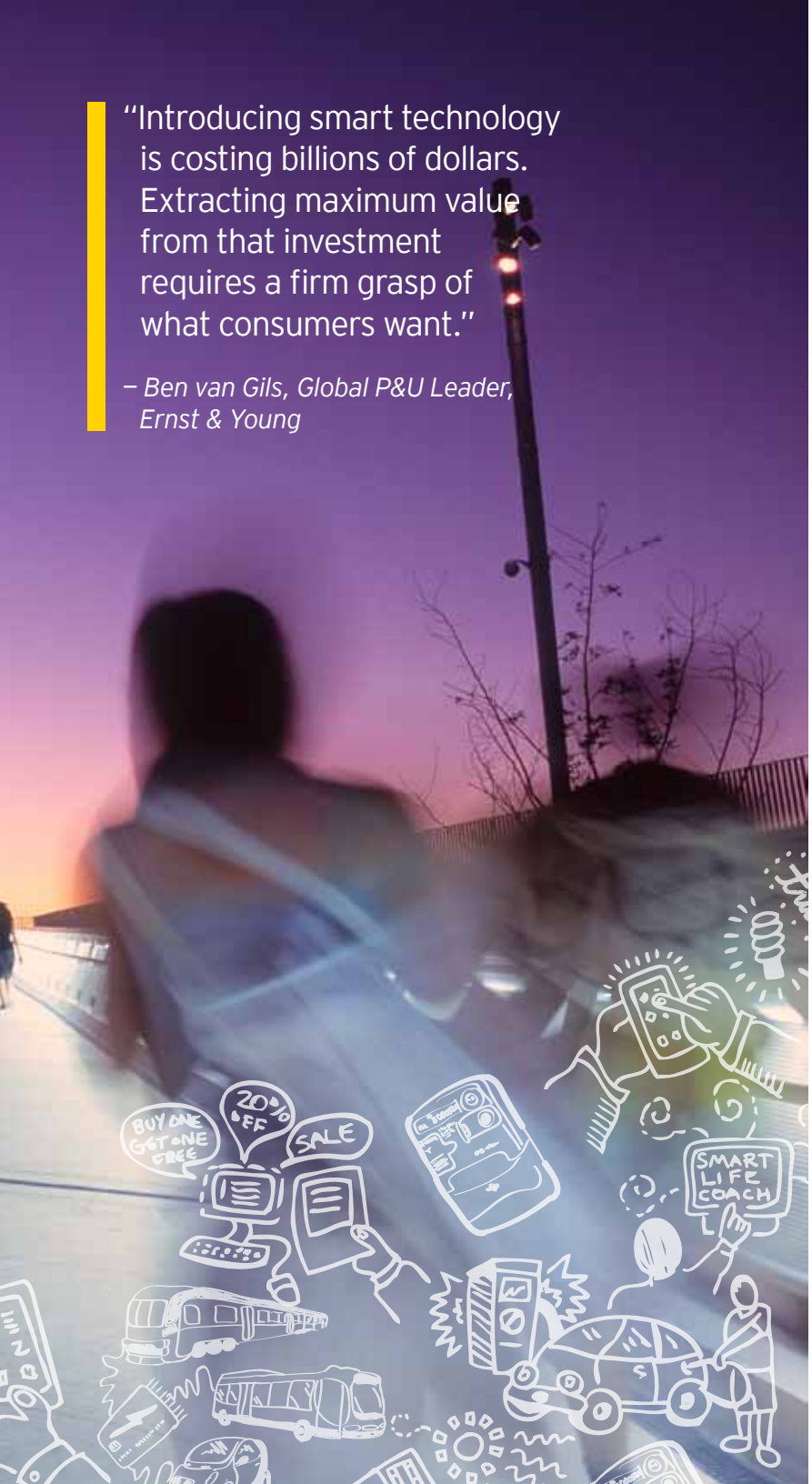
The rise of smart customers

How consumer power will change the global power and utilities business

What consumers think

Ernst & Young
Quality In Everything We Do

Contents



"Introducing smart technology is costing billions of dollars. Extracting maximum value from that investment requires a firm grasp of what consumers want."

– Ben van Gils, Global P&U Leader, Ernst & Young

Foreword

Power and utilities (P&U) companies worldwide are embarking on extensive installation of smart meters and grid infrastructure – programs that could cost them US$200 billion by 2015.[1]

At present, the majority of P&Us are treating this as a straightforward technical upgrade. But others are viewing the new technology as a driver of new business opportunities and innovation.

Whatever strategy you follow, one thing is clear: extracting maximum value from this massive investment requires a firm grasp of what consumers want, because smart technology gives people a level of control and choice that they have never had before. Engaging public interest and support for the smart transformation process is a skill that P&Us will have to learn. A key lesson from implementations to date is that there is no single "model consumer" with a standard set of priorities.

