

MSCI 422 Presentation

Ch. 1

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Principles of Disruptive Innovation

- Companies depend on customers and investors for resources
- Small markets don't solve the growth needs of large companies
- Markets that don't exist can't be analyzed
- An organization's capabilities define its disabilities
- Technology supply may not equal market demand

YESTERDAY'S
HIGHLIGHTS

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How do tech markets respond to change?

- **Established** firms respond successfully to **sustained** technological development
 - Sustained development can be:
 - Incremental
 - Radical
- **Entrant** firms can do better than established firms during **disruptive** technological development
 - Resulting innovation finds use in wider markets
 - Existing customers seldom benefit from this

Why is disk drive industry good to study?

- Lots of quantifiable data available
- Like fruit flies! High mortality rate over the 20 years -- high rate of technological turn-over
- Dominant firms seldom maintain their lead in subsequent generations.

Theory -- First Pass

- Technology **Mudslide** Hypothesis
 - Continuous innovation is **required** to survive
 - Failed firms must have stopped innovating
- **Revealed** neither the pace nor the difficulty of technological change lay at the root of the leading firms' failures.

Hypothesis Rejected!

Sustained Technological Development

Incremental

Modelled as incremental improvements along an S-curve within an existing technology.

i.e. Read-write heads sustained its rate of improvement through Ferrite-oxide, thin-film, and magnetoresistive technologies.

Radical

A radical technology would imply jumping to a new S-curve maintaining same trajectory of improvement.

i.e. 14-inch Winchester drives vs. removable disk pack drives.

