

# Smart Home Market Study for Iberdrola

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**Abstract** Iberdrola is well-positioned to embrace the growth of the Smart Home market, which is expected to reach 16.1% of Spanish households by 2021. This paper examines the main factors, technologies, main players, start-ups, and current business models in the Smart Home market with a focus on the energy management area which most interests the Spanish utility. The paper highlights the drivers for customers and Iberdrola, studies the market forecasts, compares different solution providers in a benchmarking study and presents the different business approaches the market players are taking. Finally, the paper offers four different positioning proposals for Iberdrola. These proposals use an incremental approach and build on already running projects in Hardware retail, Service-tariffs and Data including Smart Electric Vehicle charging stations, Disaggregation using the data from the Spanish households' Smartmeters, Smart Solar for neighbour communities and Demand Response using HVAC systems from office buildings.

## 1. Introduction

This MSc thesis is a study of opportunities for investment in the Smart Home market for Iberdrola's department of Innovation. Iberdrola is the first energy utility by market capitalization in Spain and the third in the world. Its interest in Smart Home comes from the forecast growth the Internet of Things (IoT) technology has. Companies set the expected Smart Home revenues from \$50 to \$150 Billion by 2022 [1] [2] [3] [4] [5] [6] [7] and this makes ITs, telecoms, utilities, security companies and customers invest in this market.

This paper is part of the exploration phase of innovation and research for new potential business models within the Smart Home trend. It

researches the drivers, the market scenarios, the state of the technology, other companies' positions, potential business plans and what new start-ups are proposing.

## 2. Smart Home Drivers

The drivers and Inhibitors behind this growth are studied from two points of view: customers and Iberdrola. The main customer drivers are the ones that have to do with home control, safety, affordability of the devices and convenience. Iberdrola's Smart Home drivers are different. After an expected decrease in energy consumption from now on in the European countries, the Smart Home technology could be a new source of revenue for utilities with only traditional business plans. Moreover, this

technology diversifies risks, presents a growth opportunity, increases customer engagement and may potentially be used for load control.

On the other hand, inhibitors for Iberdrola's customers are affordability of the devices, market confusion, complexity of the technology and safety worries. Moreover, if Iberdrola invests in the technology, it will have to deal with scattered technology, new risks and new competitors due to blurred boundaries between industries.

Potential Smart Home customers for Iberdrola have been divided in four groups, which will have to be addressed in different ways. The biggest group is the Uninterested, who are hard to reach since they do not care about energy consumption. These are followed by Functional households, who will purchase Smart Home products if they offer them clear benefits, and Potential customers, who will need more proactivity from Iberdrola's side. The Devotees, due to their interests, will be the easiest ones to address.

### **3. Growth scenarios**

All future scenarios forecast a growth in the market, because since the creation of ECHO IV in 1966 the number of Smart Home devices has not stopped growing. The entry of the big Information and Technology companies (ITs) during the last two years and the transition of the Smart Home technology to the mass market has increased interest in this technology which expects an increase in the penetration rate from 1% to 16.1% in Spanish homes during the next 5 years [6].

The structure of the market is shifting from one based on single product solutions to one in which big companies are investing to create full-ecosystems or certified ecosystems [8]. Iberdrola must differentiate its products and services to make them appealing to the customers while also making sure they can be used as part of a bigger ecosystem.

### **4. Technology and State of the art**

The spectrum of Smart Home devices is growing and the smart thermostats are the highlight product of the energy management area, which is the natural fit for a utility company like Iberdrola. The Smart thermostats market is moving towards Europe from the US and retailing some of them, as Iberdrola is already doing, can be a source of revenue. The research on Smart thermostats showed that even though the Netatmo thermostat, which Iberdrola is retailing in Spain, is not the top of the market; it offers a reliable and affordable smart thermostat, which is what customers want.

It is important to understand that all the Smart Home devices are connected by different network technologies, protocols and architectures. After comparing them, this paper concludes that the smart phone deployment makes phone-centric architecture the most interesting for Iberdrola, while the network technology will have to be studied for each of the Smart Home products since the power consumption and the reach are the main differences between networks.

