



Master of International Business and Entrepreneurship

Ch 4: The Changing Competitive Environment

Information Systems for Managers

Learning objectives

- ❖ To discuss the basic principles of network economics, including the sources of value in networks, and define physical and virtual networks.
- ❖ To explain the concepts and vocabulary of network economics, including positive feedback, network externalities, and tippy markets.
- ❖ To clarify the basic principles of information economics and the role that information plays in the modern competitive environment.
- ❖ To explain how the advent of pervasive networks has enabled information to break the constraints imposed by traditional information carriers.
- ❖ To assess the likelihood for an activity to be performed without the physical interaction among the involved participants and objects, or in other words, the chances a process may become “virtual.”
- ❖ To distinguish between disruptive and sustaining technologies, drawing implications for managerial action.

Are these the Same?



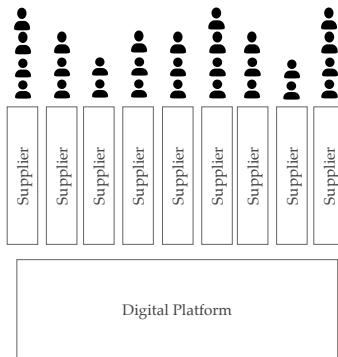
Platforms

- ❖ Platform: a raised level surface on which people or things can stand.
- ❖ Product platform: “set of stable components that support variety and evolvability in a system by constraining the linkages among other components”



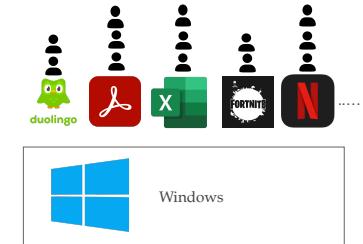
Digital Platforms

- ❖ Digital platforms are evolving socio-technical systems that expose digital resources enabling digital innovation and competitive actions by other firms.
- ❖ Platform resources are assets or capabilities that the platform makes available via a software interface



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Aggregators

Aggregators are those organizations that manage an integrated digital platform and a digital marketplace.



Network Effects



Scott Cook, Founder, Intuit

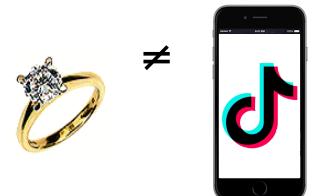
“ I also think that a fundamental understanding of network effects is very important. ... Network effects are a fundamental characteristic of certain technology businesses. When **network effects** are possible, **it is the most important thing in the world** to follow, to understand, and to make happen. ”

Value in the network, the size always matters!



- ❖ Value in scarcity: The value of a good is a function of its limited availability
- ❖ Value in plentitude: The value of a network is a function of the number of connected nodes

Network Economics



Feedback

- ❖ Positive: The self-reinforcing mechanism by which the strong get stronger and the weaker get weaker.
- ❖ Negative: The opposite of positive feedback
 - ❖ The stronger get weaker
 - ❖ The weaker get stronger



Externality

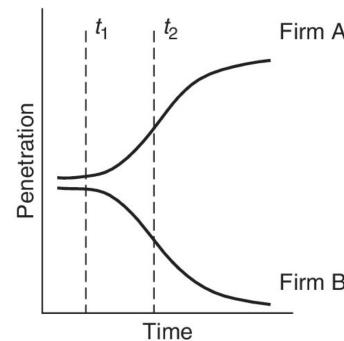
“We are not basically in the food business. We are in the **real estate business.**”



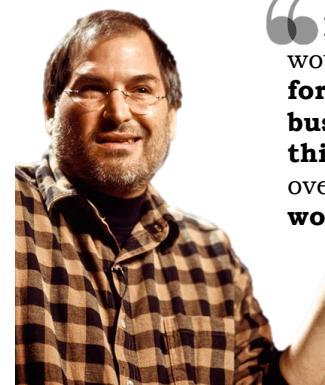
Ray Kroc, *Founder, McDonald's Corp.*

Important Definitions

- ❖ Network effects (Network externalities; Demand side economies of scale)
- ❖ Positive feedback
- ❖ Interlining (compatibility)
- ❖ Tipping
 - ❖ Tippy Market: Market that is subject to strong positive feedback (winner-take-all market)
- ❖ Tipping Point: The time when one organization or technology tips toward market dominance



