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Strategic Positioning of Energy as a Service Providers: An Empirical Study of Consumer Preferences in the European Renewable Energy Sector

Maissa Rouissi
International Master of Science in Management

Carried out under the supervision of:
Arash Laghaie

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Abstract

The Energy-as-a-Service (EaaS) model is reshaping the renewable energy sector, transitioning from traditional energy delivery to integrated, consumer-centric solutions. This research investigates the attributes that most significantly drive consumer adoption of EaaS in Europe and explores strategies for effective market positioning. Using perceptual mapping and conjoint analysis, informed by expert interviews and consumer surveys, the study uncovers critical trade-offs, such as technological innovation versus affordability and community engagement versus accessibility. Key findings emphasize the importance of seamless transitions, technological sophistication, and contract flexibility. The research offers strategic insights for EaaS providers navigating consumer priorities in an evolving energy market.

Keywords: Energy-as-a-Service (EaaS), Renewable Energy Adoption, Consumer Preferences, Perceptual Mapping, Conjoint Analysis, Market Positioning Strategies

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Introduction

If you could design the ideal energy system for the future, what would it look like?

It would be clean, seamlessly integrated, and tailored to community needs, offering flexibility and accessibility to all. The traditional model of centralized energy generation, where power flows one way to passive, rate-paying consumers, is giving way to a more dynamic and consumer-focused approach. In this evolving landscape, Energy-as-a-Service (EaaS) redefines energy consumption by packaging renewable energy solutions into tailored, subscription-based services designed to meet diverse consumer needs while prioritizing sustainability.

The Energy-as-a-Service (EaaS) model represents a significant transformation in how energy is consumed and managed, shifting the focus from ownership of energy-generating assets to a service-oriented relationship between providers and consumers. Similar to the rise of electric vehicle leasing, this new energy model allows providers to offer a comprehensive suite of services beyond just supplying power. Consumers can now subscribe to a full package, including system installation, maintenance, monitoring, and expert consulting. (Enel X, 2023). By removing the need for upfront capital expenditure, EaaS is democratizing access to renewable energy technologies, such as solar and wind power, by shifting the financial burden of ownership to the provider.

The EaaS model is particularly well-suited to the renewable energy sector, where capital-intensive infrastructure, such as solar panels or wind turbines, often represents a significant barrier to entry for consumers. By offering these technologies as a service, providers are lowering the financial barriers that prevent widespread adoption, while also offering continuous maintenance and system upgrades. This approach fosters a long-term relationship with customers, ensuring energy efficiency and cost-effectiveness over time. Moreover, as the European market increasingly emphasizes energy sustainability, this model is emerging as a solution that aligns with regulatory mandates and consumer preferences.

Relevance of the Research

The relevance of studying the adoption of EaaS models in the European residential market cannot be overstated. From a business perspective, this represents a lucrative opportunity. The European residential EaaS market, valued at EUR 2.1 billion in 2023, is projected to grow at a robust compound annual growth rate (CAGR) of 9.7% through 2032 (Global Market Insights, 2024). Key market players like Enel X, Iberdrola, and Siemens AG are capitalizing on this growth by expanding their service offerings, which now include solar PV installations, energy storage systems, and energy management software (Enel X, 2023). As these companies diversify their solutions, they cater to an expanding audience that demands energy independence, resilience, and efficiency.

This shift towards EaaS models is not only a business opportunity but also an essential driver for environmental sustainability. The increasing adoption of renewable energy technologies is a direct response to the urgent need to mitigate climate change. The European Union has set aggressive targets for carbon neutrality by 2050, which requires a 55% reduction in greenhouse gas emissions by 2030 compared to 1990 levels (European Commission, 2021). The energy sector is central to achieving these goals, as it is responsible for over 75% of total EU emissions (European Environment Agency, 2020). EaaS models can significantly contribute to reducing carbon emissions from homes. By simplifying access to renewable energy technologies, these models encourage a shift away from fossil fuels and towards cleaner energy sources. By facilitating the transition to decentralized and electrified energy systems, EaaS promotes the use of low-carbon technologies and contributes to global climate change mitigation efforts.

Beyond regulatory and environmental factors, consumer behavior is also shifting. Rising energy costs, driven by fluctuating utility tariffs and increasing demand, are pushing homeowners to seek out long-term solutions that offer financial stability and efficiency. In this context, EaaS provides a unique value proposition: it offers consumers predictable energy costs, enhanced operational transparency, and reduced carbon footprints—all without the need for large, upfront investments.

Research Question

Given the growing importance of these trends, this research addresses the question: **Which attributes of Energy-as-a-Service (EaaS) models most significantly influence consumer adoption in the European renewable energy market, and how can suppliers effectively position and differentiate their services to align with emerging consumer demands?**

Methodology

To address this research question, our study will employ two crucial methodologies: perceptual mapping and conjoint analysis. Both are highly effective tools in marketing research, particularly for understanding consumer preferences and decision-making in complex markets like EaaS.

Perceptual Mapping will allow the research to visualize how consumers perceive different EaaS providers and service attributes along multiple dimensions. By mapping these perceptions, we can identify the psychological associations consumers hold with various service features, such as cost, technological sophistication, environmental impact, and reliability. This method helps us detect "white spaces" in the market, where untapped opportunities for differentiation exist. Identifying these dimensions will be key to understanding where current players excel and where they may be falling short in meeting consumer expectations.

Conjoint Analysis, on the other hand, is designed to simulate real-world decision-making by presenting consumers with a series of trade-offs between different service attributes. This method allows us to quantify the relative importance of each attribute in driving consumer choices—whether it's cost savings, environmental benefits, or ease of use. By evaluating how consumers prioritize these features, suppliers can fine-tune their service offerings to better align with market demand. The insights from conjoint analysis will be critical for determining which attribute combinations are most likely to result in increased adoption of EaaS models.

These methodologies will be supplemented by expert and consumer interviews. Industry experts will provide insight into broader market trends, technological innovations, and strategic priorities within the renewable energy space, while consumer interviews will offer a ground-level perspective on the factors that influence adoption. Together, these qualitative and quantitative approaches will create a comprehensive understanding of both the supply and demand sides of the market.

Structure of the Research

This report begins with a foundational context section, offering a detailed overview of key market trends, regulatory drivers, and the evolving landscape of Energy-as-a-Service (EaaS). This section serves as a primer for readers who may be unfamiliar with the industry, breaking down the complexities of EaaS and its role within the broader renewable energy transition. Establishing this context is critical for understanding the significance of the research and the strategic opportunities it seeks to address.

Building on this groundwork, the literature review delves into the current state of knowledge on EaaS models, the adoption of renewable energy technologies, and the regulatory and environmental dynamics shaping the market. By reviewing a diverse range of academic, industry, and governmental sources, this section identifies existing insights into the research question while highlighting gaps that this study aims to address. The literature review also provides a theoretical basis for the use of perceptual mapping and conjoint analysis, situating these methodologies within the broader field of consumer behavior and marketing research.

Following the literature review, we conduct expert interviews with professionals across the energy and renewable sectors, including individuals from the companies under study. These interviews, involving roles such as product managers, marketing strategists, and sustainability officers, offer a practitioner's perspective on how EaaS providers currently position their services and address consumer demands. The insights gained will shape the subsequent phases of the research, ensuring relevance and practical applicability.

The next phase involves consumer interviews, which are designed to segment consumers into defined personas based on demographic, behavioral, and psychographic characteristics. These interviews will yield preliminary insights into consumer priorities, enabling the refinement of attributes for perceptual mapping and conjoint analysis.

The report then transitions to perceptual mapping, a visual tool that illustrates consumer perceptions of EaaS models along critical dimensions. This analysis will uncover how consumers evaluate various providers relative to important attributes, identifying gaps in the competitive landscape and opportunities for strategic differentiation.

Finally, the research culminates in conjoint analysis, which quantifies the trade-offs consumers are willing to make between different EaaS attributes. This phase provides robust, data-driven insights into the factors most influential in driving adoption, such as ease of transition, technological sophistication, affordability, and flexibility. These findings will guide providers in tailoring their offerings to align with consumer needs, delivering actionable recommendations for market positioning and differentiation in the EaaS space.

Preview of the Results

The adoption of Energy-as-a-Service (EaaS) models is shaped by a complex set of consumer priorities, where cost savings—though important—are only part of the equation. Our findings indicate that ease of transition, technological sophistication, flexibility, and affordability are central to consumer decision-making. These preferences reveal a nuanced hierarchy, where seamless onboarding and accessible solutions often take precedence over advanced features or community-driven initiatives, particularly in the initial stages of adoption.

EaaS represents a pivotal shift for energy providers, combining renewable energy delivery with service-oriented models to address consumer needs while aligning with Europe's regulatory and sustainability objectives. The study highlights the importance of reducing barriers to adoption, such as by offering flexible contracts and intuitive onboarding processes, to attract a broader audience. Additionally, while sustainability and community-oriented

solutions remain valued, these attributes are often secondary considerations when compared to practical factors such as affordability and accessibility.

To succeed, providers must adopt a phased approach. The initial focus should be on streamlining adoption by simplifying the consumer journey and enhancing accessibility through digital transformation. As consumer familiarity grows, providers can expand their portfolios with innovative technologies and community-focused solutions that align with broader environmental goals. This research provides a foundation for actionable recommendations, helping providers tailor their offerings to meet evolving consumer expectations in the European EaaS market while achieving differentiation in an increasingly competitive landscape.

Preliminary Interviews: Insights, Hypothesis Formation, and Consumer Personas

In preparation for the perceptual mapping survey, **six expert interviews** were conducted to provide a deeper understanding of the Energy-as-a-Service (EaaS**)** market. These interviews were pivotal in refining our hypotheses and pinpointing the key dimensions for deeper analysis, particularly regarding how EaaS providers can strategically position their services to align with evolving consumer needs and shifting market dynamics. The selected participants, representing major industry players such as Schneider Electric, Enel X, Engie, Siemens, Veolia, and an academic expert from KU Leuven, provided a diverse range of perspectives from both the corporate and academic spheres. Comprehensive company profiling and background research were conducted to gain insights into the organizational structures and market approaches of these entities, which are detailed in ***Appendix 1***. This preparatory work ensured that our discussions were both targeted and relevant, allowing us to explore the strategic nuances each company brings to the EaaS landscape..

These interviews provided both **macro-level insights** into regulatory and market dynamics and **micro-level insights** into consumer behavior, technology adoption, and service differentiation strategies. Below, we discuss the most critical questions we asked during each

interview and the insights obtained. The findings will inform the perceptual mapping study that follows, guiding the identification of key **associative dimensions** that influence consumer perception of EaaS offerings.

Project Engineer – Schneider Electric (France Office)

Schneider Electric has established itself as a leader in energy management and automation, offering comprehensive EaaS solutions that emphasize energy efficiency and smart grid technologies. Our discussion with their Project Engineer aimed to uncover the technical constraints Schneider Electric faces in scaling EaaS services and how they plan to overcome these obstacles through technology and market strategy.

Key Questions Asked:

1. How does Schneider Electric address the technical challenges of integrating renewable energy systems into existing infrastructures?
2. What role do predictive maintenance and real-time data analytics play in improving the EaaS model's value proposition?
3. How do performance guarantees through energy performance contract**s** (EPC) influence customer adoption in Europe?

Key Insights:

- **Interoperability between old and new systems** was identified as a significant challenge in the mass rollout of EaaS solutions. Schneider Electric's existing infrastructure, built on legacy systems, often needs to be integrated with modern IoT-based energy management tools. This presents a friction point, especially for residential consumers who require seamless, plug-and-play solutions.
- **Predictive maintenance**, facilitated by AI-driven analytics, was highlighted as an essential value driver for Schneider's EaaS offerings. Consumers—particularly in commercial settings—are more likely to adopt EaaS if they can see measurable operational savings through automated energy optimization and proactive issue detection. This insight is timely, given the increased focus on reducing operational

costs in post-pandemic Europe, where businesses are being forced to optimize processes for efficiency.

- **Energy performance contracting (EPC)** is crucial for driving adoption in both commercial and residential contexts. Schneider Electric's use of EPCs, which offer performance guarantees on energy savings, helps reduce risk for clients. This is increasingly important in an energy market where cost volatility and regulatory pressure (such as carbon pricing) make long-term energy planning more complex. EPCs ensure predictable outcomes, which is a key concern for risk-averse industries.

Senior Energy Market Analyst – Enel X (Germany Office)

Enel X, a subsidiary of Enel Group, focuses on digital energy solutions and smart energy infrastructure. Our interview with the Senior Energy Market Analyst centered on how European regulations and evolving consumer preferences are influencing the company's EaaS strategy, particularly in the areas of pricing, sustainability, and smart infrastructure deployment.

Key Questions Asked:

1. How are regulatory policies like the European Green Deal influencing EaaS adoption in Germany and Europe more broadly?
2. What pricing models resonate most with consumers, particularly those driven by sustainability goals?
3. How is Enel X differentiating itself through the integration of smart technologies in a crowded market?

Key Insights:

- **Regulatory incentives** are a significant driver of EaaS adoption in Germany, where energy policies are aligned with decarbonization goals. Enel X sees subsidies for

renewable energy installations and energy efficiency mandates as key levers for accelerating consumer interest in EaaS, especially for households looking to reduce their dependence on traditional energy suppliers. Moreover, carbon taxation and penalties for exceeding emission targets are pushing businesses toward EaaS as a way to manage energy demand more efficiently.

- **Pricing models** that emphasize dynamic pricing and cost transparency have shown the greatest traction. In particular, time-of-use pricing, where consumers are charged different rates based on peak and off-peak energy usage, has been effective in shifting consumption patterns and encouraging more responsible energy use. As energy costs become increasingly volatile due to geopolitical factors (such as the 2022 Russian energy crisis), these flexible pricing mechanisms are becoming more attractive to both residential and commercial consumers.
- Enel X is focusing heavily on **smart home integration**, offering consumers end-to-end energy management solutions that integrate renewable energy generation, storage, and usage optimization within the home. This includes the deployment of smart thermostats, automated lighting, and appliance monitoring systems that communicate with one another to optimize energy consumption in real time. The expert emphasized that consumers are increasingly seeking holistic energy solutions that provide both comfort and efficiency through seamless integration. This insight suggests that smart home integration will likely be a critical dimension in our perceptual mapping, as consumers will associate the convenience and simplicity of such systems with higher value propositions in EaaS offerings.

Internal Consultant – Engie (Belgium Office)

Engie is a major player in Europe's transition to renewable energy and decentralized energy systems. The internal consultant provided insights into how decentralization is reshaping the traditional energy model and how renewable energy integration is driving the EaaS model's appeal, particularly for residential consumers.

Key Questions Asked:

1. How is decentralization changing the energy value chain, and how does Engie leverage this trend in its EaaS offerings?
2. What are the most critical consumer drivers for adopting decentralized, renewable energy systems?
3. How is Engie managing the challenge of integrating intermittent renewable energy into its EaaS platforms?