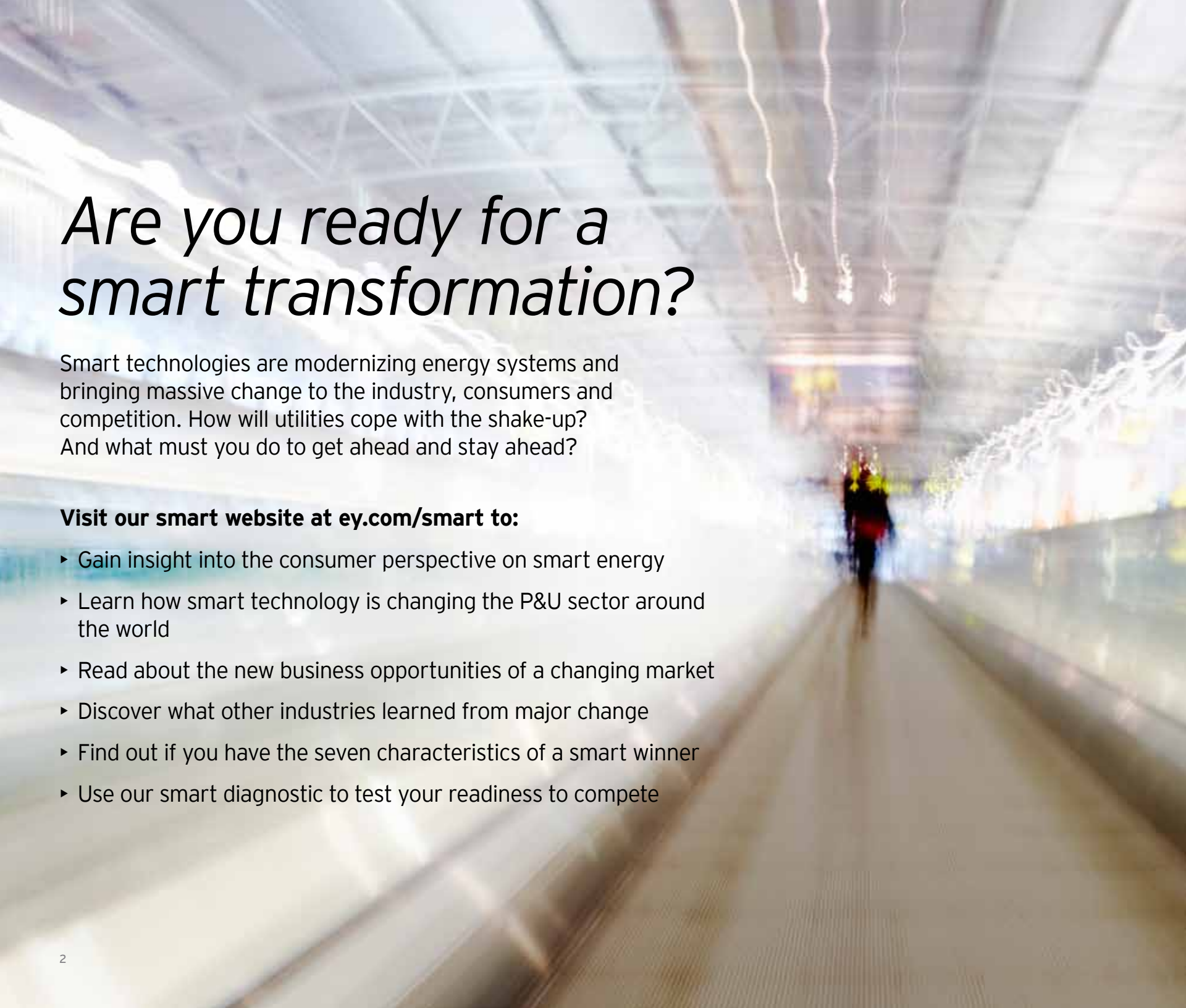
To gain insight into current consumer views and explore how consumer behavior could promote – or hold back – the broader business case for smart technology, we talked to heads of household in 13 countries. We explored their attitudes to their energy suppliers, their understanding of smart technology and their potential appetite for new, smart-enabled services.

The report is the first installment of a two-part study conducted by Ernst & Young's Global Power & Utilities Center. It is geared to helping P&Us adapt their business strategies and customer handling in a new smart world. Our second installment will explore what impact P&U leaders believe smart consumers will have on their business.

We would like to acknowledge and thank everyone who participated in our consumer focus groups around the world for their time and their insights.

Ben van Gils
Global P&U Leader

[1] *Pike Research, www.pikeresearch.com/newsroom/smart-grid-investment-to-total-200-billion-worldwide-by-2015, 28 December 2009*



Are you ready for a smart transformation?

Smart technologies are modernizing energy systems and bringing massive change to the industry, consumers and competition. How will utilities cope with the shake-up? And what must you do to get ahead and stay ahead?

Visit our smart website at ey.com/smart to:

- Gain insight into the consumer perspective on smart energy
- Learn how smart technology is changing the P&U sector around the world
- Read about the new business opportunities of a changing market
- Discover what other industries learned from major change
- Find out if you have the seven characteristics of a smart winner
- Use our smart diagnostic to test your readiness to compete

Executive summary

New smart technology places more power in the hands of energy consumers. What are the implications for P&Us?

Smart technology puts unprecedented power in the hands of consumers to manage and control their energy use. In time, this will fundamentally shift the balance of customer relations. It seems the era of a one-way relationship – where a utility delivers energy to domestic consumers, end of story – is over.

Most P&Us are currently treating the smart transition as an infrastructure upgrade, focusing chiefly on the technology and on fulfilling regulatory obligations. So far, the customer perspective and need for consumer education have not figured prominently in smart implementation programs.

But following customer resistance to implementations in the US and Australia, the sector has been alerted to further challenges. Consumers' newfound power to say "no" is one that the industry is not used to dealing with. P&Us must learn from the mistakes made so far. They need customer buy-in before they can exploit the host of new business opportunities that smart technology could provide.

To explore the sector's readiness to respond to the present cycle of change, we asked domestic energy consumers how they viewed their relationship with energy providers. We wanted to know if they understood the benefits of smart metering, as well as their appetite for smart energy services.

Key findings

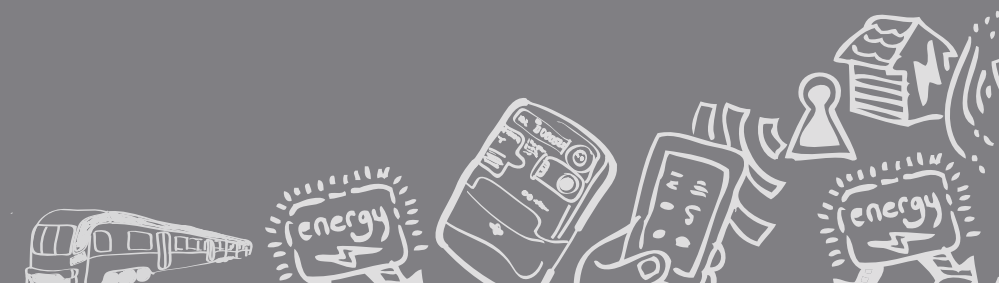
- Consumers around the world have a **neutral to poor relationship with energy suppliers**. At best, they describe it as transactional, cold and distant; at worst, it appears hostile. We uncovered widespread irritation around issues such as competitive inertia, poor customer service, and lack of clear billing and tariff information. The situation is not markedly better in deregulated markets. For P&Us that want to use smart as a potential route to expand their retail relationship with consumers, this is a serious obstacle.
- Consumers generally acknowledge that suppliers are dependable, providing a reliable energy supply and responding quickly to outages. But overall **the energy market is not viewed as dynamic, and P&Us are seen as lacking customer empathy**. They lag far behind other home service industries – mobile phone and broadband service providers in particular are seen as setting the benchmark for customer service.
- At a basic level, consumers like the idea that meters will help them control energy use and save money. But they are also **skeptical about who ultimately benefits from the meters**: the consumer, society in general or the utility. They asked whether meters would be easy to use, whether bills would be clear, whether there would be real scope to reduce consumption and whether their privacy would be invaded. In other words, they doubt there is a value proposition for them, which compounds their skepticism.
- Current negative perceptions of energy suppliers mean that the only services consumers would consider buying from their current energy provider are those **directly related to monitoring or managing energy use**. To sell them a wider range of smart services, P&Us would need to partner with a credible brand.

