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THE UNIVERSITY OF WESTERN AUSTRALIA

CITS 5506
The Internet of Things
Lecture 09

Effect of Smart Products on Industry Structure

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Effect of Smart Products on Industry Structure

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

- The bargaining power of buyers
- The nature and intensity of the rivalry among existing competitors
- The threat of new entrants
- The threat of substitute products or services
- The bargaining power of suppliers

Effect of Smart Products on Industry Structure

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Effect of Smart Products on Industry Structure

- Industry structure changes when new technology, customer needs, or other factors shift these five forces.

- Smart, connected products will substantially affect structure in many industries, as did the previous wave of internet-enabled IT.

- The effects will be greatest in manufacturing industries.

Bargaining power of buyers

- Knowing how customers actually use the products enhances a company's ability to segment customers, customize products, set prices to better capture value, and extend value-added services.

- Smart, connected products also allow companies to develop much closer customer relationships.

- All of this serves to mitigate or reduce buyers' bargaining power.

Bargaining power of buyers

- GE Aviation, for example, is now able to provide more services to end users directly—a move that improves its power relative to its immediate customers, the airframe manufacturers.

- Information gathered from hundreds of engine sensors, for example, allows GE and airlines to optimize engine performance by identifying discrepancies between expected and actual performance.

Bargaining power of buyers

- GE's analysis of fuel-use data, for example, allowed the Italian airline Alitalia to identify changes to its flight procedures, such as the position of wing flaps during landing, that reduced fuel use.

Bargaining power of buyers

- Smart, connected products can increase buyer power by giving buyers a better understanding of true product performance.

- Buyers may also find that having access to product usage data can decrease their reliance on the manufacturer for advice and support.

- Finally, compared with ownership models, “product as a service” business models or product-sharing services can increase buyers’ power by reducing the cost of switching to a new manufacturer.

Rivalry among Competitors

- Smart, connected products have the potential to shift rivalry, opening up numerous new avenues for differentiation and value-added services.

- Smart products also enable firms to tailor offerings to more-specific segments of the market, and even customize products for individual customers.

- Smart, connected products also create opportunities to broaden the value proposition beyond traditional products, to include valuable data and enhanced service offerings.

Rivalry among Competitors

- Babolat, for example, has produced tennis rackets and related equipment for 140 years.

- With its new Babolat Play Pure Drive system, which puts sensors and connectivity in the racket handle, the company now offers a service to help players improve their game through the tracking and analysis of ball speed, spin, and impact location, delivered through a smartphone application.

Rivalry among Competitors

- This transfers the cost structure of smart, connected products toward higher fixed costs and lower variable costs.

- This results from the higher upfront costs of software development, more-complex product design, and high fixed costs of developing the technology stack, including reliable connectivity, robust data storage, analytics, and security.

