Demystifying Digitally Empowered Prosumer—Transformation Opportunities for Utilities in Energy Value Ecosystem

Anindya Pradhan and Sudipta Saha

Abstract Utilities business is getting more and more attractive and interesting, thanks to consumer empowerment, blurring of industry boundaries, fusion of energy and exponentially emerging technologies and transition towards the new business models. Consumers, who are already donning the hats of 'prosumers' are opinionated when it comes to exercising their choices, control, and comfort from the utilities. The two-fold democratization of consumers and energy are empowering the prosumers to partner with the utilities in grid management. Paradoxically, consumer perception about the utility is still evolving and according to IDC Utilities Consumer Survey 2020; the Net Promoter Score (NPS) for Utilities Customers are still negative. That propels the Utilities to pay heed to the digitally empowered prosumer voices and cater accordingly. The paper will start with understanding the need of digitally empowered customers across the value chain starting from Aware, Join, Use, Analyze, Pay, Served etc. A design thinking led approach will be taken to understand the consumer empathy in the journey. Then the paper look how COVID is playing the role of an accelerator for utilities to understand and getting more closure of the customer through new roles like 'partner in crisis'. Next, we will see how global utilities today are leveraging the 'energy value ecosystem' to collaborate and co-create value around the lifestyle of the empowered consumer through fusion of commodity and services. In conclusion, the paper will emphasize the importance of technology and ecosystem to make the voice of customer an integral part of the utility's DNA.

Keywords Digital utility · Customer experience · Utility of future · COVID and utility · Energy value ecosystem

A. Pradhan (✉)
Utility Indutsry Unit, Tata Consultancy Services Limited, Kolkata, India
e-mail: anindya.pradhan@tcs.com

S. Saha
Utility Indutsry, Tata Consultancy Services Limited, Kolkata, India
e-mail: sudipta4.s@tcs.com

1 Introduction-Managing Customer Experience is a Must for Utiltites

Consumer and Energy democratization, convergence of industry boundaries, rapid adoption of energy and exponential developments in technologies are creating significant opportunities for Utilities with Prosumer at the center. Utilities today are part of larger 'Energy Value Ecosystem' where they are discovering and creating value in collaboration with prosumer and partners.

Paradoxically, consumer's perception about the utility is still negative to neutral in most of the geographies. In the UK, according to The Institute of Customer Service—'UK Customer Satisfaction Index Report'—Utility Industry is still amongst one of the bottom industries in the table while Leisure and Retail leading the table [1].

In the US, according to the American Customer Satisfaction Index—Energy and Utility Report—for the second straight year customer satisfaction with electric utilities took a hit sliding 1.5% to 72.1 on the American Customer Satisfaction Index's 100-point scale [2]. In Europe, according to IDC utilities Consumer survey, Net Promoter Score of European Customers is still an issue among many of the European countries.

In Australia, according to the Energy Consumer Australia—Energy Consumer Sentiment Survey—57% of household consumers now say they are satisfied with the value for money of electricity, up 22% since the same point in 2017 [3] (Fig. 1).
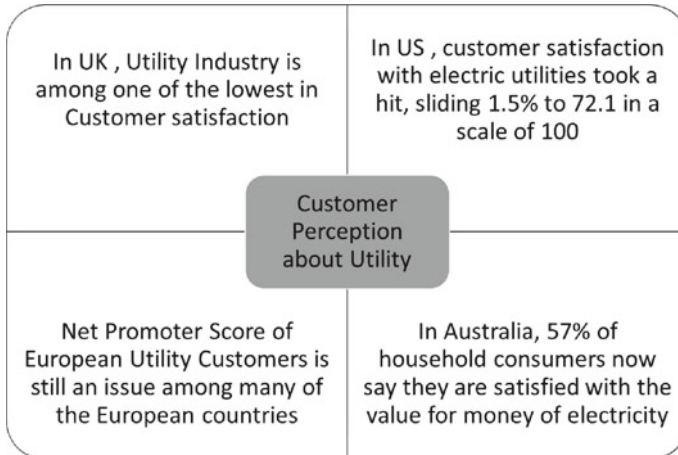

Fig. 1 Customer perception about utilities

2 Utilities Focus on Customer Journey for Managing Customer Experience

Utilities can manage the customer experience either through a journey-based approach or through a touch-point based approach [4] (Fig. 2).

The key advantage of journey-based approach over the touch point based approach is that journey-based approach encompasses the holistic view of the customer experience while touch point based approach primarily focuses on individual transactional experience.