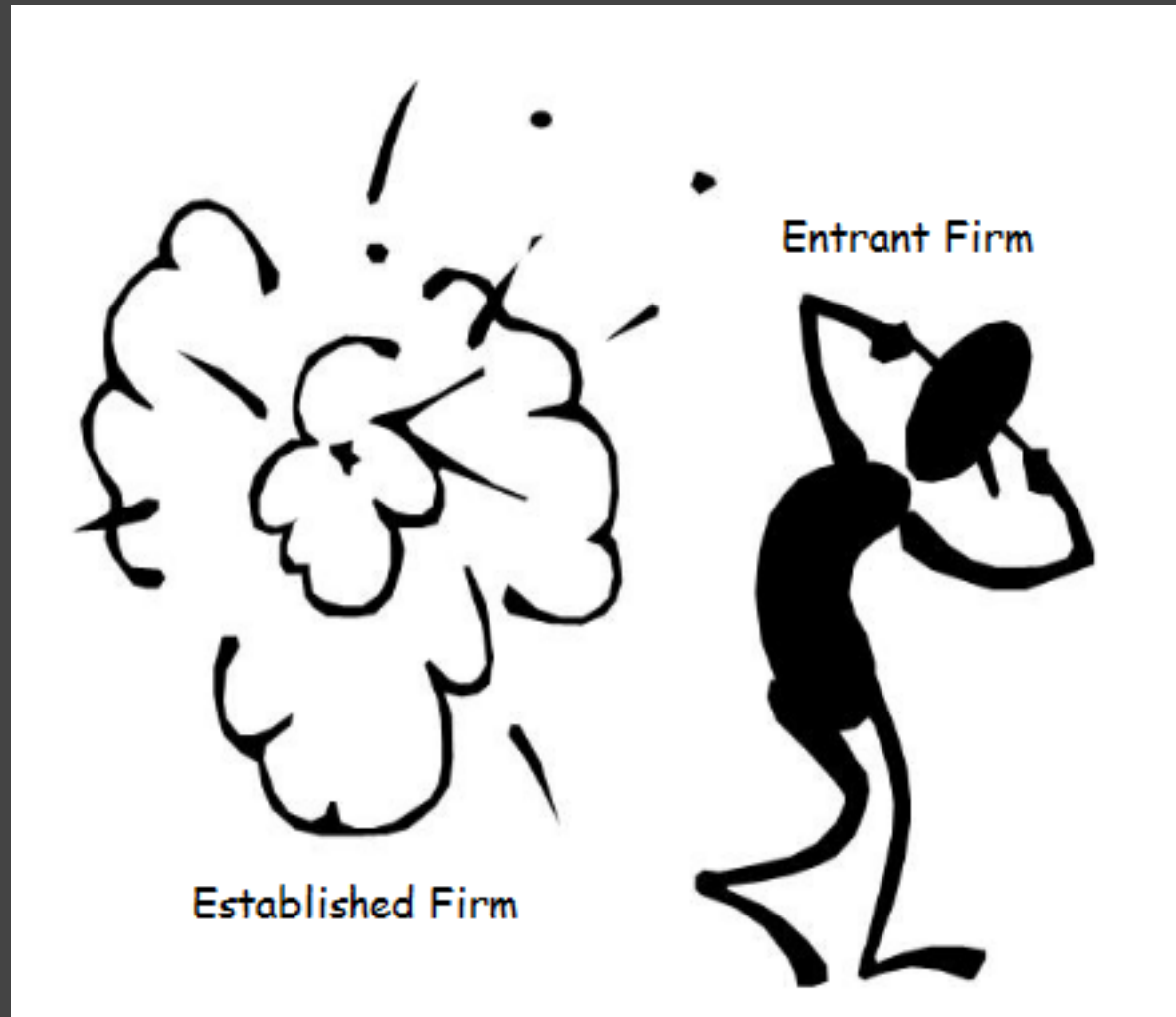
Outcome of Sustained Tech Development

- **Established** firms maintain their leadership when encountering sustained tech development
 - *"Established firms were leading innovators ... in literally every other one of the sustaining innovations in the industry's history"*
- **Entrant** firms find it difficult to compete with established firms who gave existing customers more of what they wanted

Disruptive Technological Development

- Typically uses technology in a new or innovative way
- Primarily benefit niche market
 - Often have features not desired by existing market (lower capacity, higher price per MB)
- Historically leads to the downfall of established firms
 - Redefined performance trajectories
- Entrant firms gain market majority
 - Significant first mover advantages

Disruptive Technologies



Outcome of Disruptive Technological Development

- Changes toppled the industry's leaders
- Established firms held captive by their customers
 - New innovations had undesirable aspects prevented current customer adoption (e.g. cost vs. MB)
 - Firms did not want to lose sales from existing products to new ones
- New markets are driven by entrant firms