Rivalry among Competitors

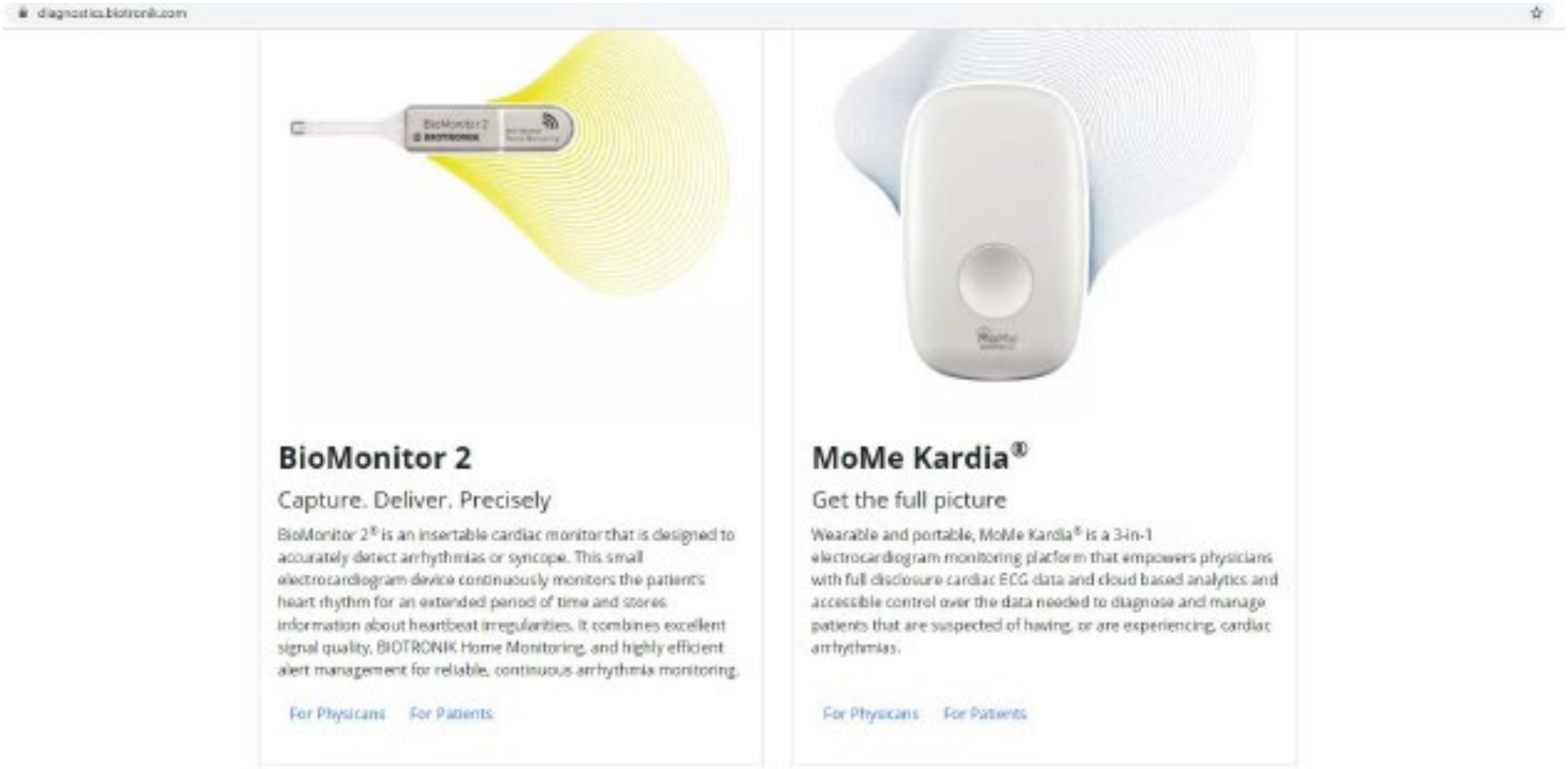
- Rivalry among competitors can also increase as smart, connected products become part of broader product systems.
- For example, manufacturers of home lighting, audiovisual entertainment equipment, and climate control systems have not historically competed with one another.
- Now vying for a place in the emerging “connected home” that integrates and adds intelligence to a wide array of products in the home.

Threats of New Entrants

- New entrants in a smart, connected world face significant new obstacles, starting with the high fixed costs of more-complex product design, embedded technology, and multiple layers of new IT infrastructure.

- Broadening product definitions can raise barriers to entrants even higher. Biotronik, a medical device company, initially manufactured stand-alone pacemakers, insulin pumps, and other devices. Now it offers smart, connected devices, such as a home health-monitoring system that includes a data processing center that allows physicians to remotely monitor their patients' devices and clinical status.

Threats of New Entrants



Threats of New Entrants

- Smart, connected products can also increase buyer loyalty and switching costs, further raising barriers to entry.

- Alternatively, barriers to entry may go down, when smart, connected products leapfrog or invalidate the strengths and assets of existing manufacturers.