Key Insights:

- **Decentralization** is one of the most disruptive trends reshaping the European energy market. Engie's approach to decentralization involves the integration of microgrids and distributed energy resources (DERs), such as solar panels and battery storage, into its EaaS offerings. This not only enables greater energy independence for consumers but also reduces grid congestion, a growing issue as energy demand increases across Europe..
- The **demand for renewable energy** is particularly high among younger consumers and eco-conscious segments. Engie has observed that energy independence is becoming a primary driver for residential consumers adopting EaaS, as they look for ways to buffer themselves against grid volatility and price increases. This aligns with broader European trends, where the pursuit of energy sovereignty has accelerated due to geopolitical instability and climate policies that prioritize renewable energy over fossil fuels.
- A significant challenge lies in managing the **intermittency** of renewable energy sources. Engie is addressing this by leveraging advanced energy storage solutions and predictive analytics to smooth out fluctuations in energy supply. The ability to ensure energy reliability in the face of intermittency will likely emerge as a critical dimension in the perceptual mapping survey, as consumers increasingly value both energy independence and reliability.

Strategy and GTM Officer – Siemens (Netherlands Office)

Siemens is recognized for its cutting-edge smart grid technologies and digital energy platforms. Our interview with the Strategy and Go-To-Market (GTM) Officer centered on Siemens' approach to market differentiation and consumer education, particularly in competitive and tech-driven markets like Europe.

Key Questions Asked:

1. What unique value propositions differentiate Siemens' EaaS offerings in the competitive European market?
2. How does Siemens approach the education of consumers about the benefits of EaaS?
3. How does Siemens manage the balance between affordability and technological sophistication in its EaaS services?

Key Insights:

- Siemens differentiates itself by offering highly **customized solutions** for different market segments. The company uses advanced predictive maintenance and real-time energy management systems to offer higher levels of service reliability, which is especially appealing to commercial and industrial consumers.
- **Consumer education** is a central pillar of Siemens' EaaS strategy. The expert emphasized that many consumers still lack a clear understanding of what EaaS entails and its long-term benefits. Siemens invests in digital platforms and interactive tools that allow consumers to simulate potential cost savings and environmental impact from switching to EaaS. Educating consumers on the value of energy optimization and long-term savings is crucial in driving adoption.
- **Affordability** vs. **sophistication** is a balancing act Siemens manages through modular service offerings. Consumers are given flexibility to start with basic energy management services and scale up to more advanced features—like smart home integration or automated energy trading—as their energy needs evolve.

Academic Researcher – KU Leuven (Belgium)

The academic perspective was provided by a researcher from the Master in Energy for Smart Cities program at KU Leuven, which focuses on the integration of renewable energy technologies into urban environments. This interview offered valuable insights into the research and development trends shaping the future of EaaS, with particular emphasis on the intersection of smart cities and energy management.

Key Questions Asked:

1. What emerging trends in smart cities and energy management will most impact the growth of EaaS?
2. How are academic institutions contributing to the development of new technologies and frameworks for EaaS?
3. What consumer behavior trends are most relevant when studying adoption patterns for EaaS models?

Key Insights:

- The expert highlighted the role of **smart city integration** as a key driver for the advancement of EaaS solutions. As European cities invest heavily in smart grids, renewable energy infrastructure, and urban energy storage, EaaS becomes essential for managing these interconnected systems. Urbanization and the rapid growth of smart cities create a demand for scalable, intelligent energy solutions that not only address environmental challenges but also enhance the quality of life for urban residents. In this context, EaaS offers a powerful framework for managing complex urban energy flows, ensuring sustainability, resilience, and energy efficiency. The smart city agenda plays a pivotal role in shaping consumer expectations. The move toward urban digitalization has heightened consumer awareness of smart energy solutions, making technological sophistication a key dimension for EaaS providers to consider. The researcher suggested that technological adoption and user experience would likely emerge as critical variables in the perceptual mapping survey, especially for younger, tech-savvy urban consumers who value efficiency, convenience, and innovation in their energy solutions.

- **Collaboration between academia and industry** is crucial in advancing EaaS technologies. Research institutions like KU Leuven are actively involved in R&D partnerships with energy companies, focusing on the development of next-generation technologies such as AI-driven energy optimization, blockchain-enabled peer-to-peer energy trading, and advanced energy storage solutions. The researcher noted that these academic-industry collaborations are playing a significant role in creating the technological underpinnings that will support the future scalability of EaaS across Europe.
- Regarding **consumer behavior**, the researcher identified three core dimensions that are most relevant for studying EaaS adoption patterns: environmental consciousness, cost sensitivity, and technology adoption. European consumers, particularly in urban settings, are increasingly prioritizing sustainability in their energy choices, with a growing willingness to invest in technologies that reduce their carbon footprint. At the same time, cost savings remain an essential factor, particularly in light of rising energy prices and economic uncertainty. Finally, the researcher emphasized that the successful adoption of EaaS will depend on how well consumers perceive the ease-of-use and integration of the technological tools—such as smart home systems and automated energy management platforms—within their daily lives.

Strategic Insights and Hypotheses: A Multi-Dimensional Exploration of Drivers and Perceptions in the EaaS Market

The insights gathered from these six expert interviews have provided a comprehensive, multi-dimensional perspective on the Energy-as-a-Service (EaaS) landscape. By synthesizing insights from the technical, regulatory, and consumer behavior perspectives, we have identified several key dimensions that will be explored in greater depth through our perceptual mapping and conjoint analysis. These dimensions include **cost sensitivity**, **environmental impact**, **technological integration**, and **energy independence**.

Moreover, these interviews have allowed us to form several refined **hypotheses** that push beyond the obvious drivers, offering a more nuanced exploration of how consumers and businesses will approach EaaS:

1. **Cost Sensitivity vs. Long-Term Value Hypothesis**: While cost savings remain important, we hypothesize that long-term value creation—including aspects such as predictive energy optimization and performance guarantees (as seen in Schneider Electric's approach)—will increasingly outweigh immediate cost concerns. Consumers may prioritize services that offer long-term stability, risk reduction, and measurable performance outcomes, particularly in regions with volatile energy markets or tight regulatory constraints.
2. **Sustainability as a Trust Marker Hypothesis**: Beyond simple environmental awareness, we hypothesize that consumers will view sustainability as a marker of trust and brand integrity. Companies that authentically align their services with broader environmental commitments (e.g., Engie's decentralized renewable energy integration) will be seen as more reliable and future-proof, influencing both adoption rates and **brand loyalty**. Consumers are likely to differentiate between superficial "greenwashing" and genuine, embedded sustainability practices.
3. **Technological Sophistication and Consumer Control Hypothesis**: We anticipate that technological sophistication will not just be an enabler but a key differentiator in consumer empowerment. Consumers who are drawn to EaaS will likely place a high value on their ability to monitor, control, and optimize their energy consumption in real time (as noted by Enel X's smart home integration). However, the hypothesis extends further: we expect that the perceived ease-of-use and seamless integration of smart home technologies will create a distinct advantage for providers, tipping the scales in favor of those who offer user-friendly, plug-and-play solutions.
4. **Energy Independence and Psychological Security Hypothesis**: Beyond the technical benefits of energy independence, we hypothesize that consumers' desire for autonomy over their energy supply will be driven by a need for psychological security. In light of geopolitical instability and volatile energy markets, consumers will increasingly view self-sufficiency as a safeguard against external disruptions. This shift in mindset may

be more pronounced among residential users in decentralized energy systems (like Engie's model) and those in countries with aggressive renewable energy targets.

Additionally, these expert interviews have revealed critical industry challenges such as navigating diverse regulatory environments, the complexities of integrating decentralized systems, and the need for effective consumer education to demystify the EaaS model and emphasize its long-term value. These challenges will be central to our analysis, informing how EaaS providers can strategically position their offerings to meet consumer expectations while adhering to regulatory constraints.

Developing Consumer Personas from Expert Insights: Refining Market Segmentation for EaaS

The expert interviews conducted across industry leaders and academic voices provided crucial insights into the evolving dynamics of the Energy-as-a-Service (EaaS) market. These interviews did not merely confirm the known drivers of consumer behavior but revealed nuanced perspectives on how different consumer segments approach energy consumption, technology adoption, and sustainability. The creation of **consumer personas** based on these insights allows us to systematize our understanding of the market and apply targeted analysis to our subsequent perceptual mapping and conjoint analysis.

While our research will engage all participants through a **single survey**, the personas we developed will enable us to segment the data effectively. This segmentation will illuminate distinct consumer needs and motivations, ensuring that our analysis is attuned to the diverse approaches consumers take toward adopting EaaS solutions. Below, we explain the rationale behind the creation of these personas and how they will enhance the depth and applicability of our research.

Extracting Consumer Drivers from Expert Insights

The expert interviews with key figures from Schneider Electric, Enel X, Engie, Siemens, Veolia, and KU Leuven highlighted the multifaceted nature of consumer engagement in the EaaS market. What emerged was a set of **core behavioral drivers** that cut across various

demographic and psychographic profiles. These include cost sensitivity, environmental consciousness, technological comfort, and the pursuit of energy independence.

- **Cost sensitivity**, as identified by Schneider Electric, is an overriding concern for many consumers, particularly in regions where energy prices fluctuate due to external factors like geopolitical instability. Performance guarantees, such as those embedded in energy performance contracts, appeal strongly to consumers seeking long-term financial predictability and reduced operational costs.
- **Environmental consciousness** was repeatedly stressed by experts from both Engie and Veolia, who noted that a growing segment of consumers is driven by a deep commitment to sustainability. These consumers prioritize the reduction of carbon footprints and are willing to invest in services that align with their ethical and environmental values.
- **Technological comfort** is another critical dimension. As discussed by Enel X and Siemens, the rapid evolution of smart home systems and real-time energy management platforms is redefining how consumers engage with energy. Consumers are no longer passive recipients but active participants in their energy consumption, empowered by IoT and AI-driven solutions.
- Finally, **energy independence**, as emphasized by Engie, is increasingly appealing to consumers seeking autonomy from traditional grid systems. This driver is especially pronounced in decentralized systems where individuals can generate, store, and even sell back excess energy, giving them more control over both costs and supply.

Developing Consumer Personas: Key Dimensions

Based on these interviews, we identified four key dimensions—price sensitivity, environmental consciousness, technological comfort, and energy independence—that allow us to craft distinct consumer personas. These personas serve as heuristic tools to conceptualize different consumer mindsets and behaviors, creating a foundation for segmentation even within a unified survey design.

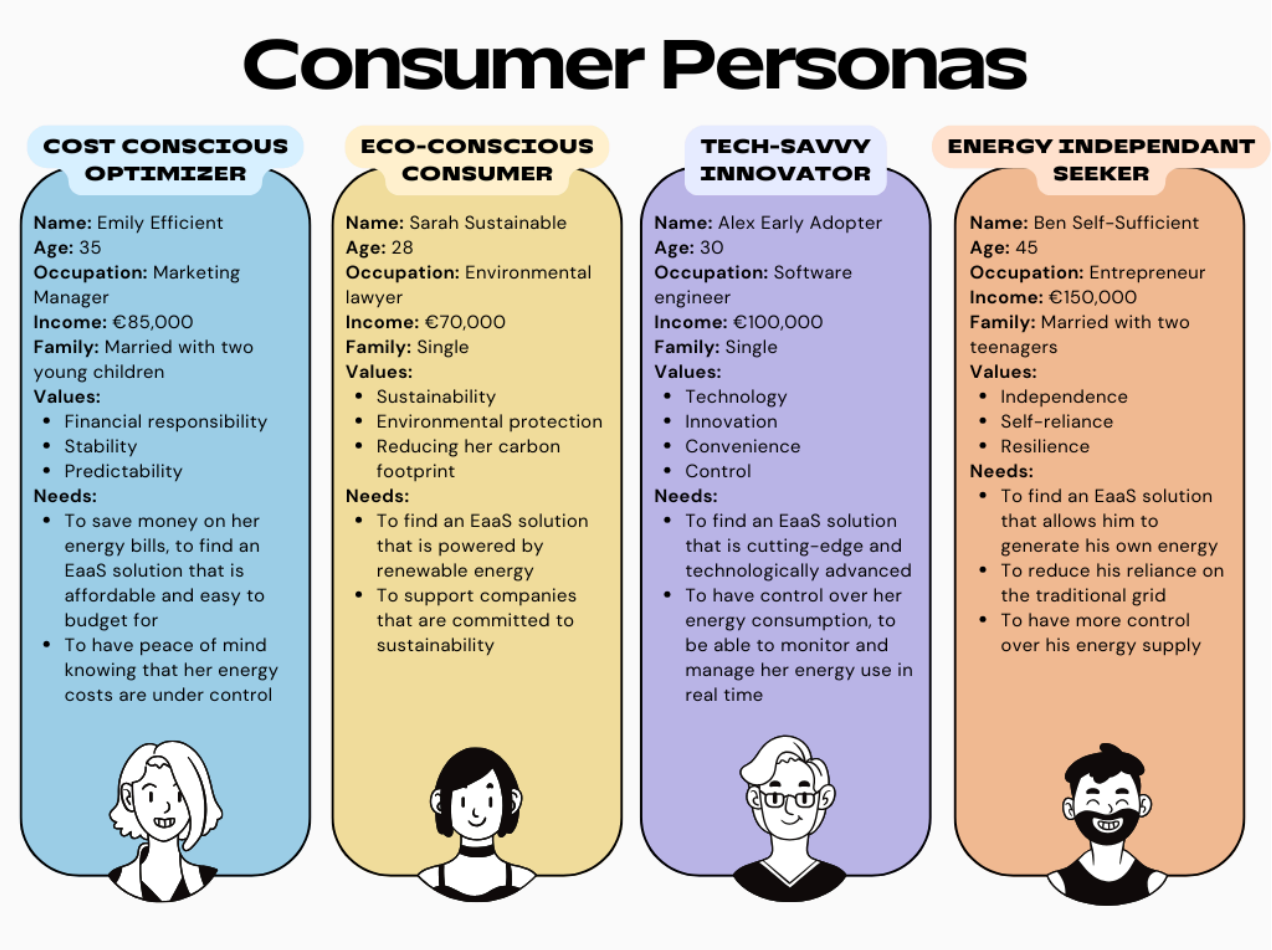
Each persona embodies a specific blend of these key dimensions, reflecting the varying degrees of emphasis that different consumer segments place on these factors:

1. **Cost-Conscious Optimizer**:
   This persona is defined by a relentless focus on financial prudence. Motivated primarily by cost savings, the Cost-Conscious Optimizer seeks out EaaS solutions that offer predictable financial benefits, such as dynamic pricing models and energy performance guarantees. This segment is particularly sensitive to pricing transparency and will be drawn to services that minimize upfront costs and optimize energy usage over time. Schneider Electric's emphasis on performance contracting suggests that this persona would value services that provide quantifiable, long-term return on investment. For this group, energy is a cost center to be managed with precision.
2. **Eco-Conscious Consumer**:
   This persona places sustainability at the forefront of decision-making. Willing to pay a premium for environmentally friendly services, the Eco-Conscious Consumer is deeply motivated by ethical considerations and the desire to minimize their environmental impact. This segment responds to renewable energy integration, carbon footprint tracking, and transparency around environmental benefits. Both Engie and Veolia emphasized that eco-conscious consumers seek clear, measurable outcomes in terms of reducing their contribution to global warming. For this group, energy consumption is not merely a utility but a moral choice, and they are particularly responsive to brands that prioritize environmental transparency.
3. **Tech-Savvy Innovator**:
   A highly engaged and forward-thinking persona, the Tech-Savvy Innovator is drawn to technological sophistication and user control. They are not just adopters of EaaS; they are looking for integrated smart home systems, real-time data on energy consumption, and seamless interaction between devices. As identified in Enel X and Siemens interviews, these consumers view technology as a pathway to convenience and optimization. The ability to monitor, adjust, and automate energy use through a unified platform appeals to their desire for efficiency and control. This persona would be more

likely to adopt cutting-edge solutions and seek out brands that offer an intuitive, tech-centric user experience.