In general, a journey consists of many customer touch points. However, excellence in one touch point doesn't always lead to the overall satisfaction of the entire journey. For example—customer billing complaint journey has multiple touch points such as customer calls the call center, call center agent interacts with customer, call center agent raises a service request for back office resolution, back office team resolves the problem and finally call center agent responds back to customer with the confirmation on the resolution. It may happen that initial interaction of customer with the call center agent went well, however, the resolution provided by the back-office team to this problem does not meet customer requirement and resulting in overall dissatisfaction of the journey.

The above diagram highlights the 6 key important customer journeys for a typical electricity retailer.

It is very important for a utility to understand how to create a positive impact on each of these customer journeys. For example, in case of use energy journey, getting a real time proactive alerts from the utility if consumption exceeds the threshold value is a key differentiating factor. Similarly, various payment options available for the customer to pay energy bill are also beneficial and provide enhanced customer experience.
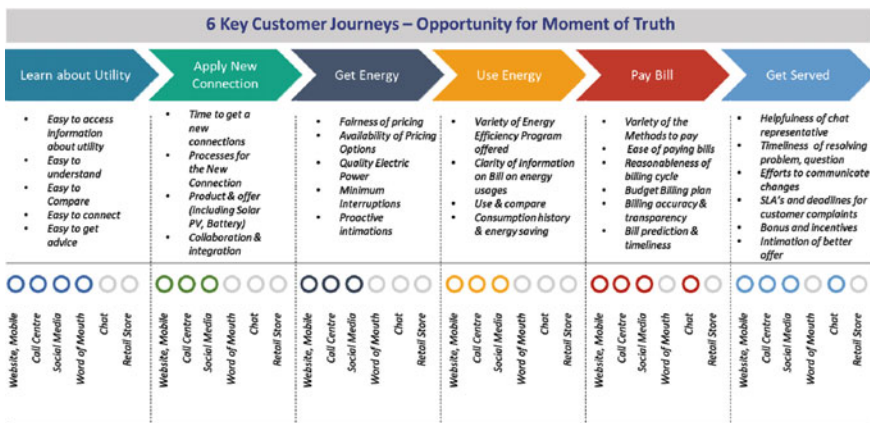

Fig. 2 Key customer journey with utilities

3 Empathy Map for Customer Journey

Understanding the customer voice in terms of say, do, think, feel, pains and gains are very important for the customer journey design. We are seeing that utilities are adopting a design thinking led approach to understand the customer empathy.

Please find below 2 sample empathy maps capturing the voice of the utility customer (Fig. 3).

We see today's customers are looking for personalized attention and to be treated as privileged customer, want to get end to end service beyond energy and to interact with utility anytime-anywhere (Fig. 4).
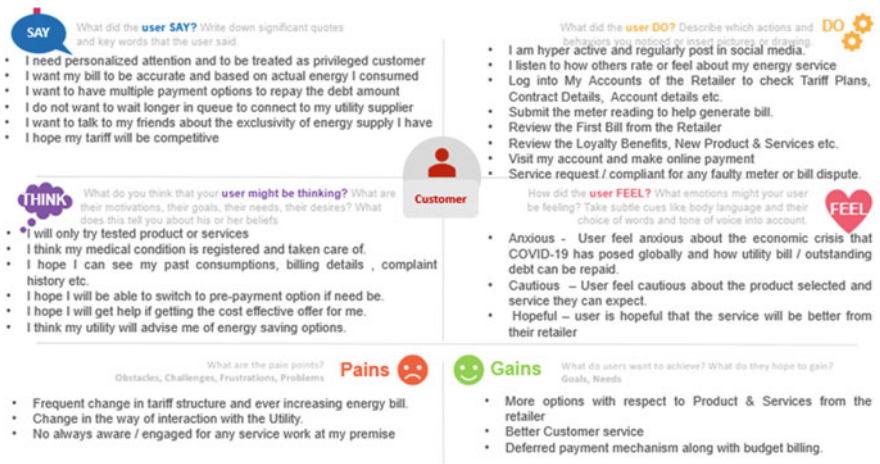
SAY — What did the **user SAY?** Write down significant quotes and key words that the user said.

- I need personalized attention and to be treated as privileged customer
- I want my bill to be accurate and based on actual energy I consumed
- I want to have multiple payment options to repay the debt amount
- I do not want to wait longer in queue to connect to my utility supplier
- I want to talk to my friends about the exclusivity of energy supply I have
- I hope my tariff will be competitive

DO — What did the **user DO?** Describe which actions and behaviors you noticed or insert pictures or drawing.

- I am hyper active and regularly post in social media.
- I listen to how others rate or feel about my energy service
- Log into My Accounts of the Retailer to check Tariff Plans, Contract Details, Account details etc.
- Submit the meter reading to help generate bill.
- Review the First Bill from the Retailer
- Review the Loyalty Benefits, New Product & Services etc.
- Visit my account and make online payment
- Service request / compliant for any faulty meter or bill dispute.

