April 2015

IoT strategy primer:

The new sources of value enabled by the Internet of Things. Implications on competitive advantage and profit pools

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This white paper takes a look at contemporary strategy tools to understand how IoT enables customer value, creates new opportunities for competitive advantage, and shifts entire profit pools in industries.

Executive summary

1. ***Customer value*** *IoT enables new sources of value. Most of the value lies in powerful analytics and cross-ecosystem collaboration*
2. ***Competitive advantage*** *Unique data sets, superior algorithms and exclusive partnerships serve as the major sources of competitive advantage that, if protected, can lead to long-standing advantage over the competition*
3. ***Competitive forces*** *IoT may increase value capture for companies in many industries, thereby increasing profit pools. Increasing market entry barriers may create lock-out scenarios for companies that wait too long*

IoT Analytics

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1. Introduction

The Internet of Things is the one of the biggest if not the biggest technology trend right now. It is promising to change the world we live in dramatically over the coming years, reaching nearly all parts of businesses and society.

In just 5 years' time, it is expected that for every human being on earth up to 6 devices (that are not smartphones or computers) will be connected to the internet, thereby linking all aspects of the physical world.

The explosion of connected devices will lead to a massive increase of data that enables the creation of new business models such as automated real-time decision making or products-as-a-service.

This new technology hype has some interesting parallels with the rise of the internet in 90s. Back then, it took some companies more than 20 years to realize that it is vital to have a strategy for the "Internet". Many companies had to learn the hard way to adapt to changing consumer demands such as shopping online, interacting via social media, or digitally enhancing product features. In the early days, only few companies jumped on the opportunities that the internet brought along. Some of these companies are among the biggest in the world nowadays (e.g., Google, Amazon, eBay). In hindsight though, it is pretty obvious how the internet has shifted competitive forces in whole industries dramatically and led these companies to succeed.

Looking ahead, the Internet of Things is the logical extension of the internet to the physical world. It will most certainly bring major business model shifts, change competitive forces of whole industries and bring out new winners and losers. The Internet of Things might even be more disruptive than the internet in the 90s as it reaches beyond to computers to basically any item in the world.

Companies need to be aware how this technology shift will impact their industry over the coming years. There are still plenty of possibilities to create early-mover advantage to lead this technology disruption. However, as will be discussed further on in this paper, IoT will change competitive forces in some industries such that it creates new barriers of entry so that companies that wait too long to create connected devices and subsequent data-driven business models get locked-out and eventually run the risk to lose their existence.

That is why every company needs an IoT strategy now.

2. Strategy basics: Determinants of industry and company success

Figure 1: Porter's 5-forces The five forces that shape industry competition *(Source: HBR)*

While the Internet of Things is set to change the rules of success in many industries, it is important to keep in mind that the general rules to create successful strategies remain intact. The established frameworks for strategy creation discussed here are:

- On an industry level:
  - Porter's 5-forces model to understand industry forces
- On a company level:
  - Porter's generic strategies to achieve competitive advantage
  - Value curve analysis (Blue Ocean Strategy) to develop new business models along the customer values

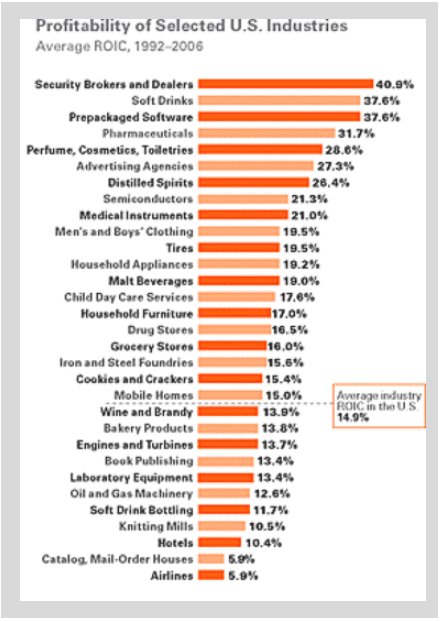

Figure 2: Industry profits Profitability of selected US industries *(Source: HBR)*

2.1 Industry dynamics: Porter's 5-forces

In 1980, Michael Porter published the well-known "Porter's 5 Forces" framework that has become the standard tool to understand dynamic forces of entire industries.

The basic idea of the framework is that five forces can explain why some industries are more profitable than others: Buying power, supplier power, substitution threats, market entry barriers, and internal competition. The framework explains well why airlines are among the least profitable companies while soft drink manufacturers are among the most profitable corporations.

In strategy terms this average industry profitability is called value capture and can be measured as the willingness-to-pay by customers minus the costs for the average company. If the rules of one of Porter's five forces change over time, the industry value capture changes as well (e.g., if some of the ingredients for soft drinks became rare, suppliers would increase their power and grab more of the overall value for themselves. Coke and Pepsi would experience lower profits).

2.2 Company strategy: Competitive advantage

For a single company in an industry, it is almost impossible to change the rules of the game themselves and thus influence value capture in a positive way.