4. **Energy Independent Seeker**:
   This persona is driven by a desire for autonomy and resilience. Energy Independent Seekers prioritize systems that allow them to generate, store, and manage their energy, reducing their reliance on traditional grids. Engie's emphasis on decentralized energy systems underscores the appeal of independence for this segment, particularly in the face of geopolitical instability and rising energy prices. These consumers view EaaS as a tool for achieving self-sufficiency and mitigating external risks, and they are likely to be early adopters of microgrid and energy storage solutions.

Below is a representation of the four consumer personas identified. These personas highlight the key demographic and behavioral segments targeted, offering insights into their unique motivations, values, and needs within the European EaaS market.



Refining the Survey with Personas in Mind

Although we will deploy a **single survey** across the consumer base, our four personas will guide the **framing of questions** and the **interpretation of results**. By ensuring that the survey covers a broad range of concerns—from pricing to technology adoption and environmental sustainability—we can ensure that it speaks to the needs of different segments without explicitly siloing the respondents into distinct categories. The personas will also help us segment and analyze the data more effectively post-survey.

For instance:

- **Cost-conscious consumers** will be drawn to questions about **pricing models** and **performance guarantees**.
- **Eco-conscious consumers** will respond strongly to questions about **renewable energy use** and **carbon footprint reduction**.

- **Tech-savvy consumers** will value insights on **smart home integration** and the **user experience** of energy management tools.
- **Energy-independent consumers** will be interested in topics around **self-sufficiency**, decentralized systems, and **energy storage solutions**.

Thus, the survey becomes a **multi-dimensional tool**, capable of capturing the diverse priorities of all consumer types, while enabling us to conduct a more granular segmentation during the analysis phase.

How Personas Serve the Research

The creation of these personas serves several critical functions in our research:

- **Refining Hypotheses**: Each persona reflects different value propositions that are likely to influence EaaS adoption. By segmenting the market into these groups, we can better test our hypotheses on cost sensitivity, sustainability, technological adoption, and energy independence.
- **Improving Perceptual Mapping**: Personas will inform how we visualize consumer perceptions in our perceptual mapping survey, enabling us to identify distinct market gaps and opportunities for service differentiation.
- **Guiding Strategic Recommendations**: The personas provide a structured framework for tailoring recommendations to EaaS providers. By understanding the unique drivers behind each consumer segment, providers can develop more targeted marketing strategies, optimize product offerings, and address specific market needs.

Ultimately, these personas will allow us to engage with the complexities of the EaaS market more effectively, ensuring that our research captures the diverse consumer perspectives that shape the market's future. They will guide both the interpretation of survey data and the strategic conclusions we draw regarding market positioning and service customization.

Consumer Perceptions: Principal Component Analysis and Perceptual Mapping

Data Collection and Sampling Strategy

To gain a deep understanding of consumer perceptions regarding the leading Energy-as-a-Service (EaaS) providers, we conducted a survey targeting individuals within relevant consumer groups. These groups were carefully selected based on the previously defined personas representing various demographics and psychographics with distinct energy needs and preferences. To enhance authenticity and relevance, we used LinkedIn and other social networking platforms, reaching out to individuals who actively engaged with the pages or other online communities of companies such as Schneider Electric, Siemens, Enel X, Engie, and Veolia. **This approach ensured that respondents had a baseline familiarity with the companies under study,** allowing us to collect informed opinions that reflected the perceptions of potential or current customers within the EaaS market. We were able to collect a total 63 responses over a period of 4 weeks.

Methodology: Principal Component Analysis (PCA)

Our survey was designed to capture a wide range of perceptual dimensions, covering attributes such as **Good Value**, **Green Commitment**, **Honesty**, **Consistent Service**, **Trustworthiness**, **Helpful Customer Service**, **Ease of Transition**, **Innovation**, **Flexibility**, and **Community-Centeredness** (see ***Appendix 2*** for detailed descriptions of each attribute). These attributes were chosen to reflect both functional aspects (e.g., service quality, affordability) and emotional aspects (e.g., trust, alignment with community values) of the consumer-brand relationship in the EaaS sector, providing a holistic view of consumer perceptions.

To analyze these dimensions, we employed **Principal Component Analysis (PCA)** in SPSS, a statistical method used to simplify complex data sets by reducing multiple correlated variables into a smaller set of core components. This approach, known as **factor reduction analysis**, identifies patterns among the variables, helping to uncover underlying structures in consumer

perceptions. By doing so, PCA reveals which attributes are most closely associated with each other and distills them into a few overarching components or factors. This process is especially valuable in market research, as it allows us to condense an array of related attitudes into meaningful, manageable categories that highlight the primary drivers of consumer preferences.

To further refine these components, we applied **Varimax rotation**—a technique that maximizes the variance of loadings across variables on each component. In simple terms, Varimax rotation adjusts the orientation of the components to make the relationships between variables and components as clear and distinct as possible. This rotation ensures that each attribute is strongly associated with only one component, making the results easier to interpret by aligning each component with the most relevant attributes. Ultimately, Varimax rotation enhances the clarity of the analysis, providing a more focused understanding of the key perceptual dimensions that shape consumer attitudes within the EaaS market.

By using PCA with Varimax rotation, we distilled the original set of perceptual attributes into two primary components, each representing a unique dimension of consumer perception.

PCA Output: Scree Plot and Total Variance Explained

The scree plot and Total Variance Explained table (refer to ***Appendix 3*** for the complete PCA output) indicate that two primary components effectively capture over 91% of the total variance in consumer perceptions. Specifically, **Component 1** explains approximately **74.88%** of the variance, and **Component 2** accounts for an additional **16.17%**, yielding a cumulative variance of **91.05%**. This high cumulative variance demonstrates that these two components provide a comprehensive and insightful summary of the data, encapsulating the key differentiators in consumer perceptions among the surveyed companies. In other words, the two components serve as the primary perceptual dimensions that shape how consumers evaluate and compare EaaS providers.

Interpretation of the Rotated Component Matrix

The Varimax-rotated component matrix offers clearer insights into how different attributes relate to each component, highlighting two primary dimensions of consumer perception:

1. **Component 1: Innovation and Trust vs. Affordability, Flexibility, and Consistency**
    - **Attributes with Positive Loadings**: Trustworthy, Innovative, Honest, Helpful
    - **Attributes with Negative Loadings**: Flexible, GoodValue, Consistent
    - **Interpretation**: Component 1 captures a **Trust and Innovation Orientation** but reflects **trade-offs regarding flexibility, affordability, and consistency**. Brands that score high on this component are perceived as highly innovative, transparent, and customer-focused. However, these same brands may be viewed as less flexible, more premium-priced, and potentially less consistent due to the complexity associated with innovative offerings. **This aligns with the idea that advanced technology solutions in the energy sector can require rigid structures and higher costs, possibly limiting the flexibility of service packages.**
2. **Component 2: Community and Environmental Focus vs. Ease of Transition**
    - **Attributes with Positive Loadings**: CommunityCentered, GreenCommitment
    - **Attributes with Negative Loadings**: TransitionEase
    - **Interpretation**: Component 2 captures a **Community and Environmental Orientation**, where brands are perceived as eco-conscious and community-focused. However, the negative loading on TransitionEase suggests that consumers may find it challenging to switch to these brands, likely due to the community-specific or sustainable nature of their offerings, which may require greater adaptation. The positive loading on GreenCommitment in this component aligns well with community-centered companies often focusing on environmental goals, even though the loadings are close enough to suggest a small overlap in green perceptions across both components.

Addressing Component Rotation in the Perceptual Plot

The rotated component plot visually represents the components in rotated space. Interestingly, Component 1 and Component 2 appear to have swapped orientations, which is a typical outcome of Varimax rotation. In this process, Varimax rotation repositions the axes to maximize the variance of loadings on each component, aligning each with its strongest defining attributes. This adjustment enhances interpretability by making it easier to see which attributes are most associated with each component, but it does not alter the underlying structure or meaning of the components themselves.

As a result, while the plot may visually flip the axes, the interpretations of each component remain consistent with the data's inherent structure:

- **Component 1 - Innovation vs. Contract Flexibility and Value for Money**

Component 1 highlights the tension between attributes such as innovation, trustworthiness, and helpfulness, which are perceived as indicators of advanced, cutting-edge offerings, and attributes like contract flexibility and affordability. Providers that emphasize technological sophistication and innovation often gain trust and are seen as highly reliable, but this focus may come at the expense of offering adaptable contractual terms or being perceived as cost-effective. For instance, brands positioning themselves as "innovative" may be associated with rigid contracts and premium pricing, which could deter consumers who value the ability to customize service terms or prioritize affordability in their decision-making.

- **Component 2 - Community Orientation vs. Accessibility and Ease of Transition**

Component 2 underscores the balance between community-focused and environmentally sustainable attributes versus accessibility and ease of transition. Providers that lead in community engagement and environmental commitment—such as those supporting local energy projects or promoting sustainability initiatives—are valued by consumers with strong environmental and social priorities. However, these offerings may be perceived as less accessible due to potential complexities in onboarding or perceived exclusivity in service delivery. Consumers prioritizing seamless transitions may view highly community-centric

models as more demanding, particularly if they require significant behavioral changes or infrastructure adjustments.

This blending of dimensions arises from the natural relationships within the data, where certain attributes consistently co-occur, shaping each component into a mix of factors that reflect consumer perceptions in a more nuanced way. The Varimax rotation simply clarifies these relationships, making the distinct yet blended nature of each component easier to interpret.

The resulting components illustrate the intricate interplay of consumer priorities within the EaaS market. Providers face the dual challenge of aligning advanced innovation with adaptable, consumer-friendly contract options while balancing community engagement and sustainability with straightforward, accessible service models.

Perceptual Mapping and Positioning of EaaS Providers

The perceptual map (*Figure 4*) offers a visual representation of each EaaS provider's positioning along the two main perceptual dimensions:

- **Schneider Electric** and **Siemens**: Positioned in the lower left quadrant, these companies score relatively low on **Innovation Meets Value** but high on **Community Orientation Balanced with Accessibility**. This reflects their broad, established presence and large network of branches, which enhance accessibility and ease of transition for consumers. Their extensive global reach and ability to offer personalized, localized services make them approachable options for a wide range of consumers, who view them as accessible and community-oriented. However, they are perceived as less innovative compared to newer, specialized players in the EaaS sector, potentially due to a focus on traditional service structures and established technology rather than cutting-edge solutions.
- **Enel X**, **Engie**, and **Veolia**: In contrast, these companies are positioned in the upper right quadrant, indicating a high score on **Innovation Meets Value** but relatively low on **Community Orientation Balanced with Accessibility**. As newer, more specialized providers, they are seen as leaders in innovation and advanced technology but are

perceived as less accessible or affordable. Their technology-driven, specialized offerings may not cater as broadly to community-based initiatives, and the limited affordability may further restrict their appeal to consumers seeking accessible solutions. This positioning highlights a trade-off: while these brands are viewed as innovative, they have yet to establish the same accessibility and community integration as larger, traditional providers like Siemens and Schneider Electric.

- **Potential Market Opportunity**: The perceptual map reveals an underrepresented area in the upper right quadrant for brands capable of combining **technological innovation, affordability, flexibility, and community engagement**, all within an environmentally sustainable framework. The data suggests that most providers tend to excel in only a subset of these attributes—either focusing on innovation and premium offerings or emphasizing community-centered, accessible solutions at the expense of advanced technology. This gap indicates a potential demand for EaaS providers that can offer an integrated value proposition, balancing high-tech solutions with affordability and ease of adoption. Successfully occupying this space could appeal to a broad consumer segment seeking advanced, eco-friendly energy options that are both adaptable and rooted in community values, setting such a provider apart in the EaaS market.

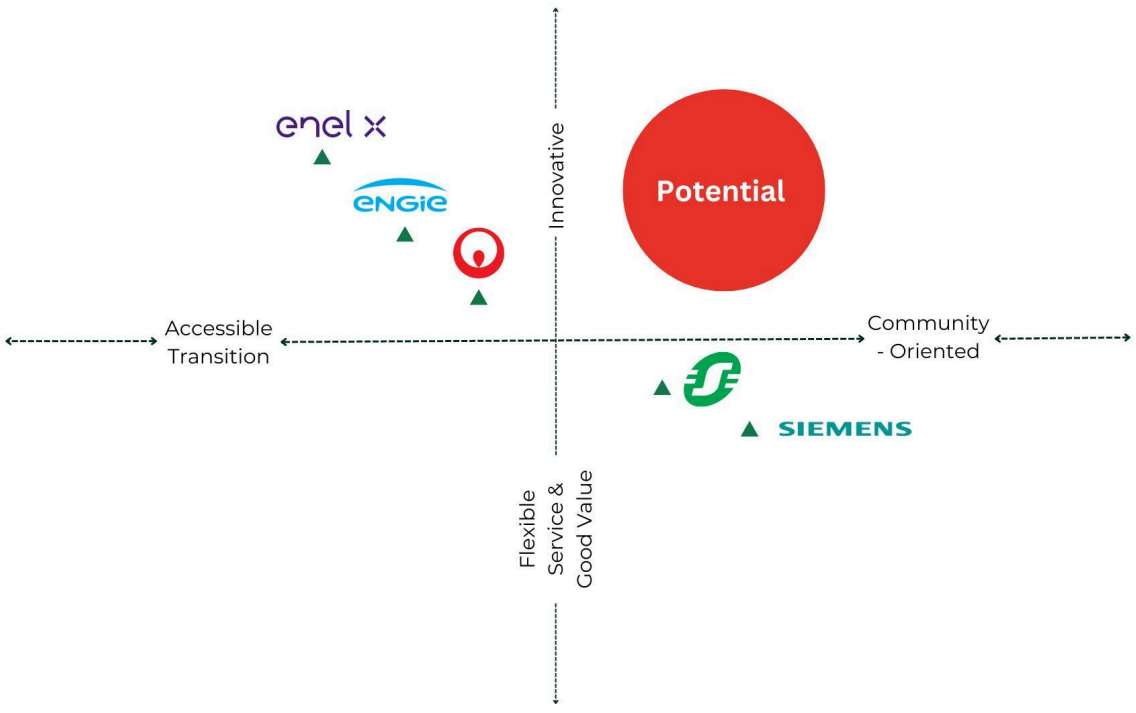


Figure 4: Perceptual Map

Results Recapitulation: Key Consumer Perception Trade-Offs and Strategic Implications

The analysis of consumer perceptions in the Energy-as-a-Service (EaaS) market unveils two critical trade-offs that underpin how providers are evaluated. These findings highlight the nuanced and multidimensional priorities of consumers, offering valuable insights into the drivers of adoption within this emerging sector. By examining these trade-offs, we identify not only the key attributes that shape consumer preferences but also the inherent tensions providers must navigate to effectively position their offerings.