Key implications for P&Us

Our survey highlights three things P&Us need to do as the industry continues to transform:

1. Assess what threats smart technology could present to the core retail business
2. Assess the impact on business models and strategy. We see three options:
   - Continue "business as usual" by treating smart technology as a pure infrastructure upgrade, but incorporating customer feedback into the meter rollout program
   - Develop a more customer-focused business model that uses smart data and new joint ventures to promote a range of new services beyond energy supply
   - Exit from the retail business in competitive markets where this is possible
3. Take action to improve customer focus:
   - Those operating "business as usual," including networking companies, will need to educate their customers effectively on the rollout of meters.
   - Those adopting a customer-focused model need to build trust and present their smart services in a way that appeals to customers (see "Six factors for success," page 19).

> "Smart technology presents opportunities to create a new range of smart services, but only if P&Us learn from the mistakes we have seen so far and adopt a more customer-focused approach."
>
> *– Helmut Edelmann, Director Utilities, Ernst & Young*



How Ernst & Young can help

Ernst & Young's P&U industry teams understand the global impact of smart technology and customer issues in national markets. We have the experience and capabilities to help P&Us control risk, reduce costs and unlock customer value throughout the whole smart metering journey. See page 24 for a brief outline of how we can help.

Our report draws together common key themes across 13 countries. Please contact our smart team (see page 25) to discuss any issues raised here or to request further information on individual country issues and responses.

Key findings from our global research

Our consumer focus groups in 13 countries around the world revealed strong, consistent views about energy suppliers and smart services.

What we asked consumers

Thinking about the different ways that P&Us might develop in a smart future, we asked consumers about:

- Their experiences and perceptions of P&Us
- Their perceptions of smart metering
- How far consumer engagement with smart meters might open the gateway for a range of new smart home services
- The extent of their appetite for new smart services
- How they would respond to existing energy suppliers and new entrants as providers of new smart services

What we heard

We heard highly consistent views across 13 countries on the nature of relationships with P&Us and on the smart services that would most interest consumers.

Experiences and perceptions of P&Us

Consumers feel that relationships with energy providers are distant at best, negative at worst.

Perceptions of energy providers are neutral to negative, even if the utility company is seen as "keeping its side of the bargain" by offering a reliable power supply and responding to problems in a timely manner. The US seems to have the most negative view. Norway and South Korea tended to be more positive than other countries, seeing energy as relatively cheap. Otherwise, indifference was widespread.

People told us they typically had limited contact with their provider. P&Us did not proactively contact consumers, and in the absence of any real need to communicate, the only contact is through the energy bill. Bills were felt to be confusing and unclear — P&Us didn't help customers to understand their energy usage, which did not help to instill trust.

Customers feel neutral to negative about their supplier

"There is no 'relationship.' You pay and they give you electricity." (Spain)

"You need power, so you pay the bill. Outside of that, you don't really talk to them." (Australia)

"They never proffer the information if there's a better tariff I could have. And I don't understand all those ... tariffs in any case." (Germany)

"There's less human contact, it's depersonalized, it's a dinosaur, slow." (Italy)

"The companies are the same ... offering almost the same services at the same high prices." (Sweden)

"Distant and faceless ... the devil." (US)

"I feel ripped off." (UK)

But it's not all bad news

"There seems to be more choice out there now: you can choose to have a contract or not, there are incentives for early payment." (Australia)

"[My provider] is competitive, dynamic; they answer the phone and are very helpful." (Italy)

"With my provider, I get a real person at the end of the line — they have a really laid-back style and call me by my first name. I like that." (Germany)

"Gets the job done." (US)

In locations where consumers had a choice of supplier, the decision was based largely on price, which reinforced the idea that the relationship was simply transactional. Even in deregulated markets, many providers were still operating effectively as monopolies. As a result, consumers felt that energy markets were not dynamic and that they did not benefit personally from competition.

Perceptions of smart metering

Smart metering is initially viewed positively, but there is skepticism about who truly benefits.

Overall, consumers tended to have a superficial knowledge of smart metering. Countries more familiar with its use were Australia, Canada, Sweden, UK and the US – where rollouts have already taken place – while in other markets, the meters were only known and understood by a minority. Countries that showed the least interest in the idea included France, Germany and Norway. There was limited understanding in Spain, where few people recognized the term and several participants had difficulty understanding the two-way nature of smart meters.