The one thing a company can and absolutely should actively manage from a strategic perspective, however, is the development of a competitive advantage over its competition.

A competitive advantage is a leading position gained over competitors by offering customers greater value. Whether it's Apple's superior product design process, Google's ability to continuously innovate, Ryanair's perfection of low-cost operations, or Pfizer's patents for some blockbuster drugs – these all serve as major sources of competitive advantages to these companies.

Competitive advantages are the reasons for companies' successes and the reason why a company can be more profitable than their direct competitors. Companies should be trying to do anything to preserve their advantage in the long run. That is why the imperative of company strategy is the development of "sustainable competitive advantage".

Sticking with Porter, there are 2 generic strategies that allow for competitive advantage:

- Differentiation – which leads to a higher Willingness-to-pay than the competition
- Cost leadership – which leads to a lower cost base than the competition.

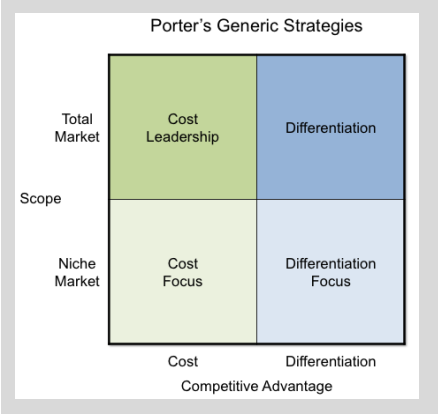

Figure 3: Porter's Generic Strategies Differentiation or Cost to achieve competitive advantage *(Source: HBR)*

There are many different ways to achieve differentiation or cost leadership in any industry but in the end it usually boils down to either access to superior resources (e.g., personnel, patents, data, input materials) or the perfection of better activities (e.g., design, innovation).

2.3 Winning business models: The value curve

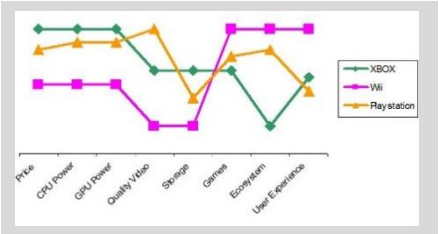

Figure 4: The value curve Generic example for game consoles *(Source: Business Model Alchemist)*

A more recent strategy framework that has found its way into the ranks of state-of-the-art strategy development is the work on "Blue Ocean Strategy" by W. Chan Kim and Renee Mauborgne of INSEAD business school (2004).

Value curve analysis is at the heart of blue ocean strategy and helps visualize different company strategies in relationship to each other and based on customer values. The ultimate goal is to use the value curve to identify new market spaces, so called "blue oceans", that enable companies to build unique value propositions (as opposed to "red oceans").

In the context of the Internet of Things, the concept is extremely valuable to companies because IoT enables a vast amount of new sources of customer value that, in turn, enable completely new market entry value propositions (as will be shown with the example of the Nest smart thermostat)

2.4 Applying strategy frameworks in the context of IoT

The Internet of Things is such a major technological shift that companies should start their IoT journey by looking at all three angles:

a.) ***How IoT changes the competitive forces in their industry***.
In the best case, the forces allow for a much higher value capture if the company positions itself correctly.
In the worst case the existing model will be disrupted and die out if business as usual continues.

b.) ***How IoT enables companies to build new kinds of sustainable competitive advantages*** compared to their competition.
In the best case, companies can secure access to new resources (e.g., relevant data) and the mastery of important activities (e.g., superior development of connected products). In the worst case companies miss the train and leave the new sources of competitive advantage to their competitors or new industry entrants.

c.) ***How IoT enables new kinds of customer value.*** In the best case these new sources of value to customers can be served by existing company capabilities and require little to no effort. In the worst case serving these new forms of customer value require significant effort for the company.

Every strategy discussion starts with "Why?". Therefore this paper looks at the 3 aspects outlined above in reverse order.

First, understanding the potential value of IoT, secondly understanding the implications to competitive advantage and finally understanding the implication to the forces in the entire industry.

3. The customer value of IoT

"The real value of the Internet of Things lies beyond the connectivity"

In essence, the Internet of Things means that "dumb" devices (e.g., a lightbulb) become "smart" (e.g., a connected lightbulb that can be remotely controlled).

But the real value lies beyond the connectivity. In fact, in many cases the additional cost of connecting a device to the internet does not justify the

additional functionality that comes with it (i.e. few people are willing to pay $50 for a lightbulb just because they can control it with their smartphone). The real value of the Internet of Things lies in the data that is generated, the analytics that can be performed with the data, and the connection with the whole ecosystem (e.g., other components of the home) or even adjacent ecosystems (e.g., smart grids)

3.1 New product capabilities

3.1.1 The IoT maturity-value curve

The value of the Internet of Things increases exponentially on a relatively stable and foreseeable maturity curve. What starts with a "dumb" (non-connected) device should in theory end in a completely cross-ecosystem automated solution.