The first trade-off revolves around the balance between technological innovation and the provision of flexible and affordable services. Providers that emphasize advanced technological solutions—such as cutting-edge energy management systems or AI-driven optimization tools—are often perceived as innovative, trustworthy, and forward-thinking. These attributes strongly appeal to early adopters and tech-savvy consumer segments who prioritize technological sophistication as a marker of reliability and market leadership. However, the prioritization of innovation can inadvertently limit flexibility in service design and customization, creating rigidity in areas such as contract terms or service modularity. Moreover, the premium pricing associated with technologically advanced solutions can alienate cost-sensitive consumers, restricting broader market penetration. This trade-off underscores a fundamental tension within the EaaS market: while technological advancement is a powerful driver of perceived value, its benefits must be carefully balanced with affordability and adaptability to meet the needs of diverse consumer segments.

The second trade-off emerges from the interplay between community orientation and sustainability versus accessibility and ease of transition. Providers that adopt a community-centered approach—focusing on localized renewable energy initiatives such as neighborhood solar arrays or wind energy projects—are often viewed as eco-conscious and socially responsible. This alignment with consumer values fosters trust and loyalty, particularly among those who prioritize environmental stewardship and community engagement. However, the localized nature of these offerings can create barriers for

consumers seeking standardized, easily accessible energy solutions. The perceived complexity of community-oriented models, coupled with the potential need for specific infrastructure or resources, may deter individuals who prioritize convenience and a seamless transition process. This trade-off illustrates the challenges faced by providers striving to align with both sustainability-driven values and the growing demand for effortless consumer experiences.

These findings have profound implications for EaaS providers seeking to differentiate themselves in an increasingly competitive landscape. Innovation-driven providers may attract early adopters but must address the limitations of inflexibility and high costs to expand their appeal. Incorporating adaptable contract options, modular service packages, or tiered pricing models can enhance accessibility without compromising the innovative edge that defines their value proposition. Similarly, community-focused providers, while resonating strongly with environmentally conscious consumers, should invest in simplifying the onboarding experience and standardizing aspects of their service delivery to broaden their reach. By doing so, they can bridge the gap between sustainability and convenience, ensuring that their offerings remain relevant to a wider audience.

These trade-offs underscore the complexity of consumer decision-making within the EaaS market. Providers that can effectively balance advanced technological offerings with flexibility and good value for money, or community engagement with accessibility and ease of transition, are better positioned to differentiate themselves meaningfully. Addressing these competing priorities not only enhances market appeal but also positions providers to capture a larger and more diverse consumer base.

Looking forward, the next stage of this research will involve conducting a conjoint analysis to quantitatively assess the relative importance of individual attributes—such as innovation, affordability, sustainability, and ease of transition—in shaping consumer preferences. While the perceptual mapping analysis has illuminated broad perceptual dimensions and revealed critical trade-offs, conjoint analysis will provide granular, data-driven insights into the specific trade-offs consumers are willing to make. This methodological progression will enable a deeper understanding of how consumers prioritize various service features, offering actionable intelligence for EaaS providers to refine their strategies. By leveraging these

insights, providers can tailor their offerings to align with consumer priorities more precisely, ultimately fostering greater adoption and positioning themselves as leaders in the evolving EaaS market.

Consumer Preferences: Conjoint Analysis

Rationale Behind the Conjoint Analysis

While perceptual mapping offered a qualitative framework to explore broad trade-offs in consumer preferences, it lacked the quantitative rigor necessary to precisely evaluate the importance of individual attributes. Perceptual mapping provided valuable insights into the dimensions that shape the EaaS market, but it could not quantify how consumers prioritize these dimensions or the extent to which specific trade-offs influence decision-making.

Conjoint analysis is a critical next step, enabling a more granular and data-driven approach to understanding consumer preferences. Unlike perceptual mapping, which is descriptive in nature, **conjoint analysis simulates real-world decision-making by presenting respondents with hypothetical product profiles comprising various combinations of attribute levels.** This method allowed us to calculate the relative importance of each attribute and uncover how consumers weigh trade-offs between features such as contract flexibility, technological innovation, accessibility, and price. By quantifying these preferences, we moved beyond surface-level observations to gain actionable insights into which combinations of features most influence consumer choice.

Structure and Design of the Conjoint Analysis

The conjoint analysis was designed to capture the multifaceted nature of consumer decision-making in the EaaS market, focusing on six core attributes identified through earlier research. These attributes were selected to reflect both **functional dimensions** (e.g., affordability, flexibility, accessibility) and **emotional dimensions** (e.g., sustainability, community involvement), ensuring a comprehensive representation of the factors driving consumer choices.

1. **Technological Innovation**: Spanning from basic technology to cutting-edge advancements, this attribute reflects perceptions of efficiency, reliability, and technological sophistication.
2. **Community Orientation**: Ranging from no community involvement to fully integrated community solutions (e.g., neighborhood solar panels), this attribute measures the social and localized value of EaaS offerings.
3. **Affordability (Monthly Cost)**: With price points set at €29, €39, €49, and €59, this attribute addresses consumer sensitivity to cost and their perceived value for money.
4. **Flexibility (Contract Options)**: From rigid contracts to fully flexible arrangements, this attribute explores the importance of adaptability in contract terms and the freedom to modify or terminate services without penalties.
5. **Accessibility (Ease of Transition)**: Capturing the experience of switching providers, from highly challenging to seamless transitions, this attribute addresses logistical and psychological barriers that may deter adoption.
6. **Environmental Sustainability**: Ranging from basic renewable energy offerings to advanced sustainability initiatives, such as full carbon offset programs, this attribute reflects the growing consumer interest in environmental responsibility.

The inclusion of **four levels per attribute** ensured a sufficient range of realistic combinations, allowing for detailed insights into how consumers prioritize and trade off these features. This approach struck a balance between capturing nuanced preferences and maintaining clarity for respondents during the survey.

A detailed explanation of each attribute and its levels is provided in **Appendix 4**, along with the descriptions shared with survey respondents to ensure their understanding of the scenarios presented. This structure enabled us to simulate realistic decision-making scenarios, offering a robust foundation for analyzing consumer preferences.

Attribute-Level Preferences and Key Consumer Insights

The conjoint analysis provided critical insights into consumer preferences within the Energy-as-a-Service (EaaS) market, quantifying the importance of six key attributes. Ranked

from most to least important, these attributes offer a detailed view of how consumers prioritize specific features and their associated trade-offs. Each attribute's significance is analyzed, with implications drawn from the preferred levels to guide strategic positioning.

- **Accessibility (Ease of Transition)** (24.7% relative importance)
    - **Most Preferred Levels:** "Seamless transition" and "smooth transition."
    - **Implications:** Accessibility emerged as the most critical factor, highlighting that consumers prioritize a frictionless onboarding process. Providers that can deliver effortless transitions, through features like personalized onboarding support or clear, step-by-step processes, are likely to capture higher consumer interest. Conversely, perceptions of a "challenging transition" can deter potential adopters, emphasizing the need for reducing perceived switching barriers.
- **Technological Innovation** (20.8% relative importance)
    - **Most Preferred Levels:** "Cutting-edge technology" and "advanced technology."
    - **Implications:** Innovation plays a vital role in signaling reliability and future-forward solutions. Consumers associate advanced technology with trustworthiness and value, making it essential for providers to showcase innovative features such as smart energy management systems or AI-based optimization tools. The preference for "cutting-edge technology" suggests that merely keeping pace with market standards may not suffice for tech-savvy segments seeking differentiation.
- **Flexibility (Contract Options)** (16.4% relative importance)
    - **Most Preferred Level:** "Fully flexible contracts."
    - **Implications:** Flexibility is not just a preference but an expectation, particularly for consumers seeking autonomy in managing their energy usage and terms. "Fully flexible contracts," which allow changes without penalties, resonate strongly. Providers offering rigid contracts risk alienating consumers, as adaptability increasingly becomes a baseline expectation in the subscription economy.
- **Community Orientation** (13.5% relative importance)

    - **Most Preferred Levels:** "Community-focused offerings" and "fully integrated community solutions."
    - **Implications:** While less important than functional attributes, community orientation remains a meaningful differentiator. Consumers value localized solutions, such as neighborhood-specific renewable projects or community solar panels, which reinforce a sense of collective impact. Providers that incorporate these elements into their offerings can attract segments prioritizing sustainability and social responsibility, even if this appeal is more niche compared to broader attributes like accessibility or innovation.
- **Environmental Sustainability** (13.1% relative importance)
    - **Most Preferred Level:** "Renewable energy with limited environmental initiatives."
    - **Implications:** Despite its low relative importance, sustainability remains a significant consideration. Interestingly, consumers favor moderate sustainability initiatives over more advanced efforts like "full carbon offset programs." This suggests that while environmental goals are valued, they are not the deciding factor. Providers should ensure sustainability enhances rather than overshadows other attributes like price or innovation.
- **Affordability (Monthly Cost)** (11.6% relative importance)
    - **Most Preferred Levels:** €29 and €39 price points.
    - **Implications:** Affordability is a secondary factor, with consumers favoring lower price tiers. However, its relatively low weight indicates a willingness to pay a premium for higher perceived value. Providers must balance competitive pricing with investments in innovation and accessibility, ensuring affordability does not come at the expense of core functionality.

This analysis reinforces the importance of attributes that ease adoption, such as accessibility and flexibility, while also highlighting the growing role of innovation and community engagement as differentiators. While affordability and sustainability matter, they act as enhancers rather than primary drivers of choice. The chart (Figure 5) below summarizes the average preferences for each attribute level, offering a clear view of which features drive consumer choice and which act as barriers.

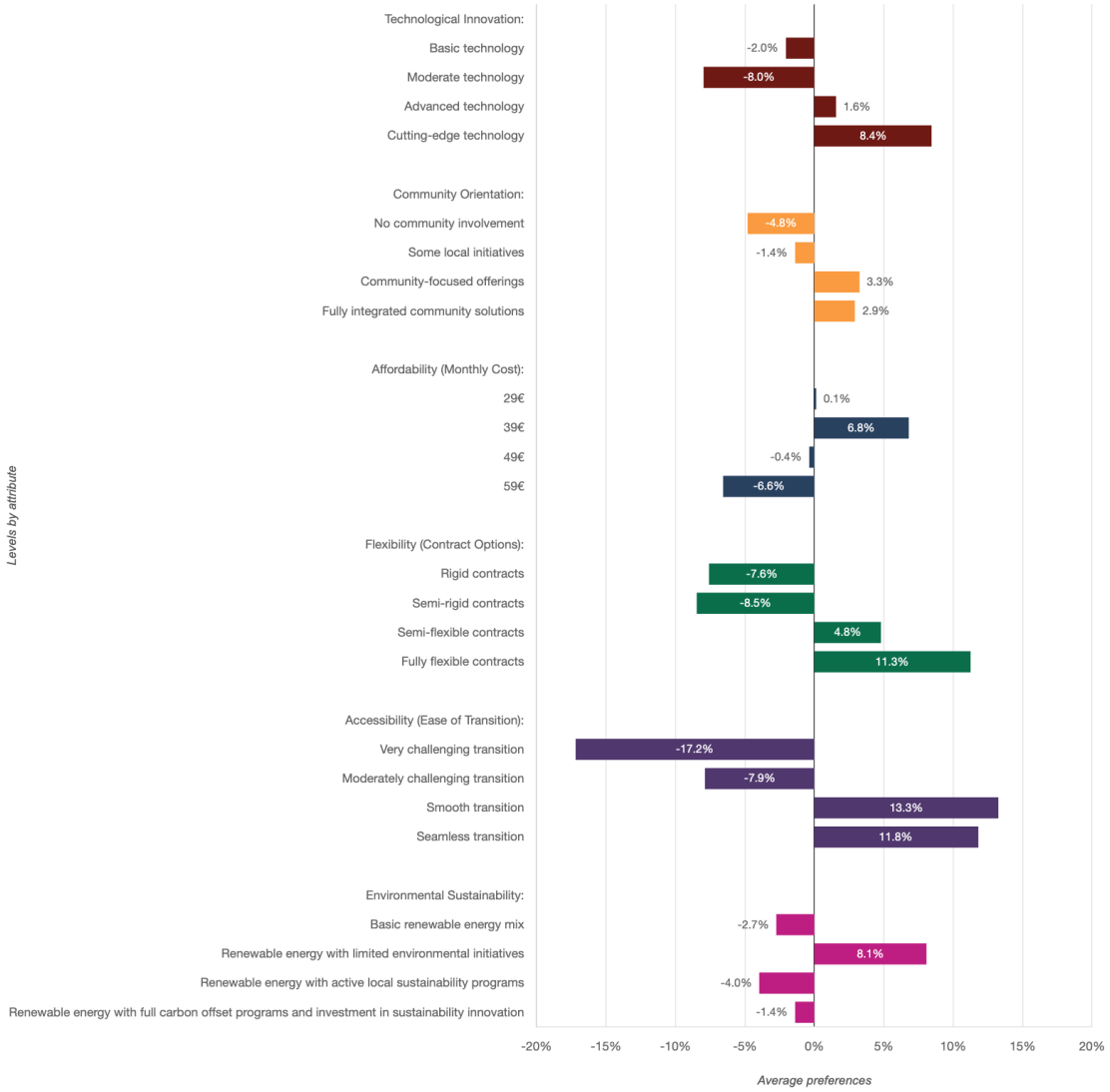


Figure 5: Average Preferences for Attribute Levels Across the EaaS Market

Dispreferences: Key Barriers to Adoption

The conjoint analysis also highlighted specific attribute levels that consumers actively rejected, shedding light on potential barriers to adoption for Energy-as-a-Service (EaaS) providers. Understanding these dispreferences is critical to avoiding misaligned strategies that could deter potential customers.

- **Low Accessibility**
  - **Disfavored Level:** "Very challenging transition," receiving the most negative preference score (-17.2%).