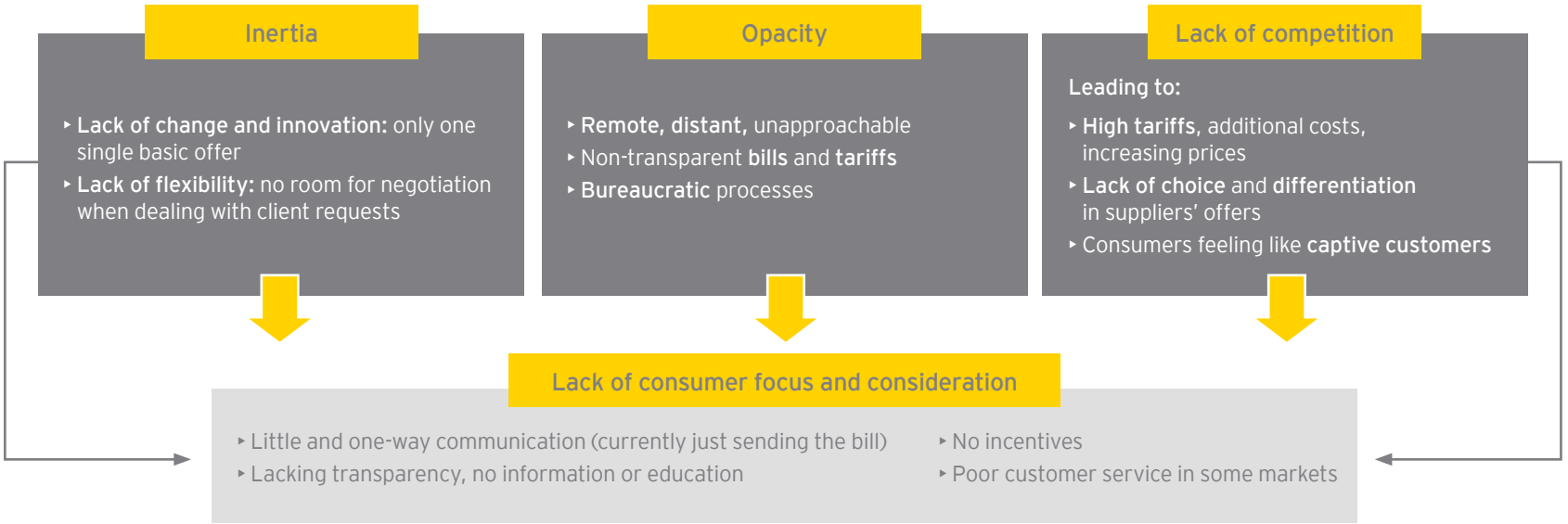
Initial perceptions are positive

"[Smart meters] allow us to have a comprehensive view. Before, this was limited to the bill. ... They help optimize consumption." (Italy)

"I can see how much I've used any time online. Very practical and transparent." (Germany)

Figure 1: Consumer perceptions of energy providers are poor

Consumers define their relationship with their energy supplier as purely rational. They sense a strong imbalance of power – big company versus small, insignificant consumer. The image of P&Us is influenced by their history as monopoly businesses.



But our focus groups wanted to know

What is the role of smart metering? To reduce energy consumption? To provide other services and marketing to consumers? Or to generate additional income for the energy companies?

Based on a superficial understanding of what the meters could do, consumers initially took a positive view of them. They liked the idea of saving money and having more control. They liked the fact that meters would show energy usage in real time, creating awareness of waste and encouraging households to control consumption better.

Opinions on who should pay for meter installation were mixed. The overriding view was that whoever would benefit financially should pay. This might be:

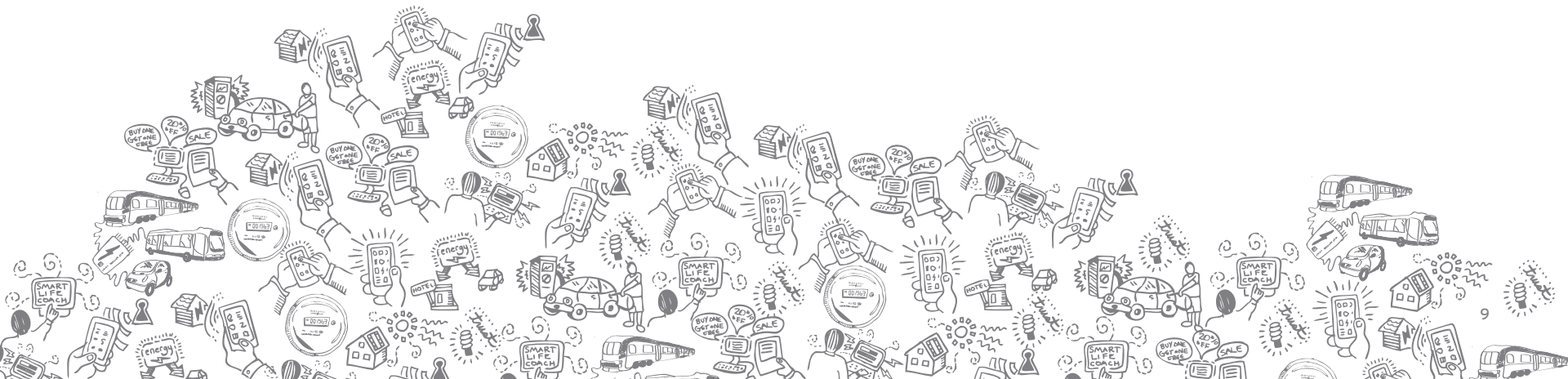
- Energy suppliers, as they will have lower costs from meter reading and forecasting energy needs
- Consumers, if the meter allows them to make savings
- The government, as an effort to reduce energy consumption and support environmental protection

When the discussion turned to introducing new services through smart metering, it prompted skepticism. Participants questioned who the meters were supposed to benefit: the energy provider, consumers, or the environment and society in general? Skepticism was evident in comments such as: "Their business is to sell electricity, and they're offering you things to help you spend less?" (Spain)

There were also questions about user friendliness, whether bills would be clear, how much scope the meter gave to reduce consumption, whether energy providers would raise prices to balance any reduction in consumption, and whether consumers' privacy would be invaded.

Overall, consumers were not convinced of any value proposition in smart metering, which compounded their skepticism.