“If I were running Apple, I would **milk the Macintosh for all it's worth** — and get **busy on the next great thing**. The PC wars are over. Done. **Microsoft won a long time ago.**”



Competing with Network Effects

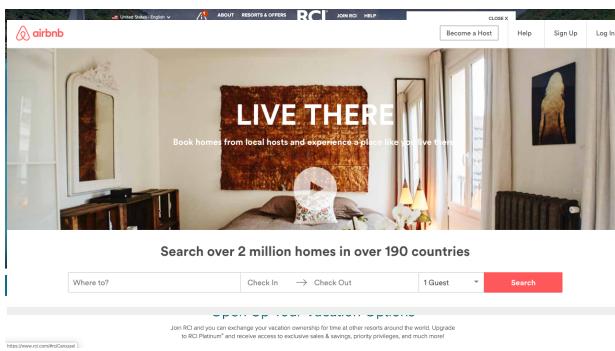
- ❖ Become compatible with the dominant player
- ❖ Find a niche that is:
 - ❖ different enough from the broader market
 - ❖ big enough to sustain the firm as a viable business



Market Tipping



Market Tipping



Two-Sided Networks

- ❖ Networks that have two types of members
- ❖ Users of content and suppliers of content (i.e. Adobe PDF format)
- ❖ Buyers and suppliers of goods (i.e. Online electronic marketplaces)
- ❖ Value of the network to one type of member depends on the number of members from the other side



Multi-Sided Markets



Network Properties

- ❖ **Network effects strength:** How strongly do nodes affect network value?
- ❖ **Network clustering:** How does the shape of the network affect network value?
- ❖ **Disintermediation risk:** How easy is for members to meet outside the network?
- ❖ **Multihoming potential:** How difficult is node's simultaneous participation in competing networks?

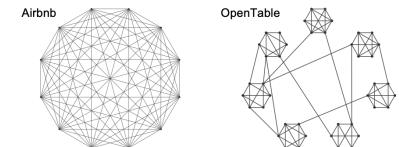


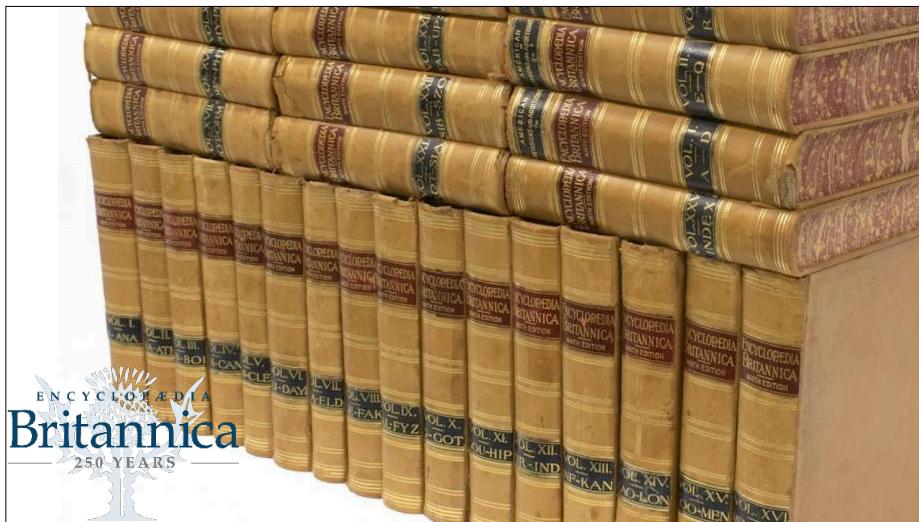
Figure 4.17. Global and locally clustered network topologies
Source: Adapted from Feng, Z., and Iansiti, M., 2019, "Why some platforms thrive... and others don't," *Harvard Business Review*

Implications

- ❖ Network effects occur:
 - ❖ Technology standards
 - ❖ Virtual networks
 - ❖ Communities of interest
- ❖ Customers will pick a network, not a product or a service provider
- ❖ Sponsoring a dominant network provides competitive advantage
- ❖ Steeper costs of membership in competing networks give more power to the sponsor of the dominant network