    - **Implications:** Accessibility stands out as the most significant barrier to adoption. A cumbersome onboarding process or perceived difficulty in switching providers is a major deterrent, particularly in a competitive market where consumers have alternatives. Providers must ensure seamless integration and proactive customer support to overcome this barrier, as even a moderately challenging transition (-7.9%) has a noticeable negative impact on preference.
- **Rigid Contracts**
    - **Disfavored Level:** "Rigid contracts" were consistently rejected, with negative preference scores (-7.6%).
    - **Implications:** Inflexible contract terms that limit consumer autonomy and adaptability are a clear misstep in this market. As flexibility emerges as a core expectation, providers offering rigid or punitive terms risk alienating consumers, particularly those who prioritize control over their service agreements. The negative response to rigidity further underscores the demand for customizable, consumer-centric offerings.
- **High Monthly Costs**
    - **Disfavored Levels:** €49 and €59 pricing tiers exhibited strong negative preferences (-0.4% and -6.8%, respectively).
    - **Implications:** While affordability ranked lower in relative importance, there is a clear threshold beyond which pricing becomes a barrier. Even innovation-focused or sustainability-conscious consumers demonstrate price sensitivity, emphasizing the need to justify premium costs with evident, high-value benefits. This is particularly relevant for middle-market consumers who may compare features across competing providers.
- **Minimal Community Orientation**
    - **Disfavored Level:** "No community involvement" registered notable dispreference (-4.8%).
    - **Implications:** As community orientation grows in importance, the lack of meaningful local initiatives is increasingly viewed as a drawback. Providers perceived as disconnected from community engagement may face challenges in

building trust and loyalty, particularly among segments that value sustainability and collective impact.

This underscores that barriers such as poor accessibility, rigidity, and high costs are not just minor inconveniences but significant deal-breakers for many consumers. Providers must address these pain points strategically, leveraging solutions like seamless onboarding, flexible contract structures, and competitive pricing models to mitigate dispreferences.

Conclusions on Consumer Preferences

The conjoint analysis reveals several critical insights into consumer preferences within the EaaS market:

1. **Accessibility as a Top Priority**
   The preference for "**seamless**" and "**smooth transitions**" underscores the significance of minimizing barriers to switching providers. Accessibility emerged as the most influential attribute, reinforcing findings from the perceptual mapping phase, where ease of transition was a central trade-off dimension. Providers must prioritize consumer-friendly onboarding processes, transparent communication, and simplified service structures to meet this demand.
2. **Innovation and Flexibility as Key Differentiators**
   "Cutting-edge technology" and "fully flexible contracts" ranked highly among preferred levels, demonstrating that technological advancement and adaptability are pivotal to capturing consumer interest. These features resonate particularly well with tech-savvy segments and early adopters, who prioritize autonomy and the latest innovations. Providers that lag in these areas risk being overshadowed by competitors offering more advanced and consumer-centered solutions.
3. **Community Engagement is Gaining Traction**
   Although not as critical as accessibility or innovation, community-oriented solutions—such as "community-focused offerings" and "fully integrated community solutions"—are increasingly valued by consumers. These preferences reflect a broader societal shift toward localized and socially responsible energy services. Providers with

robust community engagement programs have an opportunity to differentiate themselves, particularly among consumers who prioritize social impact.

4. **Affordability as a Baseline Expectation**

   Competitive pricing tiers of €29 and €39 were among the most preferred levels, highlighting the enduring importance of affordability. While consumers appreciate advanced features, price remains a decisive factor, especially for broader market segments. Providers must strike a balance between offering premium features and maintaining cost-effective pricing to remain competitive.

5. **Sustainability Within Context**

   Preferences for basic or moderate levels of environmental initiatives suggest that sustainability, while appreciated, is not a primary driver of decision-making. This is likely because the survey providers are already associated with renewable energy, making additional sustainability efforts feel less familiar or immediately relevant to consumers. As a result, environmental initiatives must be framed as part of a broader, integrated value proposition that emphasizes other consumer priorities such as affordability, accessibility, and innovation. By contextualizing sustainability within a holistic offering, providers can enhance its perceived importance and relevance.

In summary, providers must address consumer priorities holistically, balancing the practical (accessibility, affordability, flexibility) with the aspirational (innovation, community engagement, and sustainability).

Next Steps: Discussion, Managerial Implications, and Future Research

The next phase of this research will transition to a focused discussion of the findings, analyzing the trade-offs and preferences identified in the conjoint analysis. This will contextualize key priorities such as accessibility, technological innovation, and flexibility, providing deeper insights into consumer behavior within the Energy-as-a-Service (EaaS) market.

Following this, the study will outline managerial implications, offering actionable strategies for EaaS providers to optimize their offerings and positioning. The research will conclude with an exploration of its limitations and opportunities for future investigation, ensuring a comprehensive understanding of the evolving consumer landscape and paving the way for further advancements in the field.

Discussion: Analytical Insights from Perceptual Mapping and Conjoint Analysis

The results of the perceptual mapping and conjoint analysis provide a nuanced understanding of consumer decision-making in the Energy-as-a-Service (EaaS) market. These findings reveal the critical trade-offs consumers navigate when evaluating providers, highlighting key priorities such as accessibility, technological sophistication, flexibility, and community orientation. The interplay between these attributes offers insights into the drivers of consumer adoption, underscoring the complex dynamics providers must address to effectively position their offerings.

Reconciling Innovation, Flexibility, and Accessibility

The findings from the perceptual map and conjoint analysis collectively highlight a nuanced interplay between innovation, flexibility, and accessibility. The perceptual map indicates a tension between innovation and flexibility in contract options—with providers perceived as technologically advanced and innovative often lacking in adaptability. On the other hand, conjoint analysis identifies accessibility, as reflected in the preference for “seamless transition” (24.7%), as a leading attribute in consumer decision-making, slightly outweighing “cutting-edge technology” (20.8%).

This apparent divergence stems from the different lenses of the two methodologies. The perceptual map focuses on **how consumers perceive brands holistically**, suggesting that innovation is often associated with rigid structures and inflexible service models. For instance, brands leading in innovation may have established reputations for technological excellence,

but this comes at the perceived cost of adaptability in offerings, such as contract terms or modular services. In contrast, conjoint analysis emphasizes the trade-offs consumers actively make during decision-making, revealing that ease of transition—a critical form of accessibility—is prioritized even over technological sophistication.

This distinction suggests that **flexibility and accessibility are interrelated yet distinct priorities**. While the perceptual map shows that innovation-focused brands are perceived as less flexible (e.g., due to rigid contracts or limited adaptability), conjoint analysis clarifies that accessibility in onboarding and transition processes is paramount across all consumer segments. This suggests that perceptions of innovation might unintentionally signal higher switching barriers or complexity, reinforcing the need for providers to align their technological offerings with both flexible and accessible solutions.

Ultimately, the findings emphasize that **innovation is not enough on its own**—providers must actively counter the perceived trade-offs with adaptability and frictionless transitions. By integrating flexible, consumer-centric solutions into their technologically advanced services, providers can better resonate with both early adopters and mainstream consumers, mitigating barriers to adoption and maximizing market appeal.

The Role of Affordability: Baseline Expectation or Strategic Trade-Off?

The perceptual map revealed a nuanced relationship between affordability and other key attributes, notably its **negative correlation with innovation**. Brands perceived as highly innovative were often associated with premium pricing, signaling a tension between affordability and technological sophistication. This suggests that while innovation appeals to early adopters and tech-savvy segments, it risks alienating price-sensitive consumers who prioritize affordability and value for money. In this context, affordability serves as a counterweight to perceptions of exclusivity and costliness often tied to cutting-edge solutions.

The conjoint analysis further clarified affordability's role, attributing it only 11.6% of total attribute importance. While consumers demonstrated a preference for lower pricing tiers

(€29/month or €39/month), affordability was not a decisive factor in driving adoption. Instead, other attributes, such as accessibility (24.7%) and technological innovation (20.8%), carried significantly greater weight in consumer evaluations. This highlights affordability's function as a "baseline expectation"—necessary to ensure consideration but insufficient to differentiate providers in a competitive market. Consumers appear willing to pay a premium when higher prices are justified by clear, tangible benefits such as seamless onboarding, advanced technology, or enhanced energy efficiency.

The findings suggest that **affordability operates as a contextual attribute**, assessed within the broader framework of a provider's value proposition. While cost-conscious consumers may view affordability as a primary consideration, others prioritize the long-term value and outcomes associated with premium pricing tiers. For innovation-driven providers, the key challenge lies in reframing higher costs as investments in superior outcomes. For instance, emphasizing features like long-term energy savings, AI-driven optimization, or personalized service plans can shift the narrative from immediate cost concerns to value realization over time.

Providers must strategically address the tension between affordability and innovation by adopting tailored pricing and messaging strategies. **Modular service models** can play a pivotal role here. For instance, offering a core package at €29/month while providing optional add-ons for advanced features—such as predictive maintenance or community-oriented solutions—allows providers to balance affordability with flexibility. This approach caters to price-sensitive segments while showcasing the value of premium offerings, bridging the gap between cost-consciousness and innovation.

Additionally, innovation-led providers should prioritize **communicating long-term affordability** through clear messaging. Highlighting tangible benefits such as reduced energy waste, optimized consumption patterns, or enhanced reliability can position premium offerings as cost-effective solutions over time. For example, messaging like *"Invest in smarter energy today for lower bills tomorrow"* can align innovation with financial value, reducing the psychological barrier associated with higher upfront costs.

Community Orientation and the Perception of Complexity

The perceptual mapping results revealed that community orientation, characterized by offerings such as “community-focused” and “fully integrated community solutions,” holds a distinct position in the minds of consumers. These attributes are associated with ethical engagement, local sustainability, and a deeper alignment with environmental values. Brands emphasizing these aspects are perceived as community-centered and green-committed, appealing to consumers who prioritize the broader societal benefits of renewable energy solutions. However, the map also highlighted a subtle trade-off—these attributes often coexist with perceptions of complexity, which may deter segments that prioritize ease of transition or universal accessibility.

The conjoint analysis quantified this tension further, with community-oriented attributes accounting for 13.5% of overall attribute importance. While this indicates a notable level of consumer interest, it also positions community engagement below other attributes like accessibility (24.7%) and innovation (20.8%) in driving adoption. This suggests that while eco-conscious consumers find value in community-based models, a broader consumer base perceives them as secondary to more tangible benefits such as seamless onboarding or advanced technology. Moreover, the conjoint results reinforce that perceptions of exclusivity or logistical complexity linked to community engagement can act as barriers for consumers seeking straightforward and universally applicable energy solutions.

The interplay between the perceptual mapping and conjoint analysis underscores the **dual nature of community orientation**: a compelling driver for environmentally and socially conscious consumers but a potential deterrent for those seeking simplicity. For instance, while eco-conscious consumers view community-focused offerings as a differentiator that aligns with their values, cost-conscious optimizers or tech-savvy innovators may view these features as complex and lacking immediate, individual benefits.

This dynamic points to a critical challenge for EaaS providers—**how to expand the appeal of community orientation without sacrificing its localized relevance**. Messaging that emphasizes practical consumer outcomes alongside community benefits is likely to mitigate

the perceived complexity. For example, framing community-focused solutions as *"shared solar that lowers your energy bills while building a greener neighborhood"* can connect the abstract ideals of community engagement with tangible, individual advantages. Similarly, leveraging transparent technologies, such as blockchain for energy distribution, could help demystify community models, enabling consumers to visualize their personal and collective contributions to sustainability goals.

Sustainability: A Critical, Yet Often Assumed Attribute

The conjoint analysis revealed that sustainability, while an essential component of Energy-as-a-Service (EaaS) models, accounted for 13.1% of attribute importance, placing it below accessibility, flexibility, and technological innovation in shaping consumer preferences. Notably, the preference for "limited environmental initiatives" over more ambitious sustainability programs reflects a nuanced perception among consumers. This prioritization likely arises from two factors: a baseline expectation of sustainability in renewable energy services and a gap in consumers' perceived immediacy or tangibility of sustainability benefits.

In markets like Europe, where renewable energy adoption is heavily influenced by regulatory mandates and societal norms, **sustainability has transitioned from a differentiator to a hygiene factor**—a baseline expectation that does not necessarily drive purchase decisions. This is particularly true in the EaaS context, where the association with renewable energy is implicit. Consumers may perceive additional environmental initiatives, such as carbon offset programs or extensive community-driven sustainability efforts, as peripheral or even abstract if they do not directly enhance personal outcomes like cost savings or convenience.

Moreover, the preference for limited initiatives could also signal skepticism about the complexity or feasibility of ambitious environmental programs. Consumers may view such initiatives as adding layers of complexity to the service, potentially increasing costs or requiring lifestyle adjustments that deter adoption. In contrast, "limited initiatives" may be perceived as practical, achievable, and easier to integrate into existing energy systems, thus aligning with consumers' preference for simplicity and reliability.

This finding highlights an important challenge for EaaS providers: while sustainability is essential for brand credibility, it often lacks the immediacy and direct impact required to elevate it into a decisive attribute. To address this, providers must **reframe sustainability as an enabler of consumer-centric benefits**. For example, carbon offset programs can be communicated not merely as a contribution to global climate goals but as directly contributing to cleaner local air, healthier communities, or reduced future costs through energy efficiency.

Ultimately, this underscores that sustainability in the EaaS market is both critical and underleveraged. While it is a necessary baseline for providers to compete, its potential as a strategic driver lies in how well it is contextualized and connected to consumer values beyond environmental altruism. The ability to translate sustainability into personalized, tangible, and immediate benefits will determine its effectiveness in driving adoption and loyalty in the EaaS market. This requires a shift from abstract sustainability messaging to a more data-driven and outcome-oriented narrative, reflecting the real-world impact of environmental initiatives on consumers' lives.

Strategic Insights and Synthesis of Findings

The exploration of consumer perceptions within the Energy-as-a-Service (EaaS) market reveals a complex and dynamic interplay of priorities, reflecting the multifaceted decision-making processes of modern consumers. The findings indicate that accessibility stands as the most influential driver of adoption, signaling that consumers prioritize seamless transitions and ease of use over other attributes, including technological sophistication. This suggests that innovation, while critical for differentiation, can lose its appeal if it is perceived as complex or difficult to implement. Providers must confront the challenge of making advanced technology intuitive and accessible, or risk alienating broader consumer segments.

Affordability, though still relevant, emerges as a **conditional factor rather than a core motivator**. While price sensitivity is evident in preferences for lower pricing tiers, its relatively low importance (11.6% of attribute significance) underscores that affordability is evaluated in the context of the overall value proposition. Consumers appear willing to pay higher premiums when tangible benefits, such as long-term cost savings or superior energy

efficiency, are demonstrated. This challenges the traditional narrative that energy markets are primarily cost-driven, instead positioning affordability as a **baseline enabler** that must be coupled with other compelling attributes to drive adoption.

Community orientation presents a similarly dual role. While it resonates strongly with environmentally conscious consumers, contributing to trust and emotional connection, it also introduces perceptions of exclusivity and complexity. The preference for community-focused initiatives is tempered by the concern that such models may limit ease of access or universality, suggesting a **trade-off between local specificity and broader inclusivity**. Sustainability, a closely related attribute, follows a comparable pattern. It is perceived as a **baseline expectation** in renewable energy markets rather than a standalone driver, gaining importance only when tied to immediate, consumer-centric outcomes, such as reduced costs or improved local environmental quality.