"If telephone companies give you an iPhone, why would I pay for a meter?" (Spain)



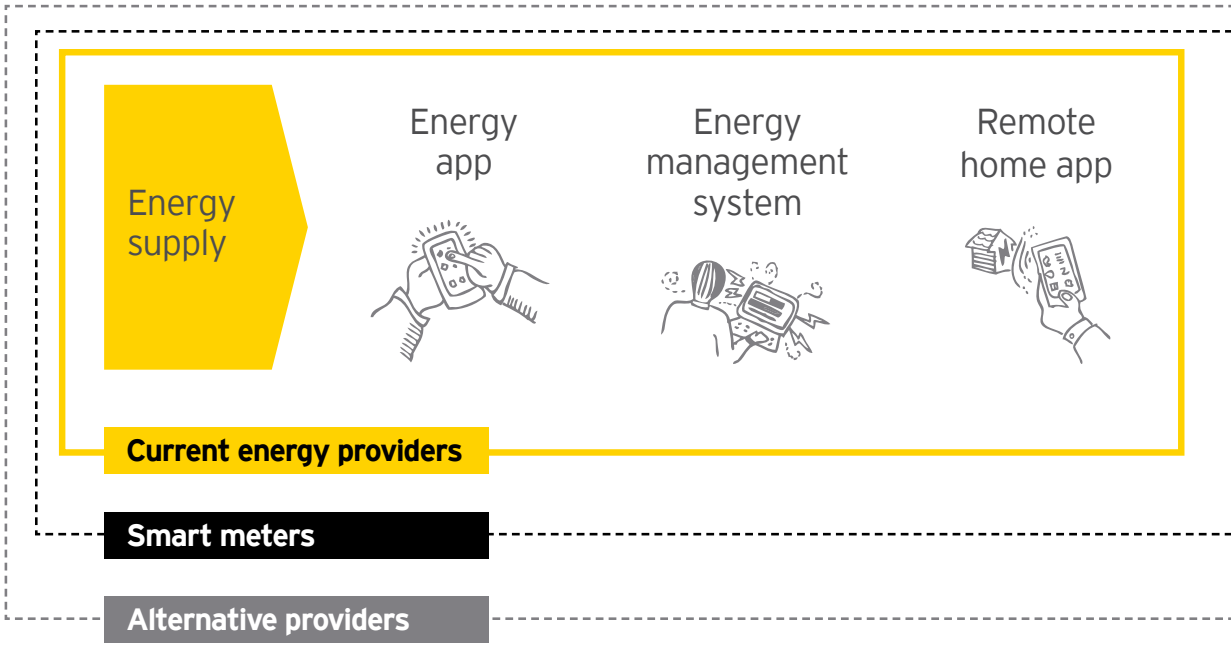
Smart meters as a gateway to new services

Smart metering could be used for more than just energy monitoring.

Consumers accepted that smart meters would be an appropriate gateway to other smart services. However, smart meters would be competing with other devices, such as mobile phones, which have already made the transition to multifunctional devices and have earned consumer trust.

Consumers saw no clear link between the smart meter and smart services that were not directly linked with energy monitoring. Overall, the negative perceptions that consumers have of their energy provider, together with the P&Us' perceived lack of proactivity, resulted in limited "permission" for energy providers to stretch into new products and services. Essentially, P&Us haven't demonstrated that they possess the knowledge or customer focus to give them credibility if they want to move away from energy supply and into energy services.

Figure 2: Energy providers have limited scope to stretch their services beyond energy



> *"The idea of smart metering is very attractive; it is the future!" (Sweden)*

Energy card

Data sharing

Secure access

Smart life coach

Mobility card

Electric vehicles

Charging only

See pages 22–23 for full descriptions of these services.

Consumer appetite for new smart services

The services with greatest appeal were energy management, remote home control and electric vehicle charging.

Of all the potential smart services we discussed with the consumer groups, three stood out as universally popular.

Energy app

This application allows users to measure energy use per room or per appliance within the home on a smartphone or computer, providing information on real-time consumption and showing past usage patterns.

Our consumer groups viewed this as a simple extension of the smart meter and assumed energy suppliers would provide it. Consumers recognized its value in giving them information they currently do not have to help them control use and reduce waste. Most consumers were willing to pay extra for services they benefited from; utilities will need to consider whether a one-off payment or monthly subscription would work best in their markets.

Consumer reaction to the energy app

"Sounds good – you can see at a glance where the energy guzzlers are." (Germany)

"I would be connected through my mobile to all the appliances in my house, and I could understand consumption patterns of each and modify my usage accordingly." (India)

"I don't need to worry that the energy would be overcharged by my provider because I am clear about the situation." (China)

Remote home app

This application links the smart meter to a smartphone or computer, allowing heads of household to monitor and control all electrical appliances remotely. For example, lights could be switched on to deter burglars, and heating and air conditioning could be turned on before arriving home. The app also could act as a home security system or help to monitor vulnerable relatives, sending alerts if appliances are used or not used as expected.

This service was very appealing to consumers, as they thought it would make their lives easier. They also liked the idea that it would provide a cheaper option than similar services already on the market.

Consumer reaction to the remote home app

"The remote home app is the trend for the future. I expect this service as it enables me to monitor the operation of my home appliances and ensure the security of my house." (China)

"Very good idea; it's often that I leave home and think: did I really switch off the coffee machine?" (Sweden)

"Very interesting, for those who live alone or who leave their house empty for a significant duration." (South Korea)

Electric vehicle (EV) charging

This service allows EV batteries to be charged at home using time-of-use pricing (the smart meter will enable utilities to create a flexible pricing system that provides lower energy prices at off-peak hours). Consumers responded positively to the idea of an alternative to gasoline cars, and although they felt EVs still had some limitations, their expectations of improvement and adoption were high (except for Norway).

Reactions were less positive about the ability of owners to sell any unused electricity stored in the car back to the public grid at a higher rate. This option was felt to be too complex, and the focus groups sent a clear message to "keep it simple."

Consumer reaction to EVs and EV charging

"It seems relatively possible in 5 to 10 years or even earlier!" (France)

"I would want an electric car because I feel guilty when I drive. I pollute the earth unnecessarily." (US)

"The charging time is a concern, but that will probably change." (UK)

"I welcome electric vehicles; I believe all the gasoline cars will be eventually replaced by electric vehicles, as environmental protection is more and more important to us." (China)

"Before using it, it needs basic infrastructure." (South Korea)

Who should provide these services?

In terms of who could provide these services, energy providers were acceptable to consumers for energy-related services (i.e., the energy app and EV charging), but P&Us would need to partner with other companies to be trusted to deliver the remote home app. While charging EVs is seen as an acceptable service from P&Us, the vehicles themselves need to be provided by car manufacturers.

Data sharing – handle with care

Many utilities are considering how to realize value from the large volumes of consumer data that smart technology will produce.

But how does this look to consumers? Although they already receive offers from other suppliers once they have registered on an internet site or signed up for a loyalty plan, their experiences to date mean that the majority do not expect offers to be genuinely tailored to their lifestyle and needs. In our research, there were many stories of companies getting it wrong – for example, sending coupons for dog food to somebody who doesn't have a dog.