Figure 1.6 Leadership of Established Firms in Sustaining Technologies

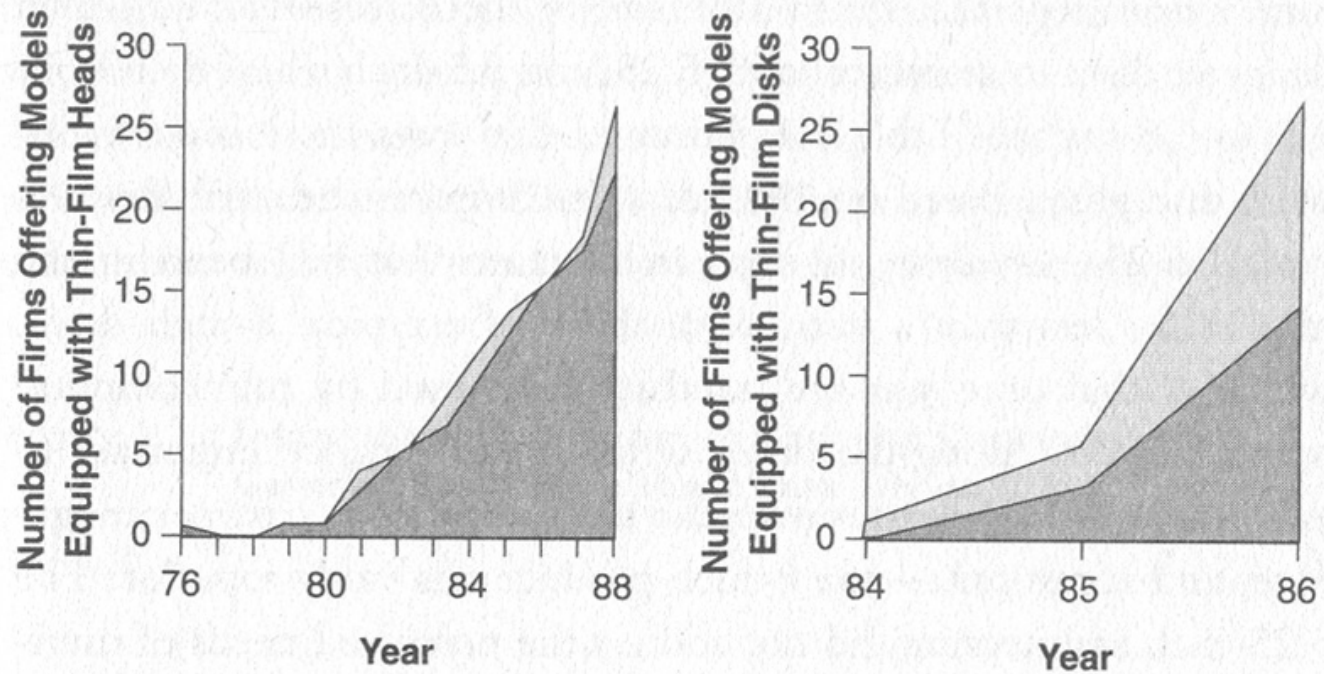


Figure 1.8 Leadership of Entrant Firms in Disruptive Technology

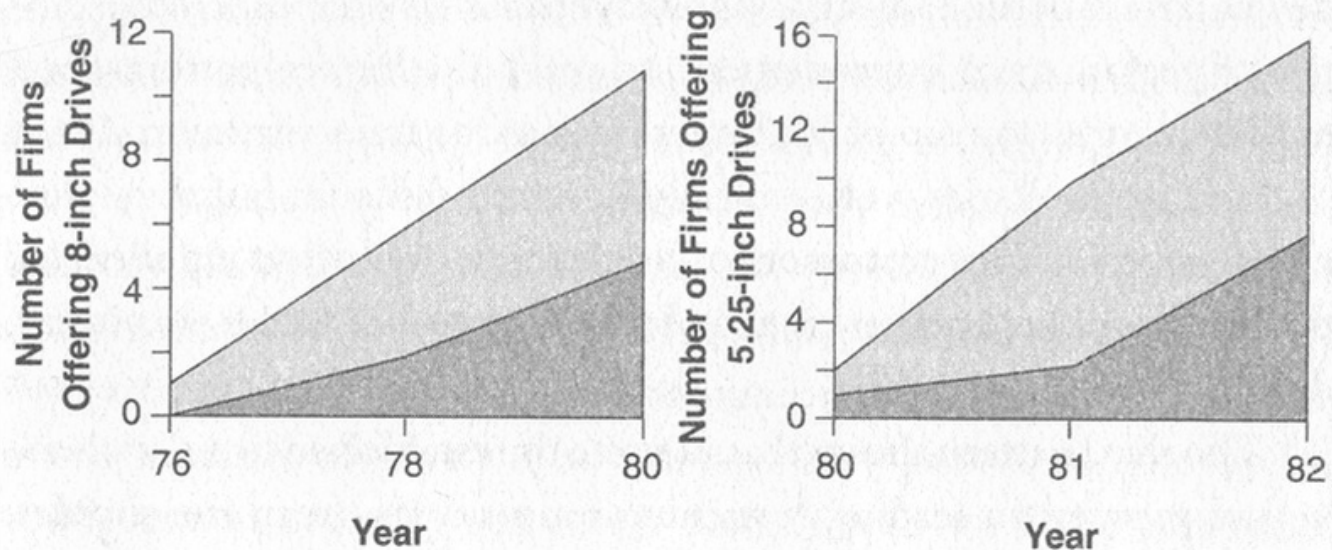
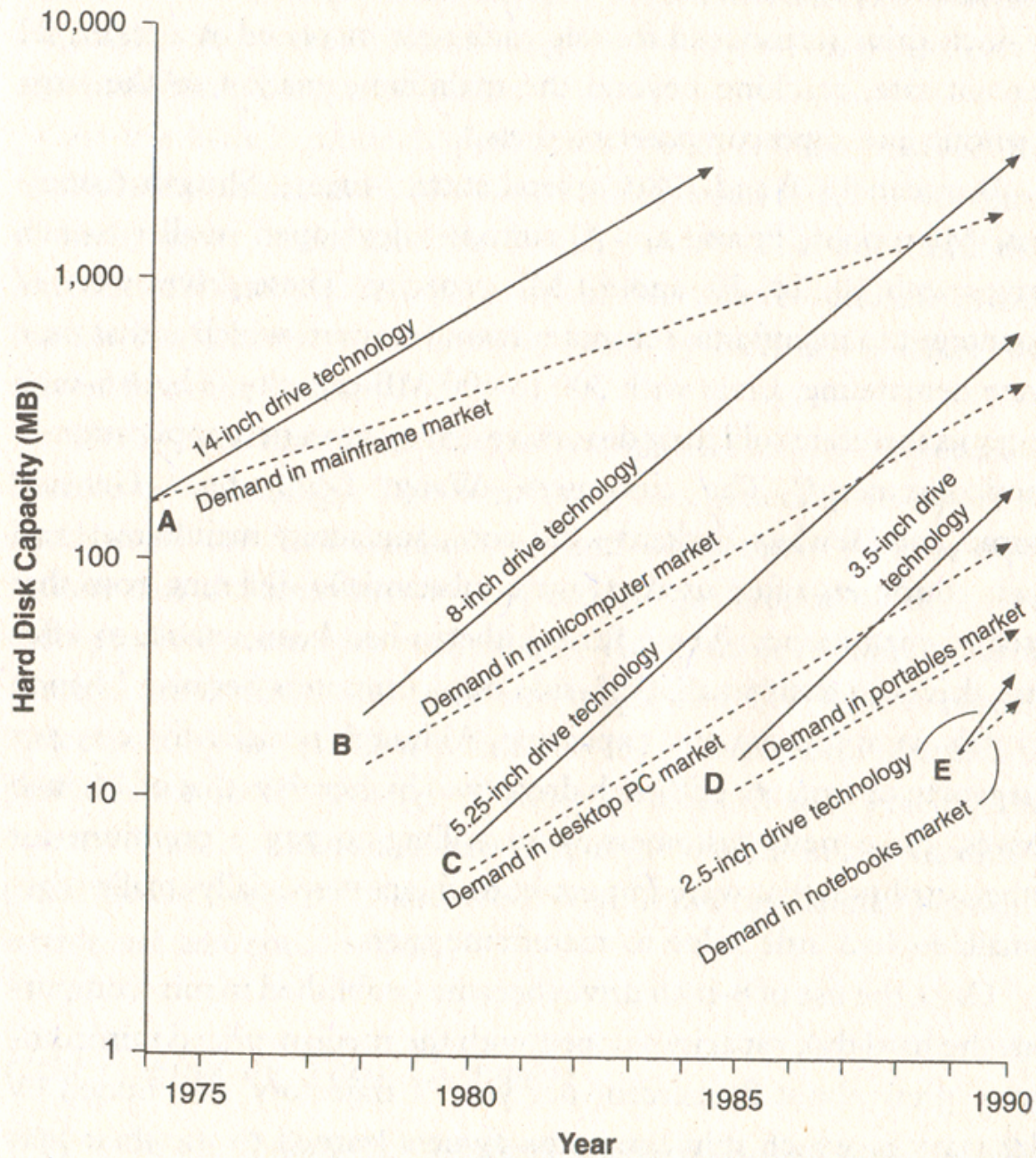


Figure 1.7 Intersecting Trajectories of Capacity Demanded versus Capacity Supplied in Rigid Disk Drives



Impact of Disruptive Tech Change

- Promotes entrepreneurship because early adopters/entrants have a higher chance of success with disruptive technologies.
- Stops monopolies who are better at maintaining dominance in sustainable markets but may not notice the disruptive technologies. (Creative destruction)

Questions?