Flexibility, particularly in contract options, no longer serves as a differentiator but as a **non-negotiable expectation**. This evolution reflects the growing demand for autonomy and personalization in service offerings. Flexibility must therefore be seamlessly embedded across all offerings to remain competitive, requiring providers to reframe it as an integral, rather than optional, feature.

The synthesis of these findings underscores the interconnected and context-dependent nature of consumer decision-making in the EaaS market. Attributes such as affordability and sustainability, while important, do not operate in isolation but are instead evaluated as part of a broader value framework. Similarly, innovation and flexibility are not mutually exclusive; rather, they must be reconciled to create service offerings that balance technological sophistication with adaptability.

This research demonstrates the importance of understanding not just what consumers prioritize, but how they contextualize and weigh these priorities in real-world decision-making. By critically examining these trade-offs, this study provides a foundation for actionable strategies that align with evolving consumer expectations. It also highlights opportunities for differentiation, such as integrating flexibility into innovative service designs or recontextualizing sustainability as a consumer-centric benefit.

Managerial Implications: Strategic Recommendations for EaaS Providers

The findings from this research offer nuanced insights into consumer behavior within the Energy-as-a-Service (EaaS) market, providing a foundation for strategic decision-making. To capitalize on the opportunities revealed by perceptual mapping and conjoint analysis, EaaS providers must address the inherent trade-offs between innovation, accessibility, affordability, and community orientation. This section outlines the key managerial implications derived from the analysis, offering a roadmap for providers to refine their market positioning and meet diverse consumer expectations.

Balancing Technological Sophistication with Accessibility

As highlighted in the discussion, the analysis revealed that accessibility consistently outweighs technological sophistication as a driver of consumer adoption. While innovation remains a key attractor, its value diminishes if consumers perceive it as overly complex or difficult to adopt. To capture broader market segments, providers must translate their technological advancements into user-friendly, intuitive experiences that emphasize seamless integration into consumers' lives.

One concrete approach is the implementation of **modular service models** that allow consumers to start with a basic package and gradually add advanced features as their comfort and understanding grow. For instance, a provider could offer a standard energy management package with the option to upgrade to AI-driven optimization or community-based energy-sharing features as consumers become more familiar with the system. This reduces the initial friction associated with adopting innovative solutions while keeping the path open for future engagement.

Trial periods and transparent onboarding are also critical tools for bridging the gap between innovation and accessibility. Providers could offer no-risk trial packages, allowing consumers to experience advanced technologies without the pressure of long-term commitments.

Similarly, hands-on onboarding, supported by clear instructions or interactive digital interfaces, can demystify complex technologies and build consumer confidence. For example, an onboarding app that walks consumers through setting up and customizing their energy management systems in simple steps can alleviate initial hesitations.

Finally, **data-driven consumer education campaigns** can help position innovation as a practical benefit rather than an abstract selling point. For instance, providers might develop dashboards that show real-time savings from AI-optimized energy use or emissions reductions from renewable energy adoption. Messaging could emphasize outcomes such as *"Save €150 annually with smarter energy control"* or *"Your solar panels have offset 2 tons of CO_2 this year,"* connecting technical features to measurable impacts.

In summary, providers must recognize that **accessibility is not a secondary attribute but a critical enabler of innovation's success**. Concrete strategies like modular service design, risk-free trials, and targeted consumer education will allow EaaS providers to maintain their innovative edge while broadening their appeal to less tech-savvy and mainstream consumers. This alignment of innovation with usability is essential for achieving scale in the competitive and evolving EaaS market.

Reframing Affordability in the EaaS Context

Affordability, while essential in the EaaS market, does not operate as a primary decision driver. The conjoint analysis revealed that while consumers gravitate toward lower pricing tiers, affordability ranked lower in importance compared to attributes such as accessibility and flexibility. This suggests that consumers perceive affordability as a prerequisite rather than a motivator, and their willingness to pay a premium is contingent upon clearly perceivable value additions.

To address this dynamic, providers should **rethink affordability not simply as a pricing strategy but as an assurance of value for money**. The focus should shift from positioning affordability as low-cost access to emphasizing cost-efficiency and reliability. For instance, providers could frame affordability through **consistent performance guarantees**—ensuring that the pricing reflects predictable energy savings, transparent billing, or reduced

maintenance costs over the service lifespan. This shifts the conversation from price points to **cost-effectiveness**, helping to reassure consumers about the longer-term implications of their investment.

Bundled offerings can also play a role in redefining affordability. Instead of presenting individual features with corresponding costs, providers can create simplified, all-in-one packages that reflect unified pricing structures. For example, a "fixed-rate plan" that includes renewable energy generation, maintenance, and periodic upgrades could simplify decision-making and make affordability less about upfront cost comparisons and more about long-term peace of mind.

Additionally, affordability can be positioned as a **trust-building mechanism**. Clear, upfront communication about pricing structures—without hidden fees or escalating costs—can enhance transparency and foster consumer confidence. Consumers tend to associate affordability with predictability in their expenses, particularly in a domain like energy, where cost fluctuations often lead to dissatisfaction. Providing clear guarantees around price stability or capped rate increases could enhance trust and make pricing models more compelling.

Ultimately, repositioning affordability as a **marker of reliability and fairness** rather than merely low cost ensures that it remains relevant without competing with other, higher-priority attributes. This reframing aligns with broader consumer expectations in the EaaS market, where pricing reflects not just access but also the integrity and effectiveness of the overall service.

Expanding the Appeal of Community-Oriented Solutions

Community orientation surfaced as an important, though not dominant, factor in consumer preferences, particularly resonating with environmentally conscious segments. While community-based models, such as shared solar or localized energy projects, appeal to those prioritizing ethical and sustainable practices, they are often perceived as **limited in scope** or overly complex. This association with exclusivity risks alienating consumers who value standardized and easily accessible solutions.

To overcome these limitations, providers should **position community-oriented solutions as scalable and universally beneficial**, shifting the narrative from localized impact to broader systemic advantages. For instance, instead of focusing solely on the local environmental benefits of shared solar panels, messaging could emphasize collective benefits, such as reduced energy prices, improved grid stability, or lower carbon emissions across entire regions. By framing community initiatives in terms of their contributions to widespread outcomes, providers can make them more relatable to a diverse consumer base.

Simplifying the perception of complexity is equally critical. Deploying digital tools, such as IoT-enabled devices or blockchain platforms, can demystify how community energy systems work. For example, blockchain could allow consumers to see real-time energy contributions and usage across the network, reinforcing transparency and trust. Similarly, intuitive interfaces that highlight personalized benefits, such as individual cost savings or contributions to emissions reduction, can create a stronger connection between consumers and community-focused initiatives.

Providers must also tailor their messaging to address potential concerns about exclusivity. Campaigns should emphasize inclusivity by highlighting how community-oriented projects contribute to **shared value for all consumers**, regardless of their proximity to localized initiatives. Statements like *"Empowering communities while delivering benefits to everyone"* or *"Local solutions for global impact"* can bridge the gap between niche appeal and universal relevance.

By **broadening the perceived scope and benefits** of community-oriented solutions and making them easier to understand, providers can expand their appeal beyond environmentally conscious consumers. These strategies ensure that community engagement is seen not as a niche attribute, but as an integral part of a modern, inclusive, and scalable EaaS offering.

Embedding Flexibility as a Foundational Attribute

Flexibility has emerged as a **non-negotiable expectation** in the EaaS market, with consumers favoring “fully flexible contracts” and adaptable service structures. However, its status as a baseline requirement diminishes its role as a competitive differentiator. Instead of leveraging flexibility as a standalone feature, providers must **embed it seamlessly into a broader value proposition**, ensuring it enhances other key attributes such as accessibility, affordability, and innovation.

To achieve this, providers should design **service models that adapt to the diverse needs of modern consumers**. For instance, flexible contracts that accommodate short-term commitments could appeal to renters or individuals who frequently relocate, addressing their unique circumstances without compromising service quality. This approach not only meets the demand for autonomy but also reflects the growing desire for services that align with transient lifestyles.

For innovation-driven segments, pairing flexible contracts with cutting-edge technological solutions creates a compelling offering. A flexible service might allow consumers to add or remove features like smart energy management or AI-driven optimization on demand, ensuring personalized experiences for tech-savvy users. Conversely, affordability-focused consumers may value flexibility through options like **predictable payment plans or temporary cost adjustments**, reducing financial uncertainty while maintaining uninterrupted service.

Clear and effective communication is essential to emphasize the **ease and relevance of flexible offerings**. Messaging that highlights features such as *“Energy plans designed for your changing needs”* or *“Tailored solutions without long-term commitments”* can resonate across diverse consumer segments. Additionally, showcasing real-world examples—like how a renter was able to transition seamlessly between homes using a flexible EaaS plan—can build trust and confidence in the provider’s adaptability.

By treating flexibility as an **embedded, complementary feature** rather than a standalone selling point, providers can position it as an enabler of broader value. This integrated approach ensures flexibility meets baseline expectations while supporting other critical attributes, such as innovation and accessibility, thereby broadening its appeal in a competitive and evolving EaaS market.

Sustainability as a Complementary Feature, Not a Standalone Driver

The analysis revealed that sustainability, while appreciated, functions more as an expected baseline than a decisive factor in consumer decision-making. Modest environmental initiatives were favored over ambitious sustainability programs, likely reflecting the inherent association of renewable energy with EaaS offerings. This suggests that while sustainability remains a critical component of the value proposition, it is not a standalone driver of adoption and must be embedded within a **broader narrative of tangible benefits**.

To maximize its impact, providers should position sustainability as a **supporting feature that enhances other valued attributes**, such as cost savings, energy security, or community engagement. For instance, linking carbon reduction initiatives to financial benefits—such as lower energy bills due to increased efficiency—can elevate the relevance of sustainability for cost-conscious consumers. Similarly, connecting sustainability efforts to improved local outcomes, like better air quality or healthier communities, makes them more relatable and immediate. Messaging could emphasize statements like, *"Cleaner energy that saves you money and improves your neighborhood,"* merging environmental responsibility with personal and community benefits.

Providers can also **demonstrate the tangible outcomes of sustainability initiatives** using accessible metrics and storytelling. For example, offering consumers a dashboard that tracks their individual carbon savings or showing how local renewable energy projects contribute to broader community goals can foster a sense of personal impact and engagement. Highlighting these direct, measurable outcomes helps bridge the gap between abstract sustainability concepts and the consumer's lived experience, reinforcing the practical value of these initiatives.

Additionally, sustainability should be framed as a **natural extension of innovation and efficiency** rather than a standalone commitment. For example, providers could present advanced energy systems not only as technologically superior but also as inherently sustainable, reducing waste and maximizing resource efficiency. This integration allows

sustainability to complement other high-priority attributes, such as accessibility and flexibility, ensuring it enhances rather than competes with the broader value proposition.

By embedding sustainability into a narrative of measurable benefits and complementary attributes, providers can elevate its importance without positioning it as the sole focus. This approach ensures sustainability remains essential while aligning with the multifaceted priorities of modern EaaS consumers, ultimately contributing to a more holistic and compelling value proposition.

Addressing Diverse Preferences Through Strategic Segmentation

The diverse consumer priorities revealed in this research highlight the need for **enhanced segmentation** to refine existing personas and develop more targeted marketing strategies. While foundational personas were established earlier in this study to capture broad archetypes, further segmentation informed by the findings from perceptual mapping and conjoint analysis can enable providers to **tailor their offerings more precisely**. This refinement is critical for addressing the nuances in consumer preferences, ensuring that marketing efforts and service designs resonate effectively with distinct audience groups.

The analysis uncovered key variations in how consumers value attributes like accessibility, innovation, affordability, and community orientation. Early adopters, for instance, prioritize **technological innovation and sustainability**, valuing cutting-edge solutions and eco-conscious offerings. These individuals are more likely to engage with messaging that emphasizes advanced features such as AI-driven energy optimization or the provider's contribution to decarbonization efforts. On the other hand, mainstream consumers lean toward **accessibility, affordability, and simplicity**, favoring offerings that highlight seamless onboarding processes, transparent pricing, and predictable service terms.

To refine personas further, providers can use insights from conjoint analysis to **quantify the weight of specific preferences** for different consumer segments. For example, the analysis revealed that accessibility (ease of transition) consistently ranks higher than innovation for broader segments. Incorporating this insight, a "Mainstream Consumer" persona could

emphasize the appeal of user-friendly onboarding tools and flexible contracts, while a "Tech Enthusiast" persona could highlight modular service add-ons and next-generation technology.

Geo-targeted marketing campaigns could also enhance segmentation by aligning messaging with regional consumer priorities. In environmentally conscious regions, for example, campaigns might emphasize **community-oriented solutions** such as shared solar projects or local wind energy initiatives, using localized storytelling to build trust. Conversely, in cost-sensitive markets, campaigns could focus on **pricing transparency and long-term savings**, such as *"Save €300 annually while contributing to a greener planet."*

Refining personas through enhanced segmentation allows providers to better align their messaging, product design, and service delivery with consumer expectations. By leveraging data-driven insights, providers can ensure their marketing strategies resonate more effectively, boosting adoption and trust across diverse consumer segments. This approach underscores the importance of integrating research findings into actionable, consumer-focused strategies, ultimately creating more tailored and impactful EaaS offerings.

Synthesis and Strategic Outlook

Success in the EaaS market hinges on providers' ability to address **key consumer trade-offs** while remaining adaptable to evolving market dynamics. Accessibility emerged as a critical driver, underscoring the importance of seamless onboarding processes, while innovation and flexibility shape perceptions of value among diverse consumer segments. Sustainability, though essential, is best positioned as a complementary feature, integrated within broader value-driven offerings.

Given the variability in consumer preferences and the rapid evolution of the market, further testing and refinement of these strategies are necessary. By remaining responsive to emerging trends and grounded in a data-driven understanding of consumer behavior, providers can craft targeted, adaptable strategies that foster adoption and ensure long-term growth.

Potential Go-to-Market Strategy: Strategic Blueprint for Entering the Energy-as-a-Service Market

Given the nascent state of the EaaS market, it is imperative that a new entrant adopts a cautious yet ambitious strategy that aligns with consumer priorities while differentiating itself from existing players. This blueprint envisions a strategic pathway, emphasizing adaptive positioning, targeted segmentation, modular service design, and transparent communication, all underpinned by scalable technological and operational capabilities.

Positioning for Market Differentiation

Establishing a distinct and compelling value proposition is the cornerstone of any GTM strategy in the EaaS market. This research reveals that consumers prioritize accessibility, seamless transitions, and technological innovation, with affordability and community orientation acting as critical but secondary drivers. Therefore, the provider must position itself as a facilitator of simple, consumer-centric energy solutions while maintaining a reputation for innovation and environmental stewardship.

The messaging must simultaneously highlight ease of adoption and technological sophistication. For example, the provider could adopt language such as, ***"Experience the next generation of energy services—simple to adopt, tailored to your needs, and powered by cutting-edge technology."*** This narrative conveys accessibility without compromising on the perception of expertise and innovation. Importantly, the brand should avoid overemphasizing any single attribute, instead presenting a cohesive offering that appeals to a range of consumer priorities.