The analysis of technology directly connected to Smart Home and energy consumption show

business opportunities in product retailing, Solar PV technology, Electric Vehicles, Demand Response, Data and Disaggregation. Each of these businesses are centered in different areas of energy technology but framed around the Smart Home.

## **5. Analysis of leading solution providers**

Iberdrola must understand what other players are doing in other markets. Hence, a benchmarking studied the main players of the Smart Home market in Europe, US and Brazil and researched the position and offers of energy utilities, telecoms and big ITs. The US energy utilities have been paving the road for this technology. Companies like ComEd, Austin Energy or Con Edison (among others) have been using Smart Home technologies for Demand Response during the last two years. Some of them retail Smart Home products, but most of them follow the Bring Your Own Thermostat (BYOT) approach and partner with an aggregator to generate Demand Side Response. The US telecoms joined the bandwagon and started by selling Smart Home products for home control, but they are broadening their scope and they are getting into the energy side of the home.

In Europe, both the British utility Centrica and the German telecom company Deutsche Telekom bet for building full Smart Home ecosystems called Hive and Qivicon respectively. In general, the pace of the Smart Home deployment in Europe is slower than in the US, but all the main European utility companies have a Smart Home proposal for their customers. In contrast to the US, European utilities and telecoms focus more

on product retail and monthly fees for additional services, even though some utilities like EDF or Vattenfall have started studying the use of the Smart Home for Demand Response purposes. The figure of the aggregator has appeared in Europe with companies like Kiwi Power or Restore, following the track of the American companies.

The Brazilian market does not have many players in the Smart Home field. But the size of the market and the interest from the consumers, makes Brazil a great market for retailing Smart Home products in the upcoming years.

The main IT companies in the market are betting for the Smart Home trend. Google, Apple, Amazon, Samsung and Foxconn are developing their own lines of products and they are having an important impact in the market due to their size and their deployment. Each of them is trying to build their products based on their strong points. Apple is centering the HomeKit on the iPhone, Google use its data as a strength and Amazon want its clients to buy from its hub, Echo. Each of these brands are deploying their own ecosystems and, even though they are still more popular in the US, they will use their market position to spread to Europe and Iberdrola must take this into account.

Moreover, new start-ups are pushing forward the Smart Home technologies and, in the energy sector, companies are designing new consumption trackers, aggregators, new devices, virtual power plants, and infrastructure and blockchain projects.

## 6. Smart Home business models

The Smart Home business models for utilities and technology providers go further than traditional utility's business models. This paper has located nine potential business models which Iberdrola will have to analyse for each of their future Smart Home proposals: Hardware retail, Pay as you go, Monthly subscription services, Service tariff, Different partners, Regulatory, Loyalty based, Bring your own device and Data business models [9].

## 7. Positioning proposals

Iberdrola encounters a Spanish market without big players and with promising forecasts. But the expected growth of technology will bring the big international players and their ecosystems to the market. Thus, Iberdrola will have to offer different products and services within the energy sector which is its natural fit. This paper proposes four Smart Home positions for Iberdrola in their envision phase.

1. Use programmable and modern Electric vehicle charging stations to increase the customers' engagement while shifting energy load from peak times to night hours.
2. Use energy load disaggregation to offer customers more information about their energy consumption while using their data for better customer segmentation which could lead to other business plans like a Market place.
3. Upgrade Iberdrola's Smart Solar proposal for community buildings so

Iberdrola oversees the energy production and consumption within the building.

4. Use an aggregator to control the load from office buildings with big HVAC systems to provide Demand Response.

Furthermore, Iberdrola must take care of the interaction with customers in each of the proposals. The App, the customer engagement and the installation process must be designed to be comfortable and clear for the clients. Moreover, the IoT the data obtained by all the devices must be treated with importance since it could benefit each of the products' lifecycle and the relationship with customers.

## 8. Conclusions

Utilities, telecoms, security companies and start-ups are moving towards a market with a great potential. Iberdrola must take advantage of its position and natural fit in the market to offer a bundle of unique products which are able to be controlled from the same interface. Iberdrola can offer energy management solutions while retailing energy efficient and Smart Home devices to increase its revenue sources and take advantage of a non-exploited market in Spain, the UK, the US and Brazil.

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