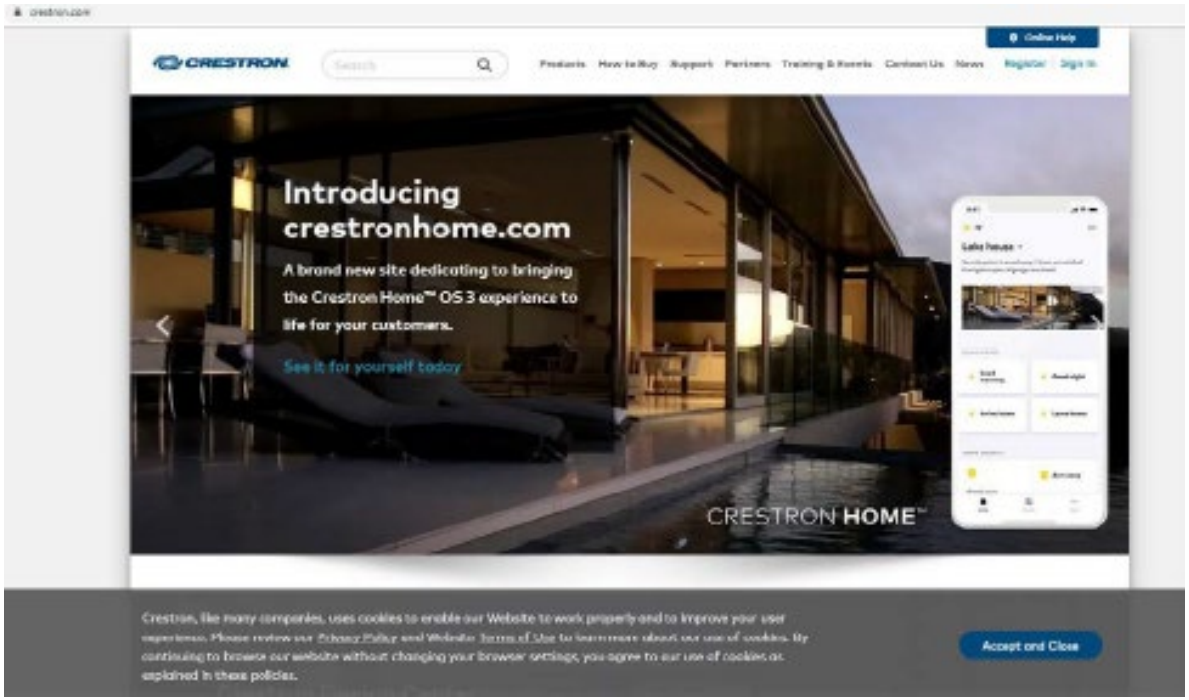
- Existing manufacturers may hesitate to fully embrace the capabilities of smart, connected products, preferring to protect hardware-based strengths and profitable legacy parts and service businesses.

Threats of New Entrants

- This opens the door to new competitors, such as the OnFarm, which is successfully competing with traditional agricultural equipment makers to provide services to farmers through collecting data on multiple types of farm equipment to help growers make better decisions, avoiding the need to be an equipment manufacturer at all.