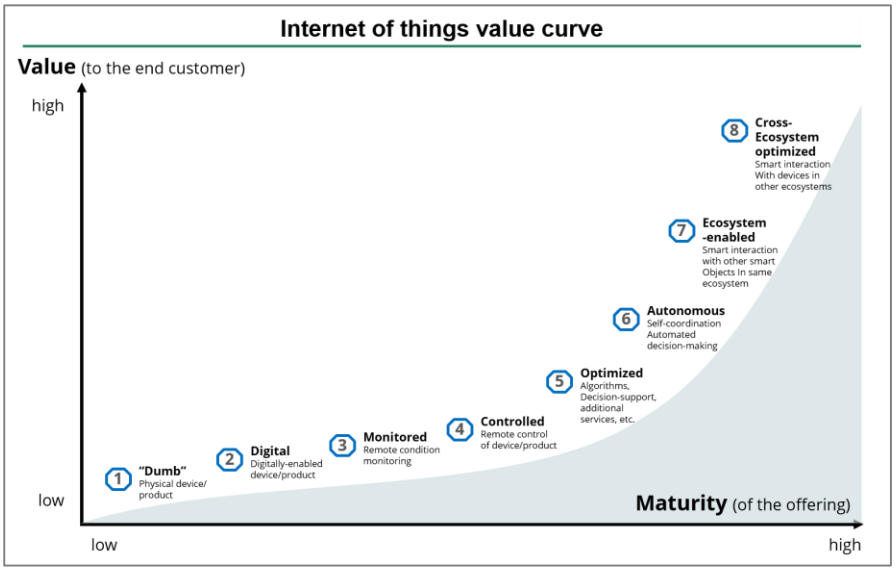

Figure 5: *Generic IoT value-maturity curve of the Internet of Things (Source: IoT Analytics)*

Physical products have been isolated for thousands of years (i.e., not connected or digitally enhanced). In the 80s and 90s most of these devices underwent a digitalization trend.

3.1.2 IoT maturity-value curve example: Connected car

Digital/Driver assisted car. In the case of the car, digital experiences such as navigation systems or digital information on dashboards were added to enable a new driver-assisted experience.

In the next decade, we will jump yet 5 steps further.

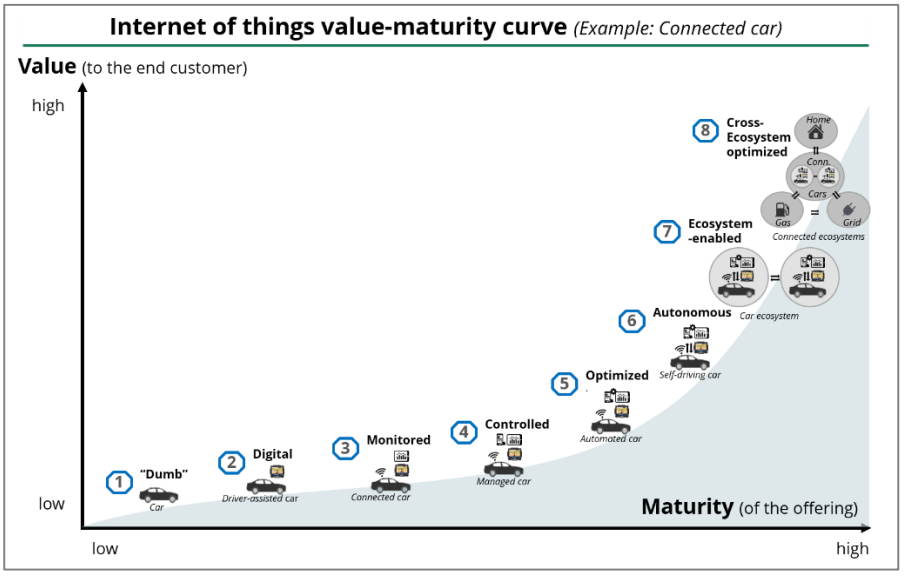

Figure 6: *IoT value-maturity curve for the connected car (Source: IoT Analytics)*

Connected car. The natural maturity path for the Internet of Things is that, as soon as products become connected, one gets the ability to monitor the conditions of these products via some of the connected sensors (e.g., remote monitoring of the fuel level).

Managed car. The value enhances once control mechanisms are established and actors are also connected. In the case of the car aspects such as remote car heating fall into this category. The data generated from the car allows for new ways to optimize performance such as predictive alerts e.g., when sensor values indicate that mechanical parts are going to fail.

Automated car. The next step of optimization is automation e.g., when doors open without needing human interaction.

Self-driving car. Going further, this automation may eventually lead to self-driving cars.

"The ultimate enabler for IoT-value of cars is the connection and subsequent optimization of the car ecosystem – not the connection in itself"

Car ecosystem. The ultimate enabler for IoT-value of cars, however, is the connection and subsequent optimization/automation of the whole car ecosystem (e.g., communication with other cars – allowing for automatic braking in case of an incident that occurs three cars in front and cannot be seen by the driver).