Consumer reactions to sharing their data in exchange for discounted energy bills varied from lack of interest to cynicism. Overall, there was resigned acceptance that the smart meter could become another portal through which they would be sold services. If P&Us are going to use it effectively, they must be careful about the offers they make. It varied by market how far consumers viewed P&Us as trustworthy organizations that can handle their data and not expose them to fraud and identify theft. Consumers in the US, for example, were fiercely protective, whereas in urban India there was a much more open attitude.

Considering the widespread lack of trust between consumers and the P&U sector, badly handled use of a smart portal to advertise or sell more could reinforce negative feelings, further damaging consumer relationships.

The overall message we can take from consumer responses is "handle with care." There are considerable hurdles to overcome in monetizing data while retaining your customers' goodwill.

Consumers told us ...

"I get too much junk mail." (US)

"It would have to be a considerable discount; we are already bombarded!" (Italy)

"Is this to save us money or to generate sales leads?" (UK)

"I don't like the idea of different companies sharing my personal info." (Canada)

"I'm dubious. Who will have access to information about me and my family?" (Norway)

But also ...

"[P&Us are] more trustworthy than private companies when it comes to the protection of personal information." (South Korea)

Potential competition from new entrants to provide smart services

In addition to the energy app, remote home app and EV charging, we discussed a wide range of other possible services with our focus groups, including more sophisticated ways to manage energy use. These included P&Us providing automated switching to leading-value tariffs, services linked to data sharing, services around home security, "smart life" advisory services and tailored product offers.

Across the board, if the service was not seen to link directly to energy use, consumers saw no obvious fit and had no appetite for energy providers to deliver these services. Because P&Us have not previously attempted to diversify, consumers have limited expectations that they could do so successfully now. Consumers' perceptions of energy providers did not change when we discussed the new services with them, and neither did their willingness to pay for a smart meter.

Current negative perceptions of energy suppliers meant that consumers were interested only in smart services directly related to monitoring and managing energy use from their existing suppliers. They would only buy a wider range of smart services from P&Us if they partnered with a credible brand (see "Which newcomers would consumers trust?" on page 17).

Providers from other sectors, such as automotive (EVs), home services, retail, technology and telecommunications, are often felt to be better placed to offer the proposed services.

All consumers reacted positively to services that gave them more control, but they strongly disliked suggestions for services that seemed to give the utility more control. Their comments included:

"I don't want to be programmed."

"I don't need to be told what to do."

"You're being remote-controlled; you don't think for yourself anymore."

"You'd be completely transparent – completely at their mercy."

Figure 3: Attitudes to smart by country

	Relationship with suppliers	Familiarity with smart	Perception of smart	Attitude to managing energy	Perception of EVs	Willingness to pay	Concern about data sharing	Concern about privacy
Australia	⊖	⊕	⊕	⊕	⊕	◐	◐	◐
Canada	⊖	⊕	◐	⊕	⊕	◐	⊖	⊖
China	⊖	⊖	⊕	⊕	⊕	◐	◐	⊖
Germany	◐	⊖	⊖	⊕	◐	⊖	⊖	◐
France	⊖	⊖	⊖	⊕	⊕	⊖	⊖	⊖
India	⊖	◐	⊕	⊕	⊕	⊕	◐	⊕
Italy	⊖	⊕	⊕	⊕	⊕	◐	⊖	◐
Norway	◐	◐	⊕	⊕	⊖	◐	⊖	⊖
Spain	⊖	⊖	⊕	⊕	⊕	⊖	◐	◐
Sweden	⊖	⊕	⊕	⊕	⊕	⊕	◐	◐
UK	⊖	◐	⊕	⊕	⊕	⊖	⊖	⊕
US	◐	◐	◐	⊕	⊕	◐	⊖	⊖

Key implications for utilities

Waiting for certainty about a smart future could expose P&Us to serious risks. Prompt strategic decisions and action are needed.

We recognize that utilities have found – and are finding – it difficult to make strategic decisions about their smart future due to uncertainty about:

- Regulatory requirements
- The right or "winning" technology
- What customers want from smart meters and future smart services

Our research shows that the sector's traditional response – to play a waiting game until there is more certainty – exposes utilities to risks regarding the failure of smart meter implementations as well as future provision of smart services.

So what do utilities need to consider? In the short term, they need to develop a customer value proposition for smart meters and communicate it clearly. Consumers want to know what "smart" is, why it's coming and any potential benefits it might bring.

In the longer term, utilities need to assess the impact of smart in terms of competitive threats and the business model. The options are to continue with business as usual, change the model to something more customer-centric or – in competitive markets where this is possible – exit the retail customer market altogether.

"My phone or internet company I often communicate with, but not with my electricity company." (Canada)

Is there a threat to P&Us' core business?

While this study doesn't explicitly show that utilities are threatened in their core business, it does show an implicit threat given the neutral to negative attitudes of consumers to utilities (see page 7):

- Consumers clearly felt that utilities lacked the credibility to move away from their core business and diversify into a broad range of smart services. P&Us need to improve customer focus and build credibility in core areas before venturing further.
- Consumers want services from strong and trusted brands, or from companies with proven experience of desired services. Compared to providers of other home services such as mobile phones, cable and internet, utilities didn't rate well. Consumers liked the responsiveness of mobile phone companies, who will negotiate on rates and tariffs.
- Consumers are interacting with a rich digital world that they trust through their smartphones. The strength of this attachment means that mobile telephone providers have permission to offer additional services.
- In more sophisticated, competitive markets such as the UK, energy supply is understood as a billing exercise, so consumers are open to other brands offering energy supply and services.

> *"Consumers are enthusiastic about smartphones, so the question for utilities is: can they manage optimally alongside mobile technology?"*
>
> *– Helmut Edelmann, Global Smart Program Manager, Ernst & Young*

To increase the adoption of home energy management and other smart services, they will need to be accessible via the smart meter, mobile phones and the internet. Smartphones are already capable of opening up multiple relationships through a single device.

Which newcomers would consumers trust?