THINK — What do you think that your **user might be thinking?** What are their motivations, their goals, their needs, their desires? What does this tell you about his or her beliefs

- I will only try tested product or services
- I think my medical condition is registered and taken care of.
- I hope I can see my past consumptions, billing details , complaint history etc.
- I hope I will be able to switch to pre-payment option if need be.
- I hope I will get help if getting the cost effective offer for me.
- I think my utility will advise me of energy saving options.

Customer

FEEL — How did the **user FEEL?** What emotions might your user be feeling? Take subtle cues like body language and their choice of words and tone of voice into account.

- Anxious - User feel anxious about the economic crisis that COVID-19 has posed globally and how utility bill / outstanding debt can be repaid.
- Cautious – User feel cautious about the product selected and service they can expect.
- Hopeful – user is hopeful that the service will be better from their retailer

Pains — What are the pain points? Obstacles, Challenges, Frustrations, Problems

- Frequent change in tariff structure and ever increasing energy bill.
- Change in the way of interaction with the Utility.
- No always aware / engaged for any service work at my premise

Gains — What do users want to achieve? What do they hope to gain? Goals, Needs

- More options with respect to Product & Services from the retailer
- Better Customer service
- Deferred payment mechanism along with budget billing.

Fig. 3 Customer empathy map

What happen if I have an emergency gas leak , how the utility will manage that ?

How my energy consumption has changed because of Lock-down

I have a prepayment meter and I am unable to top it up

I am not able to reach customer service agent – what should I do?

How do I help Utilities to support the essential work?

Will someone come to record my meter reading?

I had opted for Smart Meter installation – should I postpone it?

Should I let someone from Utility enter my house?

Aged customer with Life Support

Will my Utility be able to supply me energy? Will they care for me considering my situation?

What if I can't pay my energy bills? Will my utility be willing to bend the rules to help me out ?

I have not received my bills – what should I do?

My bill amount does not seem right – what should I do?
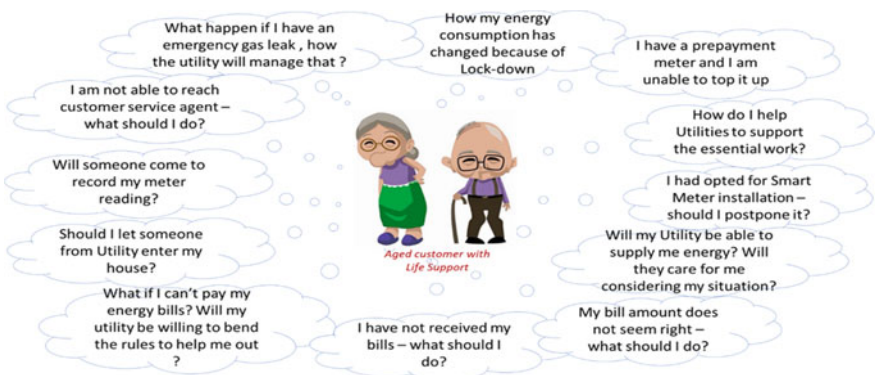
Fig. 4 Customer empathy map during COVID

Due to COVID, many customers are in financial crisis and want to get payment waiver from utility for their bills. Customers today also prefer remote services, wherever possible, rather than physical presence of utility crews at their premises following COVID related norms and social distancing.

4 COVID as an Opportunity for Utilities to Be Closer to Customer

Utilities are among the 16 industries that has been categorized by U.S. Department of Homeland Security (DHS) as critical infrastructure sectors and must be able to operate during a pandemic [5]. While the core purpose of serving the nation and put the lights on continue to remain strong, the pandemic unfolds a new purpose—'Partner in Crisis 'for the Utility.

The pandemic prepares utilities to build an operation that is resilient in managing the increasing call volumes, decreasing/new demand patterns and deferred revenues.

Managing the customer energy demand may not be a key challenge for the utilities in this scenario as demand from commercial and residential sector will decrease whereas residential sector will grow as people will stay in home and may follow a weekend pattern.

However, utilities may expect an increase demand of the call volumes from customers with new issues such as what should customer do if customer is unwell or self-isolating and they have power cut, gas leak or energy meter problems or if a utility company need to access the customer premise.

Prepayment customers may also have the queries like how they can top up their prepayment meters if customer is self-isolating.

Customer and Utility field workers interaction will also change significantly during this scenario. For any non-urgent energy issues, focus will be on self-resolution using mostly online platform, utility App or on call advice. Utilities are also helping customers with their bills by suspending service disconnection due to nonpayment and waiving late fees.

Last but not the least, it is an opportunity for the Utilities to become more adaptable to the changes by leveraging digital to provide safe, secure, simple, and self-driven services to end consumers and bring utilities at the forefront of customer mind.