Connected ecosystems. The Internet of Things really becomes the Internet of Things when different ecosystems start optimizing among themselves. One could imagine a world where cars automatically pay the fuel at the gas station, let the home know when it will be there so that the rooms can be heated just in time and let the utility company know when it can expect a car at the next charging station.

3.1.3 Company-customer interaction with IoT

Another important aspect along the maturity-value curve are the changing product lifecycles.

In the future it will be possible to update product functionalities of physical devices (like thermostats) through over-the-air product updates. Much like people download new apps on their smartphone to receive new functionalities, they may in the future receive new functionalities for their IoT-enabled devices at the click of a button (or even automatically). The same goes for the update of the product operating system.

This capability enabled entirely new business models and poses new requirements to product development.

3.2 List of customer benefits

From a customer point of view the benefits that can be experienced along the value/maturity curve of IoT are numerous. And they vary significantly by industry and application. Especially the differentiation between consumer IoT (e.g., smart home) and business IoT (e.g., smart factories) brings very different bundles of value to the end customer.

On the top level one can differentiate between:

- Functional product benefits
- Functional process benefits
- Functional business benefits
- Emotional benefits

Especially for consumer-facing applications the emotional benefits play an important role for the customer (e.g., a wearable device that enhances the owner's self-esteem).

This list can serve as a good starting point to analyze potential value for the customer:

Benefit type	Category	Customer value
Product/ Machine	Daily operations	• Monitoring • Localization • Control • Safety
	Optimization	• Functionality • Convenience • Cost
	Maintenance/Service	• Availability • Cost
Process	Strategic information	• Choice of machines • Sales optimization
	Daily operations	• Monitoring • Control • Billing • Documentation • Contract management • Usability
	Optimization	• Availability • Quality • Automation • Costs
Business	Customers	• Customer retention • Customer satisfaction • Lead generation • Offer optimization • Sales proposition
	Products	• Requirements management
	New markets	• Data as a product • IoT as catalyst
	New business models	• Added-value offering / new services • Pay-per-use / Product-as-a-service • Contracting
Emotional	Safety	• Security of body • Employment • Health • Property
	Love/Belonging	• Friendship • Intimacy • Family
	Esteem	• Self-esteem • Confidence • Achievement • Respect
	Self-actualization	• Creativity • Morality • Spontaneity • Problem-solving • Acceptance of facts

Table 1: *A generic list of customer values in the Internet of Things - adapted and translated to English from "M2M-Nutzenanalyse"*

When developing an IoT strategy it is useful for companies to think along these categories to determine how IoT could bring value to their customers on different levels.

3.3 Case study: The Nest customer value

"When Google bought Nest in 2014, the world realized that the age of the Internet of Things had started"

When Google announced in January 2014 that it would buy Nest for $3.2bn, the world suddenly realized that the age of the Internet of Things had started.

Indeed, the Nest thermostat is one of the successful early examples for the Internet of Things. A lot of people still deride the thermostat and the (in their view) hefty price premium that Google paid for it.

These people may not see the big picture and realize that Nest has made enormous progress on the Internet of Things value curve. In fact, Nest has things already set up to reach the next level.

3.3.1 Value of the Nest thermostat in 2014

The Nest smart thermostat in 2014 is a rather small, round device that people install on their wall to control their heating or cooling systems. It allows users to control room temperature both via interaction with the physical device as well as via an app. The thermostat comes with a number of sensors and built-in analytics that allow the thermostat to learn people's desired temperature and automatically realizes when people are leaving their home. Furthermore, Nest claims that these smart algorithms lead to 10-12% savings of heating usage. The thermostat has also started to integrate with other smart home devices in what Nest calls the "Works with Nest" program.

Figure 7: *Technical drawing of the Nest thermostat (Source: NY Times)*

From a customer point of view, the product is inferior to competitive „dumb" thermostats on price (The thermostat currently costs $200 vs an ordinary thermostat that cost as low as ~$20). Since the thermostat

does not yet have a long-standing track record, it may be also seen as slightly inferior in terms of longevity, or in the broader sense "quality".

The major reasons for buying however, are the advertised energy efficiency and even more so the convenience for the person at home. The fact that the thermostat automatically optimizes temperature and lets people control it from other places, make for a compelling value proposition for a certain group of buyers.