Digital Goods (information) and the Internet



1PICCOLI/GABRIELE*ADT UA7983 08JAN SA SYRORD HK1 1229 1344

#P	P Name	??	FLIGHT	DATE	ORIG/DEST	TIME
1	PICCOLI/GABRIELE	*	ADT	UA7983	08JAN	SYRORD 1229 1344

ST3311 Peet's Guatemala 11.95

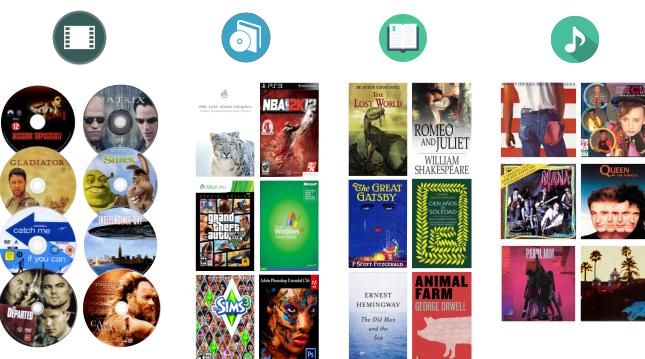
Product #	Manufacturer	Product Description	Price per lb.
ST3311	Peet's	Guatemala	11.95

Data and Information

- ❖ Data: Codified raw facts
 - ❖ Things that have happened
 - ❖ Coded as letters of the alphabet and numbers
 - ❖ Increasingly stored digitally
- ❖ Information: Data in context
 - ❖ Audience-dependent

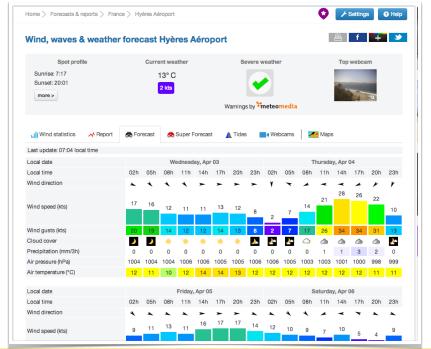


Classic Information Goods



Classic Information Goods

- ❖ High production costs
- ❖ Negligible replication costs
- ❖ Negligible distribution cost
 - ❖ Information is not the carrier
- ❖ Sunk costs
- ❖ No natural capacity limits
- ❖ Not consumed by use
- ❖ Experience good



Information is Different



Some Implications

- ❖ Information is customizable
- ❖ Information is reusable
- ❖ Information is often time-valued
- ❖ Information goods can produce significant gross profit margins

Every Business is an Information Business



Information Intensive Goods

- ❖ Most products and services are information intensive goods.
- ❖ Information plays a critical role in:
 - ❖ Creating the product/service
 - ❖ Bringing it to market
- ❖ Information may be:
 - ❖ Embedded in the product itself as knowledge
 - ❖ At the periphery of the product or service



Process Virtualization

Process Virtualizability

- ❖ **Virtual:** Does not physically exist but appears to exist through software (virtual learning?)
- ❖ **Process virtualizability:** Process performed without participants (objects) physical interaction
 - ❖ Complete vs partial



The virtualizability of a process depends on:

- ❖ **Sensory requirements:** Need to experience a range of sensory stimuli
- ❖ **Relationship requirements:** Need to interact in a social or professional context
- ❖ **Synchronism requirements:** Degree to which the activities need to occur in real time
- ❖ **Identification and control requirements:** Degree of need for unique identification of all participants and behavior control



IT Enablers of Process Virtualizability

- ❖ *Representation*: the capability of IT to effectively simulate actors and interactions
- ❖ *Reach*: the capability of IT to overcome both time and space constraints.
- ❖ *Monitoring and identification*: the capability of IT to authenticate process participants and objects

