How Smart, Connected Products Are Transforming Competition

Megan Melack :: 11.21.17 :: Systems

Smart, Connected Products

Offer expansive opportunity for new functionality, superior reliability, higher product utilization, and capabilities that transcend traditional product boundaries

Lead to the question: "What business am I in?"

What makes smart, connected products fundamentally different is not the internet, but the changing nature of the "things."

IT changing landscapes of economy

1. The first wave of IT, during the 1960s and 1970s, automated individual activities in the value chain, from order processing and bill paying to computer-aided design and manufacturing resource planning.
2. enabled coordination and integration across individual activities; with outside suppliers, channels, and customers; and across geography.
3. The third wave of IT-driven transformation thus has the potential to be the biggest yet, triggering even more innovation, productivity gains, and economic growth than the previous two.

What Are Smart, Connected Products?

3 core elements:
physical components, "smart" components, and connectivity components.

- Smart components increase capabilities and value of physical components
- Connectivity amplifies the capabilities and value of the smart components and enables some of them to exist outside the physical product itself
- Cycle of value improvement

1. Physical components comprise the product's mechanical and electrical parts.
2. Smart components comprise the sensors, microprocessors, data storage, controls, software, and, typically, an embedded operating system and enhanced user interface
3. Connectivity components comprise the ports, antennae, and protocols enabling wired or wireless connections with the product.

1. One-to-one: An individual product connects to the user, the manufacturer, or another product through a port or other interface
2. One-to-many: A central system is continuously or intermittently connected to many products simultaneously.
3. Many-to-many: Multiple products connect to many other types of products and often also to external data sources.

What Can Smart, Connected Products Do?

4 areas: monitoring, control, optimization, and autonomy

1. Monitoring: Smart, connected products enable the comprehensive monitoring of a product's condition, operation, and external environment through sensors and external data sources.
2. Control: Smart, connected products can be controlled through remote commands or algorithms that are built into the device or reside in the product cloud. allows the customization of product performance to a degree that previously was not cost effective or often even possible
3. Optimization: Smart, connected products can apply algorithms and analytics to in-use or historical data to dramatically improve output, utilization, and efficiency
4. Autonomy: combination of monitoring, control and optimization lead to autonomy - can also act in coordination with other products and systems

Reshaping Industry Structure

In any industry, competition is driven by five competitive forces:

1. the bargaining power of buyers
2. the nature and intensity of the rivalry among existing competitors
3. the threat of new entrants
4. the threat of substitute products or services
5. bargaining power of suppliers

-collectively determine the nature of industry competition and the average profitability for incumbent competitors

Smart, Connected Products Can

- expand opportunities for product differentiation, moving competition away from just price
- allow companies to develop closer customer relationships
- allow firms to reduce dependency on distribution or service partners
- can increase buyer power by giving buyers better understanding of product performance and reducing the cost of switching to a new manufacturer

New Industry Boundaries and Systems of Systems

- can expand the very definition of the industry itself
- competitive boundaries of industry grow to include a set of related products that united can meet a broader need
- basis of competition shifts from: functionality of discrete product to performance of the broader product system
- product -> smart product -> smart, connected product -> product system -> system of systems

Smart, Connected Products and Competitive Advantage

Foundation for competitive advantage: operational effectiveness (OE)

- "is the table stakes of competition:" if company is not operationally effective but embracing new best practices, it will fall behind its rivals both in cost and quality
- smart, connected objects defining new standard for OE - companies have to decide how to incorporate these connected capabilities into its products - also creates best new practices across value chain

Design

Require new set of design principles
Designs such as:

- achieve hardware standardization through software-based customization
- enable personalization
- have ability to support continuous product upgrades
- enable predictive/enhanced/remote service

Product development processes need to accommodate late-stage/post-purchase design changes quickly

Implications for Strategy

How should a company determine which smart, connected capabilities to offer?

1. Which features will deliver real value to customers relative to their cost
2. Selection of features a company offers will depend on what segments it chooses to serve
3. Company should incorporate those capabilities and features that reinforce its competitive positioning