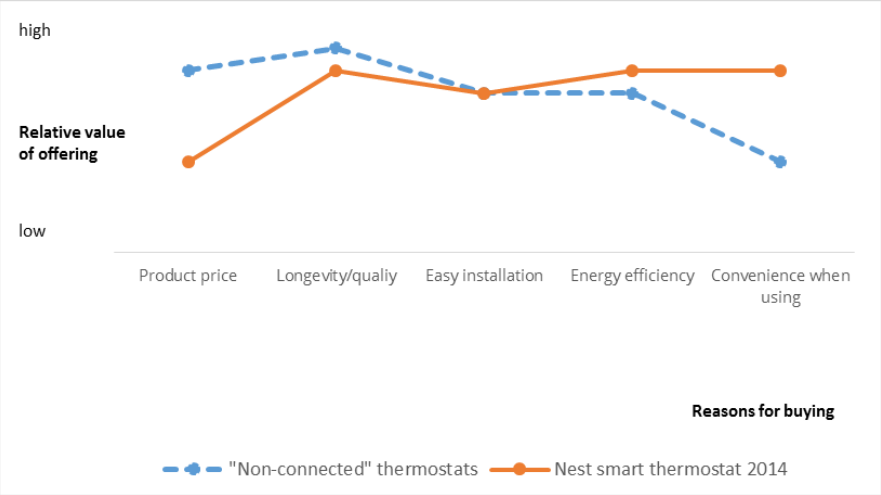

Figure 8: *Value curve analysis of a Nest thermostat in 2014*

3.3.2 Value of the Nest thermostat in the future

It seems like the real value for customers of Nest thermostats will be unlocked with the next version of the thermostat. Nest has already made big plans to increase ecosystem functionality.

Right now the thermostat is tapping into smart home ecosystem with limited functionality. But this should change soon. A customer does not want to control the Nest thermostat independently of the lightbulbs and the door-lock. In the future one can expect the Nest thermostat to seamlessly talk to other devices to allow for a single user experience for their smart home.

And Nest will start tapping into other ecosystems (not just the home):

- ***Wearables***. The thermostat could interact with wearable devices to monitor the skin temperature of people in the room and adjust the temperature accordingly.

- ***Connected car.*** The thermostat could interact with the car so it can heat up the home just in time before people come back.

- ***Smart grid.*** The real additional ecosystem-value may be the connection with the smart grid ecosystem. Nest could provide utilities with valuable data around energy usage for each consumer. The utilities in turn could optimize energy supply.

Ultimately this scenario could lead to lower energy prices for owners of smart thermostats. (e.g., the thermostats could have a mode where electricity is not used in case of more expensive peak demand).

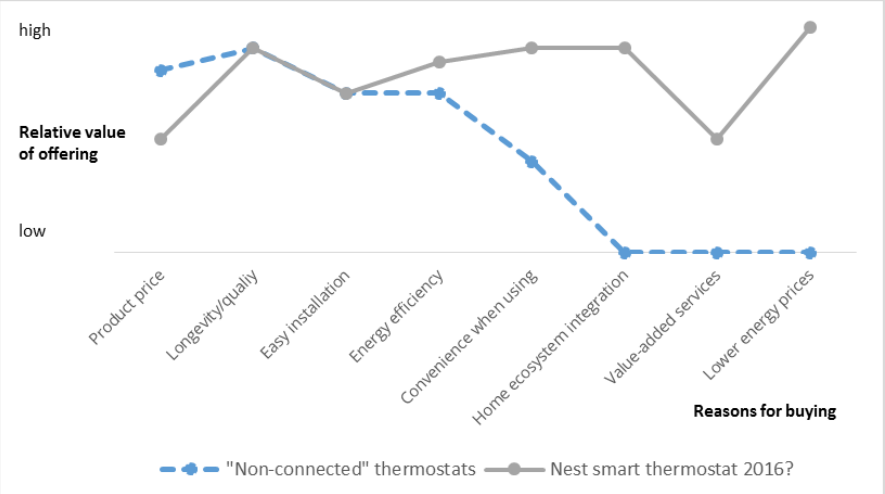

Figure 9: *Potential future value curve analysis of a Nest thermostat in 2016*

This scenario could lead to a lock-out for established providers of non-connected thermostats. At one point their technology becomes so outdated that they are too far behind to develop a competitive product. Utilities would not have any interest to integrate their solution into the "smart power supply network" that Nest might be dominating by then.

A third aspect of value that smart thermostats could provide in the future are value-added services. This could include subscription services and unique applications. Examples of potential future value-added services include electricity cost reporting features for large residential customers or specific product deals for related smart home products.

Even though the Nest thermostat value proposition may not appear compelling enough at first sight, as discussed above, it might soon prove to provide an enormous value-add to home owners and residents.