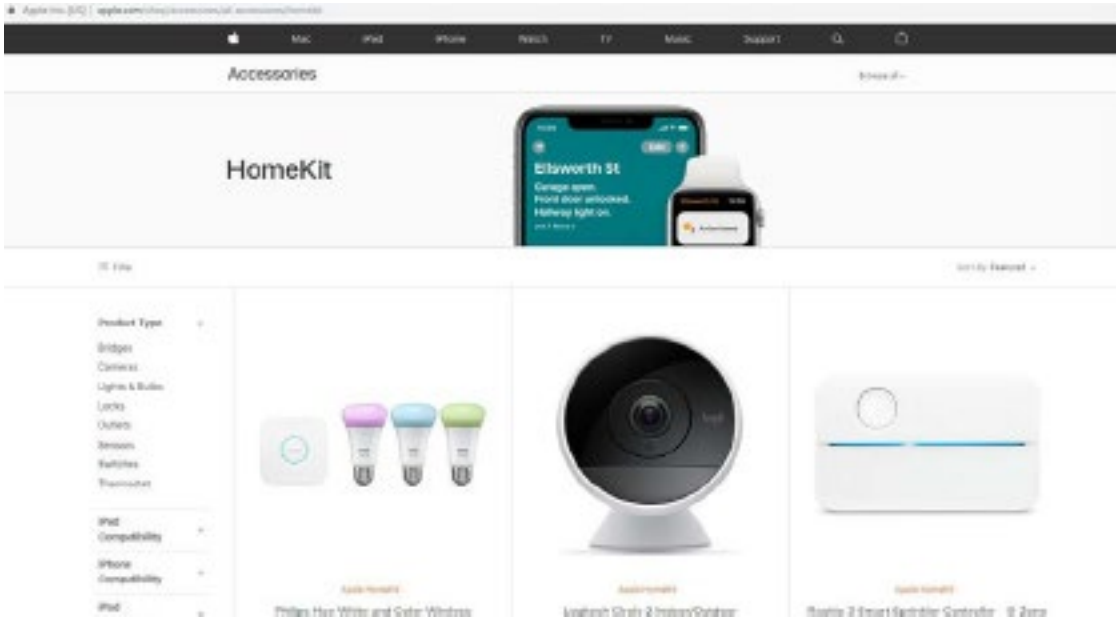
Threats of New Entrants

- In home automation, Crestron, an integration solution provider, offers complex, dedicated home systems with rich user interfaces.



Threats of New Entrants

Product companies are also facing challenges from other nontraditional competitors like Apple, which recently launched a simpler, smartphone-based approach to managing the connected home with Homekit.



Threat of Substitutes

- In many industries smart, connected products create new types of substitution threats, such as wider product capabilities that can include the conventional products.

- For example, Fitbit's wearable fitness device, which captures multiple types of health-related data including activity levels and sleep patterns, is a substitute for conventional devices such as running watches and pedometers.

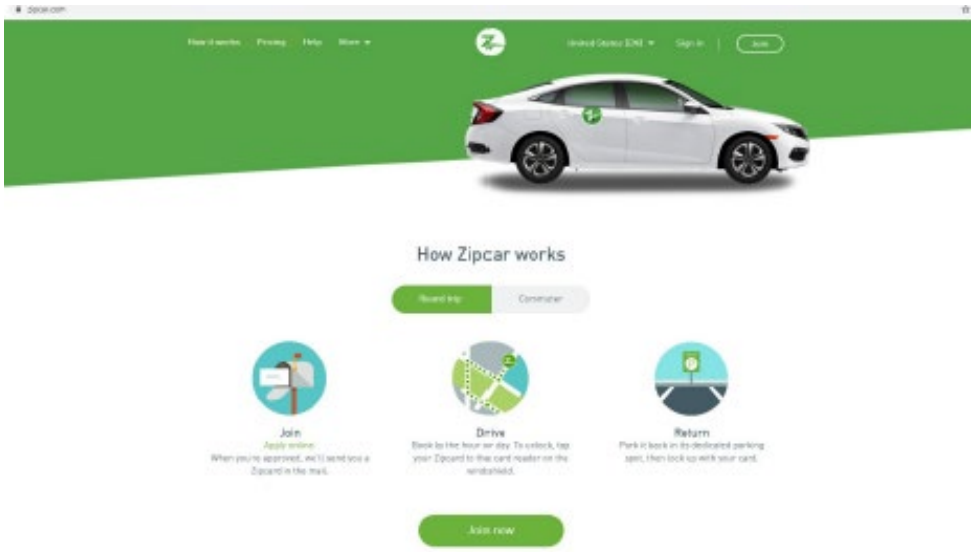
Threat of Substitutes

- New business models enabled by smart, connected products can create a substitute for product ownership, reducing overall demand for a product.

- Product-as-a-service business models, for example, allow users to have full access to a product but pay only for the amount of product they use.