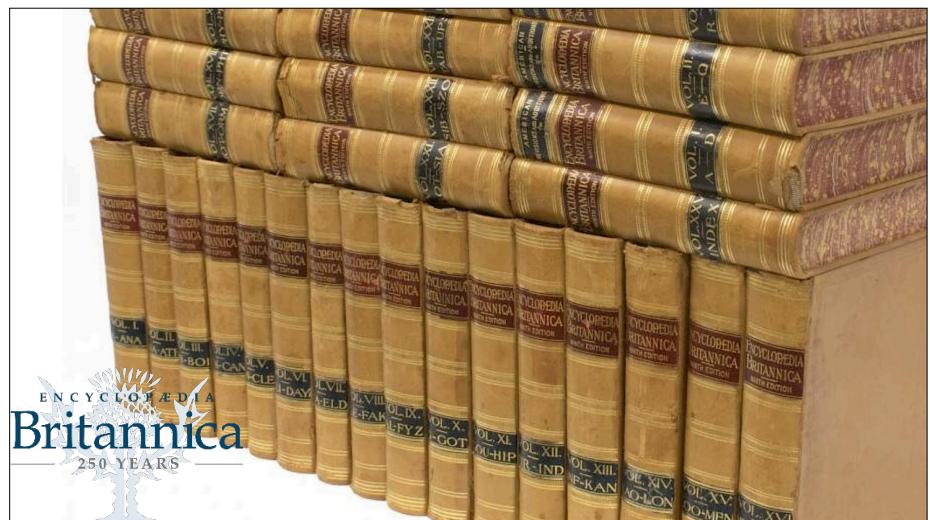


Digital Disruption

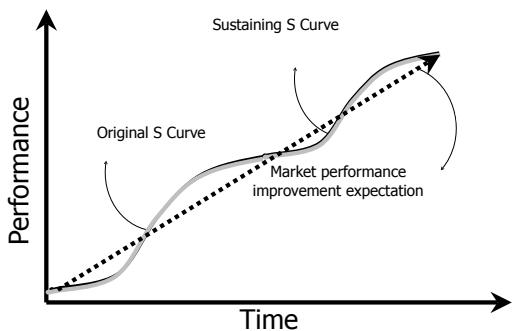
Digital Disruption

The software-induced redefinition of value creation and operational activities that makes (traditionally) valuable assets and capabilities irrelevant or difficult to exploit without a digital transformation.

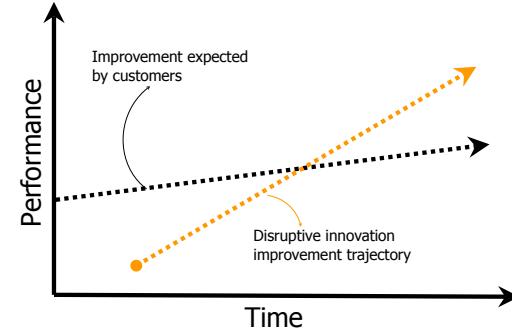
“Will the incumbent learn *software* before the startup learns the *business*? ”



Sustaining technology



Disruptive technology



Disruptive Innovation

- ❖ New products
- ❖ New services
- ❖ New value propositions
- ❖ New business models
- ❖ That offer a
 - ❖ different bundle of characteristics
 - ❖ faster rate of improvement

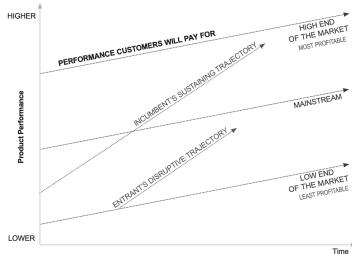


Figure 4.38. The disruptive innovation model
Source: Adapted from Christensen, C. M., Raynor, M. E., and McDonald, R., 2015, December 1, "What is disruptive innovation?" *Harvard Business Review*, retrieved from <https://hbr.org/2015/12/what-is-disruptive-innovation>

Disruptive Innovation

- ❖ Low end market start: Incumbents don't engage due to low margins
- ❖ New market start: Incumbents don't engage because a new bundle of characteristics is necessary

The Secret Tesla Motors Master Plan (just between you and me)

Elon Musk, Co-Founder & CEO of Tesla Motors • August 2, 2006
As you know, the initial product of Tesla Motors is a high performance electric sports car called the Tesla Roadster. However, some readers may not be aware of the fact that our long term plan is to build a wide range of models, including affordably priced family cars. This is because the primary purpose of Tesla Motors is for the reason (and the reason is) to help expedite the move from a mine-and-burn hydrocarbon economy towards a solar electric economy, which I believe to be the primary, but not exclusive, sustainable solution.