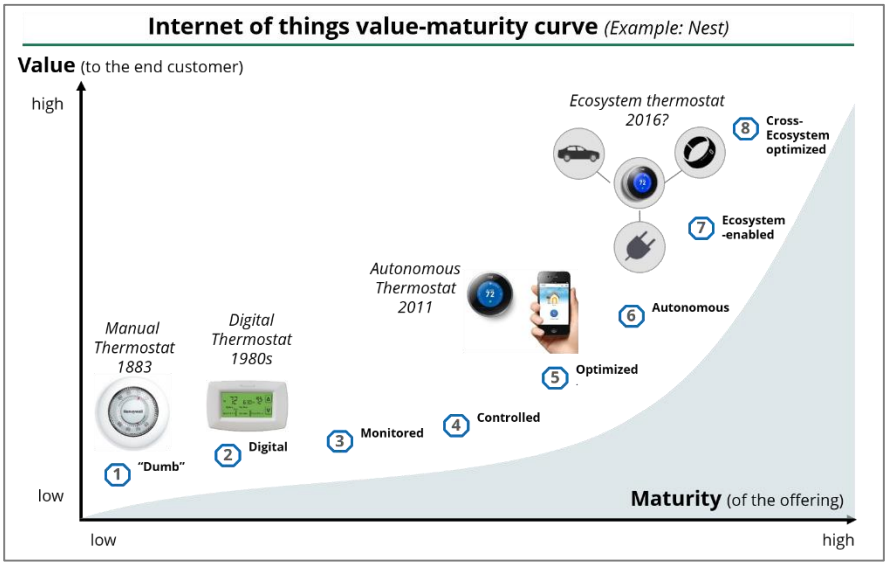

Figure 10: *The Nest smart thermostat along the IoT value-maturity curve*

In fact, looking at the IoT value-maturity curve, Nest may be years ahead of those companies still focusing on „dumb/digital thermostats".

4. How IoT enables competitive advantage

Selling products that deliver customer value does not enable competitive advantage by itself. Competitive advantage comes once a company serves this value better than its competition. In the above example the 2014 Nest thermostats have a competitive advantage if they allow for better energy savings or higher convenience than other smart thermostats.

The ultimate goal of a company has to be to protect the competitive advantage to develop a "sustainable competitive advantage" (e.g., a sustainable competitive advantage would be if Nest thermostats allowed for higher energy savings than competitive products even in the coming years).

The key to sustainable competitive advantage are unique resources and activities.

4.1 New sources of competitive advantage

The Internet of Things creates new resources and activities:

"The ability to take data—to be able to understand it, to process it, to extract value from it, to visualize it, to communicate it—that's going to be a hugely important skill in the next decades"

4.1.1 Resources

- ***Unique data sets*** (e.g., large sets of energy usage data)
  As Hal Varian put it nicely, it is the ability to take data and do something meaningful with it that characterizes the new interconnected world.
  Access and protection to unique data sets will be a key source of advantage in the Internet of Things. Just like Google and Facebook have built up enormous data sets on the internet around web-search or social profiles, it will be those companies that manage to get a hold of large IoT-data sets that can build up a position not reachable by competitors.

- ***Analytics*** (e.g., superior algorithms that allow for better optimization)
  The number one reason for Google's early success as a search engine on the internet was because Google had developed superior algorithms to index the world wide web. Their competitors such as Altavista or Yahoo could simply not match Google's search result accuracy. A similar logic applies to the Internet of Things where superior algorithms to automate and optimize become a key source of competitive advantage.

- ***Exclusive co-operations and*** contracts (in the wider IoT-ecosystem)
  If the ultimate source of value lies in the co-operation between different ecosystems, then it will be possible to strategically lock-out competitors by securing exclusive partnerships with other companies.

- ***Talent access*** (of quality engineers for both soft- and hardware)
  Mastering the Internet of Things is a very complex tasks because it requires many different skills: application development, enterprise architecture, hardware engineering, data science, cybersecurity expertise, etc. Adding to the complexity, these job profiles are already seeing strong demand today. Therefore, specific access to talent pools (e.g., university affiliations) or geographic location can become a source of competitive advantage.

4.1.2 Activities

- ***IoT-device/product development***
  For many years, one of Toyota's source of competitive advantage was the fact that the engineers mastered the new vehicle development process such that Toyota was able to

perform this process twice as fast as some competitors (and also at higher quality). Likewise, for some industries – mastery of IoT product development can become a new source of competitive advantage.

- ***Algorithm development***
  Superior algorithms are a key resource. Constantly being able to innovate and develop these new algorithms that are ahead of the competition is an additional activity that can serve as a source of competitive advantage.

4.2 Case study: Nest competitive advantage

Of the above-mentioned aspects, it looks as though Nest has built some resource-based sources of "sustainable competitive advantage":

- Through its early move into this new smart thermostat industry, Nest has the largest source of data on consumer thermostat usage and beyond. Even though Nest may not yet be using this advantage fully, it could soon become a big asset as utilities or other start buying this data.

- Nest algorithms claim to save 10-12% of energy to the average consumer. While others may soon match this impressive figure, it seems that for now Nest is holding the advantage due to superior analytics in the home.

- Nest has started to form partnerships with energy companies across the US such as NRG Energy, National Grid, Austin Energy and Southern California Edison and is already offering rebates for the 90 million customers that are reached through these agreements. If these partnerships are exclusive, then Nest may end up with a huge source of competitive advantage. No competitor could match the rebates for customers.

5. How IoT will shape the industry forces

It is rare that a new technology has the potential to change the structure of entire industries. But the Internet of Things does.