When asked who they would trust to provide smart home services, consumers identified the following characteristics:

- Proven expertise in the relevant field (customer profiling for data sharing, security for secure home access, etc.).
- Brands that have earned consumers' trust (these varied by country, but many were large retail companies).
- Compatibility with reliable technology platforms they trust (e.g., internet, smartphone).
- In several markets, consumers said suppliers would need to be businesses that had already diversified successfully (such as Amazon or Google); preference for local versus international brands also varied from one market to another.

Impact on business model and strategy – three options

As described in our findings, there is a consensus across countries that the current relationship between consumers and utilities is distant and transactional. This lack of trust means utilities need to decide what they want to achieve and what relationship they want with customers in the future – otherwise, their efforts to create smart services and businesses could be frustrated.

So where is the value in smart? There are some benefits that all utilities should achieve, including cost savings from automated meter reading, operational improvements and increased efficiency. There may also be revenue opportunities, such as selling data to a third party (depending on your legal and regulatory environment) and new services related to the smart home.

We see three options in terms of strategy and business models:

1. "Business as usual" – treating smart as an infrastructure upgrade and improving customer communications enough to make smart meter rollouts a success.
2. Customer-focused strategy – changing the business to exploit the value of smart data and offer smart services, perhaps through joint ventures with trusted consumer brands.
3. Exit strategy – in competitive markets where this is possible, deciding that you can't excel in this arena and choosing to exit the retail customer market.

Business as usual

Many utilities intend to hold back on change and only enter the smart market when it reaches a tipping point. This is a perfectly viable option. But business as usual does not mean "ignoring the customer." It will still require P&Us to make some (minimal) changes to ensure the successful rollout of smart meters, primarily in educating and informing consumers. Those that fail to make these improvements risk losing customers in competitive markets and risk failed implementations in regulated markets.

Our consumer focus groups revealed a wide variation in understanding and awareness of smart meters. Most consumers said they would like to receive or access information from utilities. But they also wanted information from neutral, unbiased third parties, such as the government, regulatory institutions or independent consumer advice centers.

Rollout of smart meters is still some way off in many markets, while alternative technologies for home services (e.g., mobile phones) are already well established. Any communication on this topic therefore needs to shout loudly, using a wide range of channels. It also needs to focus on creating interest and excitement, rather than simply imparting practical information. And it needs to present a clearly differentiated value proposition for the P&U sector.

> *"[P&Us] approach all the clients in the same way. There's no individualization in terms of what they offer." (France)*

Customer-focused strategy

For those who choose to change their business to exploit the potential of smart, it's important to leave behind the traditional "commodity buying" relationship. But our focus group findings show that P&U's existing brands do not possess the necessary "stretch" to allow them to do this. Customers do not feel sufficient brand allegiance to trust utilities in supplying other products or services.

Changes to the business model must incorporate the fundamentals of customer care and trust. Trust underpins absolutely everything: only if it is firmly embedded in your customer relationship can you proceed to implement and present your smart offering successfully.

Consumers stated very clearly that they wanted energy companies to improve their core services and customer service before they would trust them to offer other smart services, such as those related to energy monitoring, remote control of home appliances or EV charging.

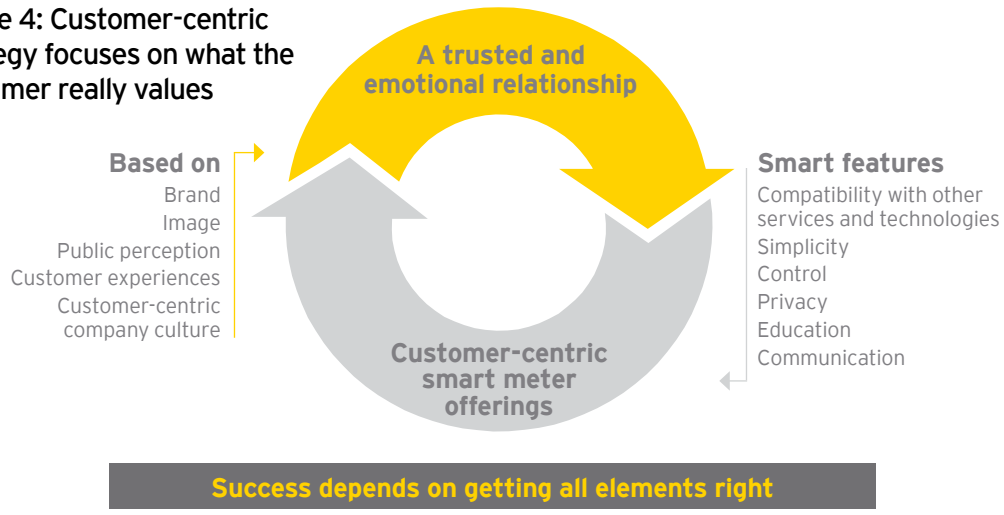
As described in our findings, utilities interested in offering smart services that stretched beyond this "zone of comfort" cannot go it alone – they need to partner or form a joint venture with trusted consumer brands to be credible suppliers. This will allow P&Us to stretch the breadth and depth of services they offer.

Exit strategy

For those in competitive markets who decide that the challenges of smart are too great, exiting the retail customer market is an option. If you decide to change your position on the value chain, such as by refocusing on transmission or generation, speed is of the essence.

Generally speaking, those who sell early get the better deal. To be in the strongest position, companies will need to make decisions on how to value and package retail assets for the leading sale outcome.

Figure 4: Customer-centric strategy focuses on what the customer really values



Six factors for success

All utilities need to improve how they handle their customers. The new smart metering technology increases the frequency and complexity of interaction with energy buyers, creating massive new volumes of data about patterns of energy use.

In our focus groups, we identified six key factors that would enhance consumer focus and help smart services succeed:

1

Compatibility

Consumers assess the complete product or service (including technology, price, convenience, manageability, ubiquity, prestige) by comparing it with alternatives and well-known products or services. Smart metering must be as convincing as the smartphone – and integrated with it.

2

Simplicity

Consumers want products and services that are easy to use, have uncomplicated designs and offer clear value and benefit. This is especially true with increasingly complex and time-pressured lifestyles. The more complex your service is, the harder the fight for acceptance and popularity (see page 13 for an example of excessive complexity in EV charging).

