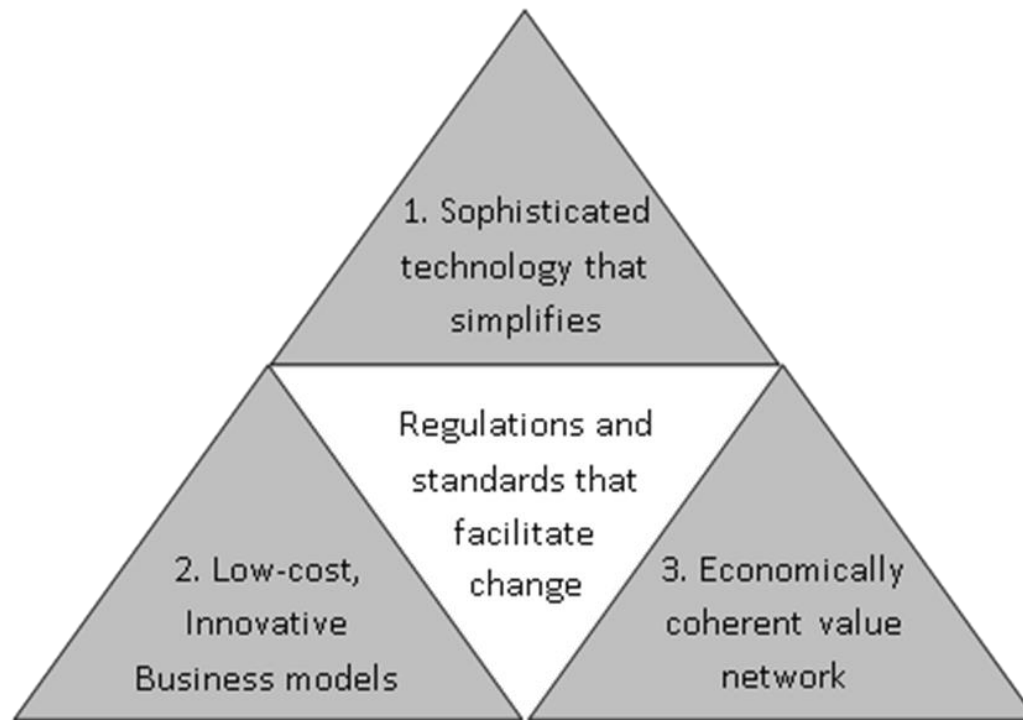
- Disrupts hospital-based surgery requiring high degree of expertise
- Move from solution shop model in general hospital to value-added process model in an outpatient eye surgery centre
- Medical equipment innovation as enabler requiring less surgical skill than procedures it replaced

EXAMPLE: REMOTE PATIENT MANAGEMENT

- Enabling technology: physiologic monitoring and telecommunications
- Shift from hospital or home care to self care and/or care by non-clinical providers
- Savings from reduced ED, inpatient, skilled nursing facility use
- Applicable: Chronic disease, post-hospital stay recovery

ELEMENTS OF DISRUPTIVE INNOVATION

Figure I.1 Elements of Disruptive Innovation



USING THE FRAMEWORK - QUESTIONS

- Does it change the position of diagnosis or treatment of disease on the continuum from intuitive medicine to precision medicine?
- What is the current business model for provision of the service (Solution Shop, Value Added Process or Facilitated Network)?
- What is the business model likely to arise after the innovation is adopted?
- How are the skill sets needed by providers changed by the innovation? Are changes in training needed to provide a suitable labor supply?
- Is the legal, social and cultural environment consistent with, and supportive of, the new business model?

USING THE FRAMEWORK - QUESTIONS

- How well do the existing business model and the likely new business model address specific consumer demands? Is "moderately lower quality and much lower cost" an attractive option?
- Is the new business model likely to be introduced within existing organizations or within new organizations?
- Are there suppliers of equipment, supporting or complementary services, needed by the new business model which do not now exist?
- Is the existing funding mechanism consistent with the new business model?