5.1 IoT's effect on industry forces

If you look at Porter's 5 forces, the Internet of Things brings changes to all of the 5 forces and also across industries:

- ***Bargaining power of buyers***
  IoT-enabled products enable new forms of measuring customer behavior (e.g., fitness trackers measure activity, sleep behavior, etc.). This will allow companies to tailor their products more to customers and generate new offerings.
  ➔ The power of companies over their customers may thus increase. Buyer power decreases.

- ***Bargaining power of suppliers***
  As more and more products become network-enabled and data becomes a key differentiator, the sources of what make a product valuable will shift. Companies that supply critical components such as interactive screens today, may find that tomorrow their offering becomes commoditized. At the same time new powerful suppliers (e.g., security layer providers) emerge.
  ➔ The changes of supplier power thus have to be evaluated on a case-by-case basis.

- ***Threat of substitutes***
  Generally speaking, the enablement of devices to become internet-connected gives rise to new sources of differentiation for companies. A rise in product attributes therefore leaves more room for potential substitutes.
  Substitutes also come in the form of business model innovations. The software industry has recently seen one such innovation: The rise of Software-as-a-Service (e.g., MS Windows is nowadays sold on a subscription rather than a one-off – with multiple advantages to both customers and suppliers). We might soon see similar models entering the physical world: Products-as-a-Service (Car sharing companies are already employing this model as cars in cities are paid on a per-use basis)
  ➔ The threat of substitutes may thus increase with the Internet of Things.

- ***Threat of new entrants***
  One of the key value drivers for the Internet of Things is data and the subsequent application of analytics to this data. Successful IoT companies will have access to data and will have to develop (or source) algorithms that make sense of the data and utilize it with a benefit to the customer.
  Companies that are trying to enter an industry, however, will not have this data or these algorithms when they start. Therefore, the Internet of Things creates new entry barriers to new entrants.
  Another new entry barrier that should not be underestimated are upfront costs. Developing IoT-enabled products costs both money to

develop and requires the acquisition of new talent (hardware designers, data scientists, etc.)

➔ The threat of new entrants for successful IoT companies in an industry may thus go down

- ***Rivalry among existing competitors***

  As the Internet of Things brings together traditional companies from the industry, IT-companies, hardware-companies, and others the rivalry for market share in most industries is set to increase. An early example is the auto-industry. For years, companies like Toyota, Volkswagen, or GM fought the rivalry battle with Tesla being the only new entrant. But now it is Google and Apple announcing that they are entering the car market and potentially others following soon.

  ➔ The rivalry among existing competitors may thus increase

The above analysis shows that the competitive forces need to be evaluated on an industry-by-industry basis. Generally speaking two forces lead to declining value capture for firms: Increasing substitution threats, and additional internal rivalry. Two forces lead to increasing value capture: Declining buyer power, and an increase in market entry barriers.

Timing also needs to be considered. While in the short term internal rivalry is increasing, the rise in entry barriers may eventually stop this process. What we might see afterwards has happened in many other industries before: Industry consolidation via M&A. As the industry consolidates internal rivalry decreases and value capture and therefore profits increase.

5.2 Case study: Nest/thermostat industry forces

5.2.1 Before the introduction of smart thermostats

Before the rise of smart thermostats, the average industry profitability of thermostat manufacturers was medium to low - about ~10% EBIT-margin (IoT Analytics' analysis of German thermostat companies 2005-2013 shows an average margin of 9.8%).

When looking at Porter's 5 forces it becomes clear why this is: Low barriers to entry and fierce internal rivalry while both suppliers and buyers have a certain degree of power.

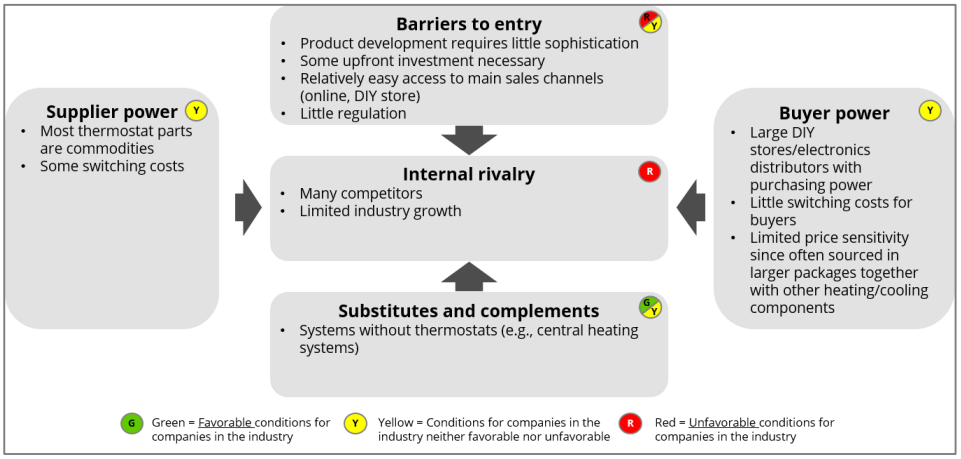

Figure 11: *Porter's 5-forces of the thermostat industry before the arrival of "smart thermostats" (Source: IoT Analytics)*

With the Nest thermostat as an Internet of Things device entering the market, things have started to shift. Porter's 5-forces analysis for smart, internet-enabled thermostats looks overwhelmingly different.