Differentiation should also emphasize the provider's commitment to sustainability, a baseline expectation for renewable energy consumers. This could be articulated through messaging like, *"Every kilowatt-hour you use contributes to a greener future,"* reinforced by data-driven evidence of the provider's environmental impact, such as CO_2 reductions or

community-driven renewable projects. The ability to frame sustainability as an embedded, rather than isolated, feature will further enhance the provider's credibility.

Targeted Market Segmentation

The EaaS market is not homogeneous, and consumer preferences vary significantly across demographic, psychographic, and behavioral segments. A phased approach to targeting these segments is recommended, beginning with early adopters and gradually scaling to more price-sensitive, mainstream consumers.

Early Adopters: Early adopters are often characterized by a willingness to engage with innovative and technologically advanced solutions. This segment is less sensitive to price and more inclined to adopt services that emphasize innovation and sustainability. Messaging for this group should focus on the novelty and sophistication of the provider's offerings, such as: *"Be a pioneer in the energy revolution—harness the power of smart, renewable energy tailored to your lifestyle."* Pilot programs, exclusive access to advanced features, and opportunities for co-creation could further engage this segment, providing valuable insights for refining the provider's offerings.

Mainstream Consumers: Scaling to the mainstream market requires a shift in focus toward accessibility, affordability, and simplicity. This segment is more price-sensitive and values clear, tangible benefits over technological sophistication. Marketing efforts should highlight cost savings and practical ease, using messaging such as: *"Save on energy costs with services designed to fit your needs—affordable, sustainable, and effortless."* Streamlined onboarding processes and transparent pricing structures will be critical in reducing perceived barriers to adoption.

Service Design: Customization and Modularity

The diversity of consumer preferences underscores the need for modular and customizable service offerings. A flexible product architecture allows consumers to select features that align

with their specific priorities, whether they are driven by cost efficiency, technological integration, or environmental impact.

The provider could design tiered service packages to accommodate different consumer segments. For instance:

- **Entry-Level Tier**: A cost-effective option focused on basic renewable energy access, appealing to price-sensitive consumers.
- **Premium Tier**: A feature-rich offering incorporating advanced technologies such as real-time energy monitoring, predictive analytics, and IoT-enabled device integration.

Customization should extend beyond pricing to include flexible contract options, enabling consumers to scale their services up or down based on changing needs. For example, contracts could include terms such as *"Modify your energy plan anytime, at no additional cost,"* reinforcing perceptions of adaptability and consumer-centricity.

Integrated Marketing and Communication Strategy

Effective communication will be critical in translating the complexities of EaaS into accessible, relatable value propositions. The marketing strategy should address both functional and emotional drivers, with a dual focus on education and engagement.

Educational campaigns will be essential, particularly for mainstream consumers less familiar with the EaaS model. These campaigns could include interactive tools, such as cost calculators or virtual demos, to demystify the service. For example, a platform allowing consumers to simulate potential savings based on their energy usage could enhance transparency and trust.

Storytelling should form the backbone of the provider's communication strategy, weaving together narratives of technological innovation, environmental impact, and consumer empowerment. Highlighting success stories—such as a family reducing their energy bills by 30% or a community achieving carbon neutrality through shared solar initiatives—can make the benefits of EaaS tangible and relatable.

Transparency is another critical element. The provider should communicate pricing, service terms, and sustainability metrics clearly, avoiding technical jargon or perceived complexity. Messaging like, *"Our pricing is as transparent as our energy—no hidden fees, no surprises,"* can help build trust and mitigate skepticism.

Operational and Technological Foundations

Behind the scenes, the success of the GTM strategy will depend on the provider's ability to deliver on its promises through robust operational and technological infrastructures. Investing in advanced digital platforms powered by AI, blockchain, and IoT will enable real-time energy management, predictive maintenance, and personalized recommendations.

For example, IoT-enabled sensors could continuously monitor energy consumption, offering consumers actionable insights such as, *"You could save €15 per month by adjusting your usage during peak hours."* Blockchain technology, meanwhile, could facilitate transparent peer-to-peer energy trading, aligning with the growing demand for decentralized energy systems.

Strategic partnerships will further strengthen the provider's capabilities. Collaborations with local governments, technology vendors, or community organizations can enhance credibility, facilitate resource sharing, and accelerate market penetration. For instance, partnering with municipalities to develop community solar projects could demonstrate the provider's commitment to both sustainability and local engagement.

Acknowledging Market Complexities

While this GTM strategy is informed by robust consumer insights, it must remain adaptive to the uncertainties and complexities of the EaaS market. Consumer preferences, regulatory frameworks, and technological advancements are all subject to rapid change, necessitating ongoing research and flexibility in execution. Regularly revisiting and refining the strategy based on emerging data will be critical in maintaining relevance and competitiveness.

Moreover, the inherent trade-offs identified in this research—such as the tension between innovation and affordability or community engagement and accessibility—highlight the need for nuanced decision-making. A provider entering the EaaS market must be prepared to navigate these trade-offs, leveraging iterative feedback loops to optimize its offerings.

Looking Forward: Implications for Future Research and Practice

Deepening Consumer-Centric Insights

The findings of this study highlight the critical importance of refining our understanding of consumer preferences within the Energy-as-a-Service (EaaS) market. While this research has identified core attributes such as accessibility, affordability, innovation, flexibility, community orientation, and sustainability, these priorities are dynamic and susceptible to shifts driven by technological, regulatory, and cultural forces. Future research must build on this foundation by examining emerging factors such as data privacy concerns, energy independence, and seamless integration with next-generation smart technologies. These attributes, though peripheral now, could become pivotal as the market matures.

One key area for further investigation is how these preferences evolve over time. Longitudinal studies that track shifts in consumer behavior and priorities in response to external factors, such as energy price volatility or climate-driven policy changes, would yield insights into the adaptability of consumer decision-making. Such studies would also clarify whether attributes that are secondary today, such as advanced sustainability programs, may rise in importance as consumers become more attuned to the long-term implications of their energy choices.

The regional and cultural specificity of this study also warrants broader comparative analyses. While Europe serves as a compelling context due to its regulatory frameworks and leadership in sustainability, consumer preferences may differ significantly in regions with less stringent policies, varying levels of technological infrastructure, or differing levels of environmental awareness. Cross-regional research could illuminate universal drivers of EaaS adoption while

uncovering region-specific barriers, enabling a more globally informed approach to strategy development.

Navigating Technological Integration and Behavioral Complexity

The integration of advanced technologies such as artificial intelligence, blockchain, and IoT into EaaS models represents a transformative force within the sector. However, these technologies introduce complexities that future research must address. For instance, while predictive analytics and IoT-enabled devices offer potential benefits such as personalized energy management and real-time monitoring, they may also evoke concerns about data privacy, perceived intrusiveness, or over-reliance on technology. Studies exploring how consumers balance these perceived risks against the tangible benefits of advanced technologies would provide critical insights into adoption dynamics.

Equally important is the examination of behavioral and psychological drivers of consumer choice. While this research utilized quantitative tools such as perceptual mapping and conjoint analysis to capture explicit preferences, qualitative methods could uncover the deeper motivations and biases underpinning these choices. For instance, understanding how trust in a provider, perceived risk of service failure, or attachment to environmental identity shapes consumer behavior would offer a more comprehensive view of decision-making processes. Behavioral experiments could also reveal how consumers respond to different framing strategies, such as emphasizing cost savings versus environmental benefits.

Intersections of Competition, Differentiation, and Market Dynamics

The growing competitiveness of the EaaS market underscores the importance of exploring how consumers perceive and differentiate between providers. Future research should investigate how attributes such as brand reputation, marketing communication, and perceived alignment with consumer values influence provider selection. These dynamics are particularly relevant as EaaS providers seek to differentiate themselves in a market where many offerings are converging on similar value propositions.

Moreover, as market dynamics shift, there is an opportunity to study the impact of first-mover advantages and network effects on EaaS adoption. Providers that invest early in digital infrastructure, community-focused programs, or advanced technologies may shape consumer expectations, creating standards that later entrants must meet or exceed. Understanding how these dynamics play out across different consumer segments could inform strategies for both incumbents and new entrants.

Bridging Knowledge Gaps Through Interdisciplinary and Collaborative Approaches

Future research into EaaS would benefit from interdisciplinary collaboration that combines insights from marketing, technology, behavioral science, and environmental studies. Such approaches could offer a richer perspective on how technological advancements, regulatory frameworks, and consumer behavior intersect to drive adoption. For instance, exploring the interplay between regulatory incentives, such as subsidies for renewable energy adoption, and consumer perceptions of value could clarify how external forces shape internal decision-making.

Collaboration between academia and industry is another critical avenue. Academic rigor can uncover nuanced consumer behaviors, while industry data can ground these findings in practical, real-world contexts. For example, using real-time adoption data from EaaS providers to validate hypotheses derived from experimental studies could strengthen the reliability and relevance of research outcomes. Jointly developed simulation models could also allow researchers to test how changes in attribute configurations affect market outcomes, offering predictive insights into future consumer trends.

The insights from this study provide a valuable foundation for understanding consumer preferences within the EaaS market, but they also illuminate areas requiring further exploration. Future research must move beyond static analyses to embrace the complexity and dynamism of the sector, incorporating diverse perspectives, advanced methodologies, and interdisciplinary collaboration. By addressing these gaps, researchers can provide deeper,

more actionable insights that guide the strategic evolution of EaaS models, ensuring they remain responsive to both consumer needs and broader societal challenges.

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Appendix 1: Company Profiles and EaaS Context

Schneider Electric

Headquarters: Rueil-Malmaison, France
Industry Focus: Energy management, automation, and digital solutions
EaaS Role: Schneider Electric is a global leader in **energy management** and **automation**, with a strong focus on **sustainability** and **energy efficiency**. Their EaaS offerings are integrated with **IoT-enabled smart grid technologies**, allowing businesses and residential consumers to optimize energy usage through **predictive analytics** and **automated maintenance**. Schneider is also pioneering in **energy performance contracting (EPC)**, which guarantees energy savings and mitigates risk for its customers.
Strategic Positioning: Schneider Electric is heavily invested in **digital transformation**, enabling real-time monitoring and optimization of energy systems. Their strength lies in providing **customized solutions** that ensure both **operational efficiency** and **sustainability**, particularly for large-scale commercial and industrial consumers.
Key Strength: Strong emphasis on integrating **sustainability** and **digital technologies** to enable efficient energy usage and reduce costs.

Enel X

Headquarters: Rome, Italy
Industry Focus: Smart energy solutions, renewable energy, and digital infrastructure
EaaS Role: Enel X is at the forefront of **digital energy innovation**, focusing on **smart grids**, **energy storage**, and **distributed energy solutions**. They offer a wide array of EaaS services, from **dynamic pricing models** to **demand response management** and **smart home integration**. Their services target both residential consumers and businesses, emphasizing **energy independence** and **sustainability** through **renewable energy integration**.
Strategic Positioning: Enel X differentiates itself by offering **end-to-end smart energy solutions** that combine renewable generation with digital infrastructure, including **real-time**

energy optimization. The company has been a key player in **Europe's energy transition**, leveraging regulatory frameworks like the European Green Deal to drive consumer adoption.
Key Strength: Expertise in integrating **smart home technologies** and leveraging **data-driven pricing models** to enhance energy efficiency and optimize cost savings for consumers.

Engie

Headquarters: La Défense, France
Industry Focus: Renewable energy, decentralized energy systems, and energy services
EaaS Role: Engie is focused on promoting **renewable energy** and the development of **decentralized energy systems**. Their EaaS offerings include services that enable customers to generate and store their own energy through **solar panels**, **wind turbines**, and **battery storage solutions**. They also manage decentralized energy through **microgrids** and **distributed energy resources (DERs)**. Engie plays a leading role in helping businesses and residential consumers reduce their carbon footprints and gain energy independence.
Strategic Positioning: Engie's strategic advantage lies in its commitment to **renewable energy integration** and decentralized systems. The company is well-positioned in Europe's energy landscape, offering solutions that align with both **sustainability goals** and the growing consumer demand for **energy independence**.
Key Strength: Leadership in **renewable energy generation** and decentralization, which aligns with the global push for **sustainability** and **grid resilience**.

Siemens

Headquarters: Munich, Germany
Industry Focus: Industrial automation, smart grid solutions, and digital energy systems
EaaS Role: Siemens is recognized for its **smart grid technologies** and **digital energy platforms** that support both commercial and residential sectors. Their EaaS offerings include **real-time energy management systems**, **predictive maintenance**, and **automated energy trading**.

Siemens' focus on **customization** allows them to offer scalable solutions that can meet the needs of both **large industrial clients** and **smaller businesses**.

Strategic Positioning: Siemens' EaaS services are designed to integrate seamlessly into both legacy and modern energy infrastructures, providing **real-time data analytics** and **predictive tools** that optimize energy usage and ensure reliability. The company is known for its strong **technological expertise**, particularly in **automated energy management** and **smart city applications**.

Key Strength: Strong capabilities in **customized smart grid integration** and **technological innovation**, positioning them as a leader in offering **cutting-edge digital energy solutions**.

Veolia

Headquarters: Paris, France

Industry Focus: Environmental services, waste management, and renewable energy

EaaS Role: Veolia has expanded its environmental services portfolio to include **renewable energy** and **energy efficiency solutions** through EaaS. Their EaaS model focuses on **sustainable resource management** by integrating **renewable energy generation** with energy services like **energy performance contracting** and **demand-side management**. Veolia's expertise in **environmental sustainability** enables them to position EaaS as part of a broader effort to reduce waste and improve **circular economy** principles.

Strategic Positioning: Veolia's unique positioning as both an environmental services provider and an energy services company gives it a competitive edge. By offering EaaS within the context of **sustainability** and **waste reduction**, Veolia can target **eco-conscious consumers** and businesses that are seeking to meet sustainability targets.

Key Strength: Expertise in **sustainability** and **resource efficiency**, positioning their EaaS solutions as a key tool for consumers and businesses focused on environmental impact reduction.

KU Leuven (Faculty of Engineering Science - Master in Energy for Smart Cities Program)

Location: Leuven, Belgium

Academic Focus: Smart city integration, energy systems, and digital infrastructure for sustainable urban environments

EaaS Role: KU Leuven's **Master in Energy for Smart Cities program** emphasizes the role of EaaS in urban environments. The institution focuses on **smart grid development**, **distributed energy management**, and **energy storage systems**, contributing to the technological advancements required for scalable EaaS solutions. Through R&D collaborations with industry partners, KU Leuven is pioneering **blockchain-enabled peer-to-peer energy trading** and **AI-based energy optimization** systems that are transforming how cities manage their energy use.

Strategic Positioning: KU Leuven plays a critical role in shaping the future of EaaS through its research initiatives, focusing on the **intersection of smart cities and energy systems**. Their research not only advances the technological tools required for EaaS but also addresses the **socio-economic factors** influencing consumer behavior and market adoption.