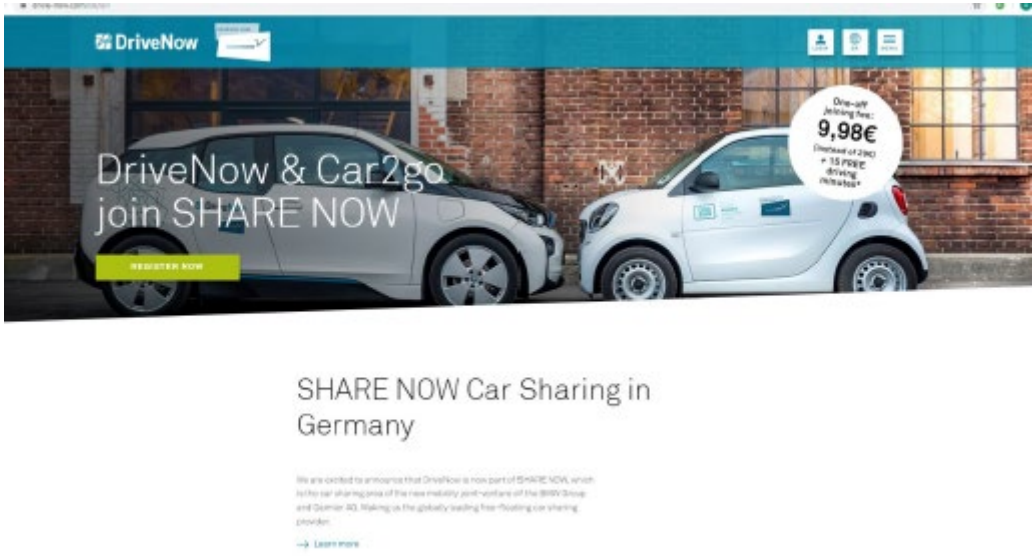
Threat of Substitutes

- A variation of product-as-a-service is the shared-usage model. Zipcar (https://www.zipcar.com/), for example, provides customers with real-time access to vehicles when and where they need them.



Threat of Substitutes

This substitutes for car ownership and has led traditional automakers to enter the car-sharing market with offerings such as RelayRides now Turo (https://turo.com), DriveNow (https://www.share-now.com/) from BMW.



Threat of Substitutes

- Another example is shared bike systems, which are springing up in more and more cities. A smart phone application shows the location of docking stations where bikes can be picked up and returned, and users are monitored and charged for the amount of time they use the bikes.

- This shared usage will reduce the need for urban residents to own bikes.

Bargaining Power of Suppliers

- Smart, connected products are shaking up traditional supplier relationships and redistributing bargaining power.

- The importance of traditional suppliers to total product cost will often decline, and their bargaining power will fall.

- However, smart, connected products often introduce powerful new suppliers that manufacturers have never needed before; providers of sensors, software, connectivity, embedded operating systems, and data storage, analytics etc. Some of these, like Google, Apple, and AT&T, are giants in their own industries.

Bargaining Power of Suppliers

- The bargaining power of those new suppliers can be high, allowing them to capture a bigger share of overall product value.
- A good example of these new types of suppliers is the Open Automotive Alliance, in which General Motors, Honda, Audi, and Hyundai recently joined forces to utilize Google's Android operating system for their vehicles.
- The auto OEMs (Original Equipment Manufacturer) lacked the specialized capabilities needed to develop a robust embedded operating system that delivers an excellent user experience while enabling an ecosystem of developers to build applications.

Bargaining Power of Suppliers

- Auto OEMs' traditional clout relative to suppliers is greatly diminished with suppliers like Google, which have not only substantial resources and expertise but also strong consumer brands and numerous related applications (for example, consumers may prefer a car that can sync with their smartphone, music, and apps).

- As suppliers capture product usage data from end users, they can also provide new services to them, as GE has done with Alitalia.

Conclusion

Smart Products are changing not only the traditional products, they are also changing the Industry structure by bringing in new players and altering the strength of competitive forces in Industry.