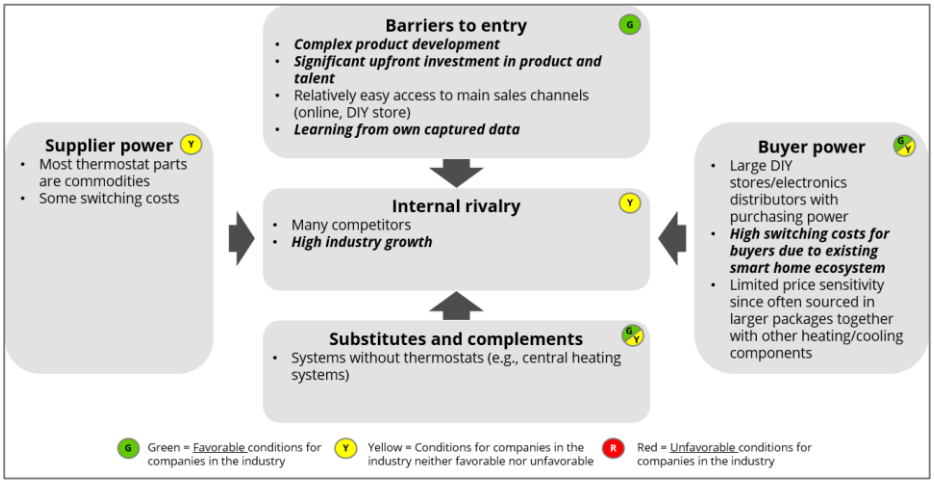

Figure 12: *Porter's 5-forces of the smart thermostat industry (Source: IoT Analytics)*

Most notably barriers of entry are going up due to the complexity and the cost involved in developing a smart ("self-learning") thermostat. Developing clever algorithms based on the generated data (e.g., Nest's ability to understand usage patterns) is starting to become an obstacle for new companies entering the space.

Buyer power also decreases as customers now become locked-in to specific smart home systems that offer unique personalization and additional context through data.

What can currently be experienced in the smart thermostat industry is that internal rivalry is declining because the creation of the "smart thermostat market" has led to strong double-digit industry growth which in turn leaves a lot more room for many competitors.

The changes of IoT to these industry forces may look entirely different in other segments. That is why every company should have an idea how industry forces will change their industry.

6. Key strategic questions companies need to answer

Apart from understanding the new sources of customer value, understanding the shifting industry forces and building competitive advantage around new business models, there are a number of other strategic questions that companies should answer for themselves as they build their IoT strategy.

This is a list of generic relevant questions for any industry:

6.1.1 General industry scenarios

- How will my industry forces change?
- What are some scenarios where the industry is going?
- What business models / industry scenarios can create lock-out?

6.1.2 Company strategy

- What is the value curve for my customer?
- Can we achieve first mover-advantage?
- Is there a value to "wait-and-see" what the competition does?
- What are some no-regret moves we should absolutely do now?
- What scope of IoT do we want to serve? How close is this to our existing business?
- Do we want to shape IoT infastructure as well? (e.g., IoT platforms, communication networks, etc.)
- What are some potential products / business models for us?

6.1.3 Strategy implementation

- What would our product functionality look like?
    - Cloud vs embedded?
    - Open-source vs. Proprietary?
    - Which data analytics necessary?
- How would we distribute?
- What forms of collaboration and integrating/selling-to partners are possible/necessary?
- What capabilities are needed?

    - In- vs outsourced talent
- What are the implementation risks?
    - Privacy
    - Security
    - Competitor moves

7. Conclusion

The Internet of Things will change competitive forces in many industries much like it has started to do in the thermostat industry. These forces can lead to lower or higher power for companies in industries.

Generally speaking the Internet of Things, however, is likely to increase value capture in many industries which may thus lead to higher profits for companies in these markets. Often, there is a real threat for companies that do not introduce IoT-enabled products to be locked-out of the industry and lose their existence.

- From a customer point of view, the Internet of Things enables new sources of value that can be tracked along an IoT value curve. The real value enablers are power analytics and cross-ecosystem collaboration.

- The Internet of Things leads to new sources of sustainable competitive advantage. Companies should try to secure access to unique data sets, superior analytics, talent pools, and/or exclusive cross-ecosystem partnerships.

- These changes in value, competitive advantage and industry forces will lead to many new business models and will create a number of winners and losers.

That is why every company should build their own IoT strategy now if it hasn't started to do so already.

8. References

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