Key Strength: Leading academic research on the integration of EaaS within **smart city frameworks**, driving innovation in **distributed energy systems** and **digital energy management**.

Appendix 2: Consumer Perceptions Survey

Section 1: Demographic and Background Information

1. **How familiar are you with renewable energy services?**
    - Very familiar
    - Somewhat familiar
    - Slightly familiar
    - Not familiar at all
2. **How familiar are you with each of the following EaaS providers?** (Rate each on a scale from 1 - Not familiar at all to 5 - Very familiar)
    - Schneider Electric
    - Siemens
    - Enel X
    - Engie
    - Veolia
3. **What is your primary motivation for considering renewable energy services?** (Select all that apply)
    - Environmental impact
    - Cost savings
    - Community involvement
    - Technological innovation
    - Reliability and consistency

Section 2: Consumer Perceptions

4. **How would you rate each of the following providers on their level of technological innovation?**
   (Scale: 1 - Very low to 5 - Very high)

5. **How much do you trust each of the following providers to deliver reliable energy services?**
   (Scale: 1 - Do not trust at all to 5 - Trust completely)
6. **How helpful do you find the customer service provided by each of these companies?**
   (Scale: 1 - Not helpful at all to 5 - Very helpful)
7. **How honest and transparent do you believe each of these providers is in their communication?**
   (Scale: 1 - Very dishonest to 5 - Very honest)
8. **To what extent do you feel each provider offers good value for money?**
   (Scale: 1 - Very poor value to 5 - Excellent value)
9. **How flexible do you perceive each provider to be in terms of adapting to customer needs?**
   (Scale: 1 - Very inflexible to 5 - Very flexible)
10. **How consistent do you find the quality of service provided by each company?**
    (Scale: 1 - Very inconsistent to 5 - Very consistent)
11. **How committed do you believe each provider is to supporting environmentally sustainable practices?**
    (Scale: 1 - Not committed at all to 5 - Very committed)
12. **To what extent do you feel each provider is involved in community-based energy solutions, such as neighborhood solar programs or local initiatives?**
    (Scale: 1 - Not involved at all to 5 - Very involved)
13. **How accessible do you find each provider's services in terms of ease of transitioning from your current energy provider?**
    (Scale: 1 - Very difficult to transition to 5 - Very easy to transition to)

Extra Section: Overall Preferences and Prioritization (Voluntary)

1. **When choosing an EaaS provider, how important are each of the following attributes to you?**
   (Rate each on a scale from 1 - Not important to 5 - Very important)

- Technological innovation
- Trustworthiness
- Customer service/helpfulness
- Honesty and transparency
- Value for money
- Flexibility and adaptability
- Consistency in service quality
- Commitment to environmental sustainability
- Community involvement
- Ease of transition/accessibility

2. **Considering all the factors above, which provider do you feel best aligns with your ideal renewable energy provider?**

   (Select one)

- Schneider Electric
- Siemens
- Enel X
- Engie
- Veolia

Appendix 3: PCA Output with Varimax

Factor Analysis

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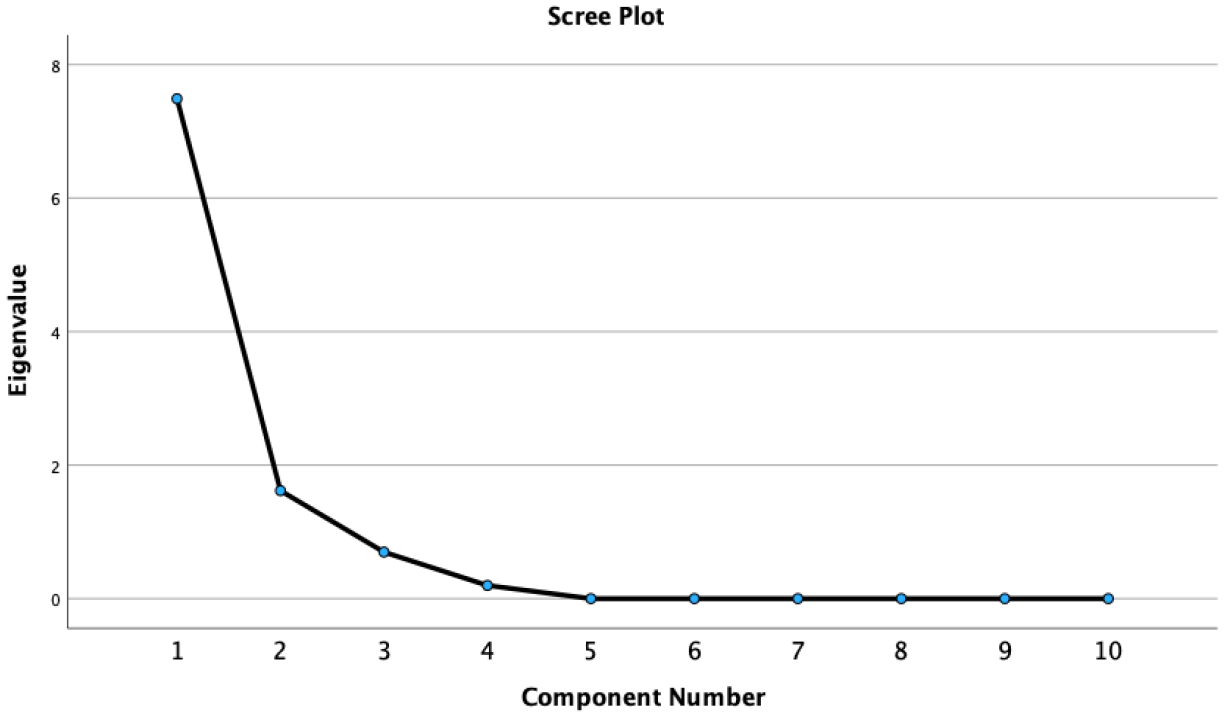
Descriptive Statistics

	Mean	Std. Deviation	Analysis N
GoodValue	3.4960	.59395	5
GreenCommittement	3.4660	1.30001	5
Honest	3.3880	.65439	5
Consistent	3.7000	.80134	5
Trustworthy	3.2860	1.42045	5
Helpful	3.3720	1.36120	5
TransitionEase	2.8020	.81423	5
Innovative	3.4240	1.28881	5
Flexible	2.5700	.93691	5
CommunityCentered	3.0660	1.09095	5

Correlation Matrix[a]

		GoodValue	GreenCommittement	Honest	Consistent	Trustworthy	Helpful	TransitionEase	Innovative	Flexible	CommunityCentered
Correlation	GoodValue	1.000	-.922	-.953	.844	-.956	-.958	.579	-.878	.884	-.389
	GreenCommittement	-.922	1.000	.922	-.741	.780	.988	-.683	.709	-.637	.639
	Honest	-.953	.922	1.000	-.938	.850	.959	-.747	.746	-.784	.568
	Consistent	.844	-.741	-.938	1.000	-.768	-.802	.788	-.613	.788	-.419
	Trustworthy	-.956	.780	.850	-.768	1.000	.843	-.361	.955	-.965	.162
	Helpful	-.958	.988	.959	-.802	.843	1.000	-.654	.783	-.715	.623
	TransitionEase	.579	-.683	-.747	.788	-.361	-.654	1.000	-.131	.356	-.539
	Innovative	-.878	.709	.746	-.613	.955	.783	-.131	1.000	-.879	.194
	Flexible	.884	-.637	-.784	.788	-.965	-.715	.356	-.879	1.000	.028
	CommunityCentered	-.389	.639	.568	-.419	.162	.623	-.539	.194	.028	1.000

a. This matrix is not positive definite.



Component Matrix[a]

	Component 1	Component 2
GoodValue	-.988	.121
Honest	.988	.130
Helpful	.971	.134
GreenCommittement	.933	.209
Trustworthy	.916	-.399
Consistent	-.899	-.105
Flexible	-.844	.496
Innovative	.829	-.469
TransitionEase	-.662	-.580
CommunityCentered	.488	.743

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Communalities

	Extraction
GoodValue	.992
GreenCommittement	.913
Honest	.992
Consistent	.820
Trustworthy	.999
Helpful	.960
TransitionEase	.774
Innovative	.907
Flexible	.959
CommunityCentered	.790

Extraction Method: Principal Component Analysis.

Component Transformation Matrix

Component	1	2
1	.815	.579
2	-.579	.815

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Component Score Coefficient Matrix

	Component 1	Component 2
GoodValue	-.151	-.015
GreenCommittement	.027	.177
Honest	.061	.142
Consistent	-.060	-.122
Trustworthy	.243	-.130
Helpful	.058	.142
TransitionEase	.135	-.343
Innovative	.258	-.172
Flexible	-.269	.185
CommunityCentered	-.213	.412

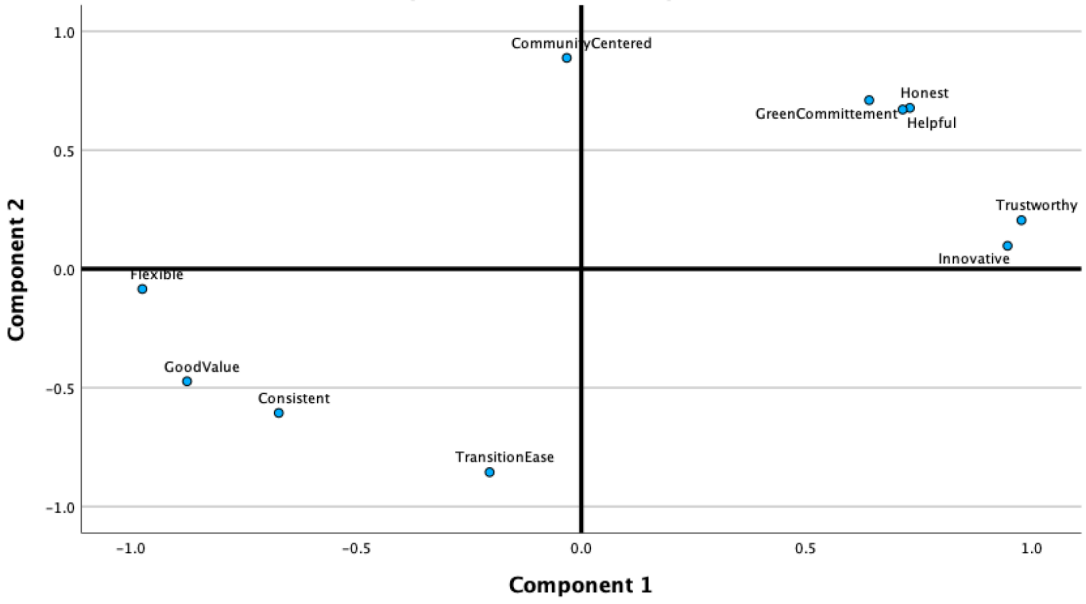
Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Component Scores.

Component Score Covariance Matrix

Component	1	2
1	1.000	.000
2	.000	1.000

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Component Scores.

Component Plot in Rotated Space



Appendix 4: Explanation of Attributes and Levels in Conjoint Analysis

This appendix provides detailed descriptions of the attributes and their levels used in the conjoint analysis, ensuring transparency and clarity in interpreting the results. These descriptions were also shared with survey respondents to help them evaluate the scenarios presented.

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1. Technological Innovation

This attribute measures the level of advanced technology integrated into the EaaS offering, reflecting consumer perceptions of efficiency, reliability, and future-readiness.

- **Basic Technology**: Standard energy monitoring with no smart features or automation. Suitable for basic energy needs.
- **Moderate Technology**: Includes smart energy meters and basic automation for energy usage tracking.
- **Advanced Technology**: Incorporates advanced features like smart home integration and real-time energy optimization tools.
- **Cutting-Edge Technology**: Features predictive AI, IoT-enabled devices, and full integration with smart home ecosystems for maximum efficiency and customization.

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2. Community Orientation

This attribute evaluates the provider's involvement in community-driven energy initiatives and their contribution to local sustainability efforts.

- **No Community Involvement**: The provider does not offer any community-oriented programs or localized energy solutions.

- **Some Local Initiatives**: Small-scale efforts, such as pilot programs or partnerships with local organizations, to promote renewable energy use.
- **Community-Focused Offerings**: Programs like neighborhood solar installations or localized energy-sharing schemes that involve community participation.
- **Fully Integrated Community Solutions**: Comprehensive, community-driven initiatives such as shared solar or wind energy infrastructure and extensive local engagement.

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3. Affordability (Monthly Cost)

This attribute reflects the pricing structure of the subscription service, addressing consumer sensitivity to cost and value perceptions.

- **€29**: Entry-level pricing, providing basic services at the lowest cost.
- **€39**: Mid-range pricing, balancing affordability with enhanced features.
- **€49**: Premium pricing for more advanced offerings.
- **€59**: High-end pricing for fully featured, top-tier services.

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4. Flexibility (Contract Options)

This attribute captures the adaptability of the provider's contracts, focusing on the ease of modifying or terminating agreements.

- **Rigid Contracts**: Fixed-term contracts with significant penalties for early termination or changes.
- **Semi-Rigid Contracts**: Contracts with limited options for adjustments, requiring moderate penalties for termination or modifications.
- **Semi-Flexible Contracts**: Contracts that allow for moderate changes or early termination with minimal penalties.
- **Fully Flexible Contracts**: No fixed-term agreements, allowing customers to modify or cancel their subscriptions at any time without penalties.

5. Accessibility (Ease of Transition)

This attribute measures how simple it is for customers to switch to the provider's services, addressing logistical and psychological barriers to adoption.

- **Very Challenging Transition**: High setup costs, time-intensive onboarding, and significant effort required from the consumer.
- **Moderately Challenging Transition**: Some setup costs and effort required but still manageable.
- **Smooth Transition**: Minimal setup costs and a straightforward onboarding process with some support.
- **Seamless Transition**: Effortless adoption with no setup costs, fast onboarding, and full provider support.

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6. Environmental Sustainability

This attribute reflects the provider's commitment to renewable energy and broader sustainability initiatives, aligning with consumer interest in environmental responsibility.

- **Basic Renewable Energy Mix**: A partially renewable energy mix (30–50%) with no additional sustainability efforts.
- **Renewable Energy with Limited Initiatives**: Mostly renewable energy (70–90%) with small-scale sustainability programs like customer education on energy efficiency.
- **Renewable Energy with Active Local Programs**: Fully renewable energy (100%) paired with localized environmental programs such as tree planting or habitat restoration.
- **Renewable Energy with Full Carbon Offsets**: Fully renewable energy combined with comprehensive carbon offset initiatives and investment in sustainability innovation (e.g., funding renewable energy R&D).

Purpose of the Attributes

These attributes were chosen to reflect the core trade-offs identified during the perceptual mapping phase, ensuring that both functional (e.g., price, flexibility, accessibility) and emotional (e.g., community orientation, sustainability) drivers of decision-making were represented. This appendix ensures transparency in how the survey was constructed and provides a reference for interpreting the results.