Critical to making that happen is an electric car without compromises, which is why the Tesla Roadster is designed to beat a gasoline sports car like a Porsche or Ferrari head to head showdown. Then, over and above that fact, it has taken the electric car to a whole new level. Everyone may question whether this actually does any good for the world. Are we really in need of another high performance sports car? Will it actually make a difference to global carbon emissions?

Well, the answer are no and not much. However, that misses the point, unless you understand where the master plan needs to go. Almost any new technology initially has high unit cost before it can be optimized and this is no less true for electric cars. The strategy of Tesla is to enter at the high end of the market, where customers are prepared to pay a premium, and then drive down market as fast as possible to higher unit volume and lower prices with each successive model.

....
If you travel less than 350 miles per week, you will therefore be "energy positive" with respect to your personal transportation. This is a step beyond conserving or even nullifying your use of energy for transport - you will actually be putting energy back into the system than you consume in transportation! So, in short, the master plan is:

- Build sporty cars
- Use that money to build an affordable car
- Use that money to build an even more affordable car
- While doing above, also provide zero emission electric power generation options

Don't tell anyone.

<https://www.tesla.com/blog/secret-tesla-motors-master-plan-just-between-you-and-me?redirect=no>

Intel, Apple and the M1 Chip

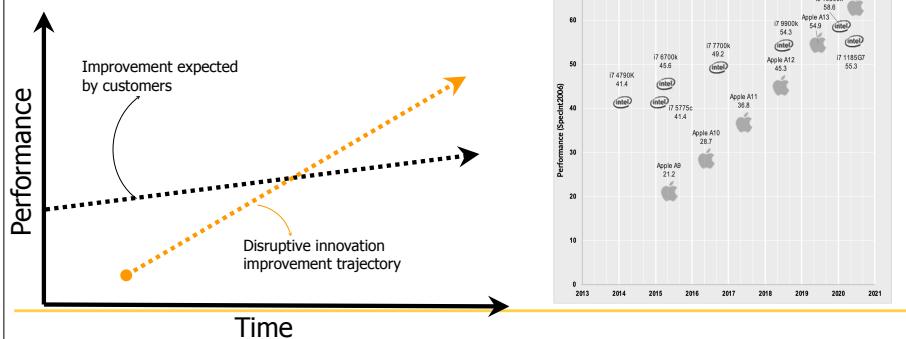


Paul Otellini, former Intel CEO

We ended up not winning it or passing on it [...] And the world would have been a lot different if we'd done it, [...] remember this was before the iPhone was introduced and no one knew what the iPhone would do... At the end of the day, there was a chip that they were interested in that they wanted to pay a certain price for and not a nickel more and that price was below our forecasted cost. I couldn't see it. [...] And in hindsight, the forecasted cost was wrong and the volume was 100x what anyone thought.



Disruptive Technology



CASE STUDY FOR CHAPTER 4

Online Education

Thirty years from now the big University campuses will be relicts. Universities won't survive. It is as large a change as when we first got the printed book.

—Peter Drucker*

Introduction†

As the Internet had become yet another arrow in the quiver of educational institutions and in industries as diverse as elevator manufacturing and financial services, the above quote by Peter Drucker sounded, in January 2015 on the snowy campus of Ivey University, like a warning echoing from the past. Erica Wagner, dean of the School of Information Management, recalled the quote while scanning a recent article in

While the number of students in executive education programs had been declining steadily over the last decade, forcing the School to shorten some of its programs from five to three-days, many blamed the recent recession for these results, others the competition of new players on non-degree executive education[‡]. However, as she pondered the future she recalled a passage from an article in *The Economist* that she had seen a few years before. The memory brought back some of Dr. Wagner's own uneasiness:

The innate conservatism of the academic profession does not help. The modern university was born in a very different world from the current one, a world where only a tiny minority of the population went

The Higher Education Industry



Peter Drucker (1909-2003)

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What We Learned

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