3

Control

There is a balance between simplicity and retaining control. For example, automatic switching to a better tariff did not appeal, even if it saved consumers money, because it removes the element of personal choice.

4

Privacy

While concerns about privacy vary by market, with the US being particularly sensitive, these are heightened when information about consumers is pooled from multiple sources. However, concerns can be outweighed if consumers better understand the benefits to them.

5

Education

Awareness of smart meters varies greatly. Consumers want and expect education about smart metering from utilities, as well as government bodies and the media. This is even more important when new smart services are offered.

6

Benefits

Communication must focus on consumer benefits, not product features, to make smart meters a success. Utilities should clearly explain what the meters allow customers to do in terms that are easily understood – for example, by showing the monetary value saved, not the kilowatts.

It's not enough to improve just a few of these aspects. P&Us must get all six factors right for smart meters and services to be understood by, and appeal to, consumers – and offer P&Us a major opportunity for revenue growth.

Survey approach and next steps

The global consumer research program was co-developed by Ernst & Young and TNS Research International. Our objectives were to:

- Understand consumers' experiences and perceptions of P&U companies
- Establish how they perceive smart metering
- Determine consumer interest in smart services beyond energy monitoring — specifically, services relating to energy services, data services, home services, smart life and EVs
- Explore consumer responses to the provision of services by existing energy suppliers and new entrants

We conducted research in 13 countries (see map) across North America, Europe and the Asia-Pacific region.

We ran discussions with a minimum of two consumer groups in each country: a young family group (children in the household under 10) and an older family group (children in the household between 10 and 18). All discussions took place in urban locations due to the presence of infrastructure and the focus on early adopters. In India and China, we also conducted a focus group in a rural location, as these areas are changing rapidly and require different services than those in urban areas. In South Korea, we hosted a discussion with pre-family respondents to capture perceptions of smart services in this technologically advanced market.

Figure 5: Our smart focus group locations

The smart services we discussed

We introduced a variety of ideas for smart services to our consumer focus groups, with a brief scenario describing why each service might be beneficial.

Energy app

This is a simple application that allows consumers to monitor domestic energy use and identify where they could make savings. Smart meters in the home measure energy use by room or appliance and provide information on real-time energy consumption via smartphone and computer.

Energy management system

Using the information captured by domestic smart meters, the energy management system builds a profile of household energy usage patterns and requirements. It uses this to suggest how households can reduce energy bills, such as by automatically switching to cheaper tariffs or even to a different energy supplier offering the most competitive rates, or by remotely switching off appliances left on standby.

Remote home app

This allows users to control and monitor the electrical appliances in their homes via a simple online app linked to the smart meter. The app can be accessed on a smartphone or computer. This simple system allows users to turn appliances on and off, as well as monitor what appliances are being used, when and how often.

Energy card

This system allows users to bundle together the cost of all energy use, at home and outside, into one bill by inserting the card into any smart meter. Users benefit from lower energy tariffs and other benefits as a result: for example, hotels and gyms may offer reduced rates for energy card users.

Data sharing

This is a voluntary plan that consumers can elect to join. It allows energy suppliers to share information from domestic smart meters with other partner companies. In return, consumers receive a discount on their energy bill along with personally targeted advertisements, offers, advice and services.

Secure access

This allows users to let people into their homes when they are not there. When a visitor rings the doorbell, a pinhole camera built into the door alerts users via smartphone. Trusted people are allowed access through a fingerprint scanner.

Smart life coach

This device gathers information on users' lives through various media including energy usage from smart meters, travel patterns from satellite navigation systems, online activity and mobile phone usage, and spending habits. It uses this information to connect people to their existing suppliers for more cost-effective support and offers a variety of selected promotions from new suppliers.

Mobility card

This gives users access to public transportation services and to a fleet of electric cars in and around the city. The cost of all public transport journeys, vehicle rental and electricity used to power the cars is charged to the home energy bill by swiping the card through a reader.

Electric vehicles (EV)

EV batteries can be charged at home or at public charging stations. Smart meters enable the utility company to create a flexible pricing system that provides lower energy prices at off-peak hours. EV owners can choose to charge their battery at the cheapest time of day. Because the price of electricity may fluctuate, when the price is high consumers can sell any unused electricity stored in the car battery back to the public grid at a higher rate than they paid.

Follow-up sector survey tracks industry's response

Following the consumer focus group discussions, we conducted sector research to understand utilities' current customer strategies and to capture their reactions to what consumers told us. The results of the sector research, based on interviews with the leading P&Us in the countries where we conducted focus groups, will be published in a companion report available in October 2011.

Ernst & Young and the smart customer

Ernst & Young professionals understand the global impact of smart technology, as well as specific issues in national markets. Our objective is to help you make appropriate decisions by providing sound, independent and unbiased advice. We have the experience and capabilities to help P&Us control risk, reduce costs and unlock customer value throughout the whole smart metering journey.

Strategy	Key issues and challenges	How Ernst & Young can help
Business as usual	▸ Achieving a minimal level of customer involvement ▸ Preventing customer resistance ▸ Fulfilling regulatory and legal requirements ▸ Delivering pilot projects and rollouts successfully ▸ Performance improvement	▸ Defining your customer proposition ▸ Improving operations through customer and market segmentation, customer service effectiveness and customer service processes ▸ Communication and marketing strategy or planning ▸ Supply chain management ▸ Project management
Customer-focused strategy: ▸ Strengthening existing business capabilities ▸ Joint ventures and partnering	▸ Fundamental changes to business strategy ▸ Establishing trusted and strong customer relationships ▸ Achieving customer engagement ▸ Make-and-buy decisions in customer-related areas ▸ Identification and selection of potential joint venture partners ▸ Implementing joint ventures	▸ Customer strategy ▸ Digital strategy ▸ Transforming your business model ▸ Joint ventures to provide new services – identifying target partners, mergers and acquisitions ▸ Change management
Exit strategy	▸ Stakeholder management ▸ Carve-out issues, including separation of IT or other shared services ▸ Getting the best price for the retail business	▸ Defining exit strategies ▸ Identifying potential buyers ▸ Vendor due diligence ▸ Carve-outs

For more information on this report

For detailed results from our consumer focus groups in individual countries, please get in touch with your personal Ernst & Young contact, or call any member of our smart team listed on the following page.

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