5 Energy Value Ecosystem

As utilities are moving from energy seller to energy service provider, utilities need to create an ecosystem in collaborations with prosumers, partners and cross-industries. This partnership helps utilities to discover new values such as energy efficiency

program, demand side management, bring your own battery, EV charging, DERMS orchestration, home insurance, etc.

We are already observing utilities are merging with telecom service operator to offer bundled product to customer (Fig. 5).

For example, in case of new customer connection utility can leverage the ecosystem of multiple stakeholders such as builder, contractor, architect, electrician, plumber, field engineer, etc (Fig. 6).

The following is an example of how utilities are levering the energy value ecosystem in collaboration with prosumer and partner for defining the value around customer own solar journey. The orchestration of virtual power plant (VPP) along with the demand side management (DSM) will enable prosumer to contribute to grid stabilization and peak load management for utility (Fig. 7).
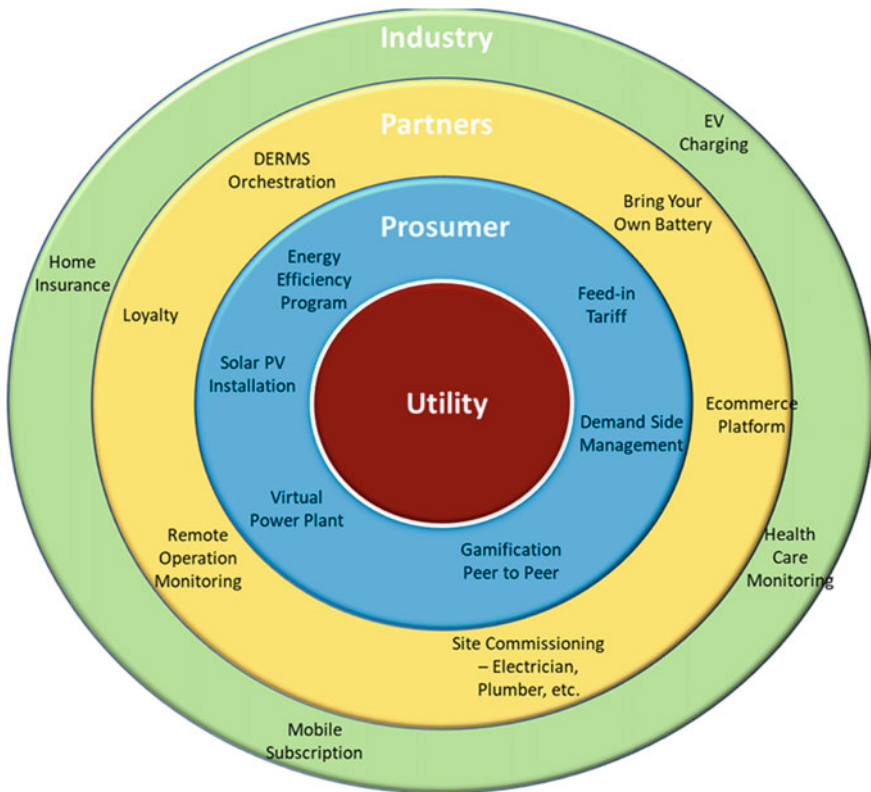
Fig. 5 Energy value ecosystem
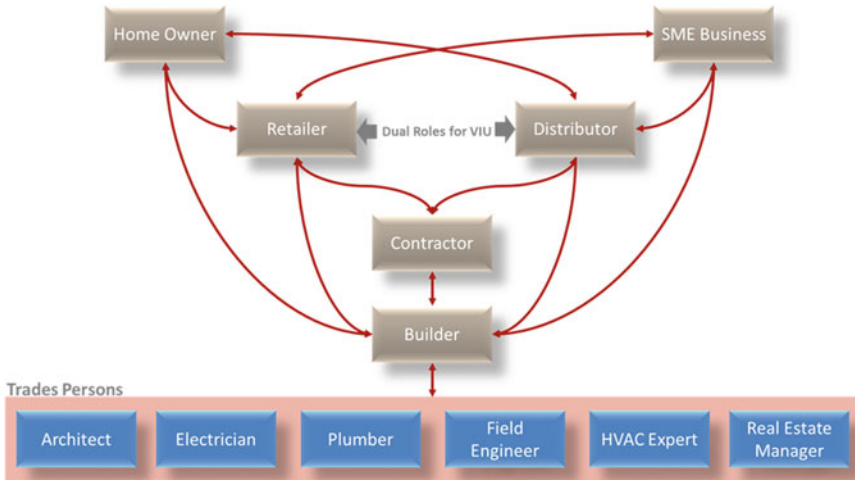
Fig. 6 Partners in new connection ecosystem
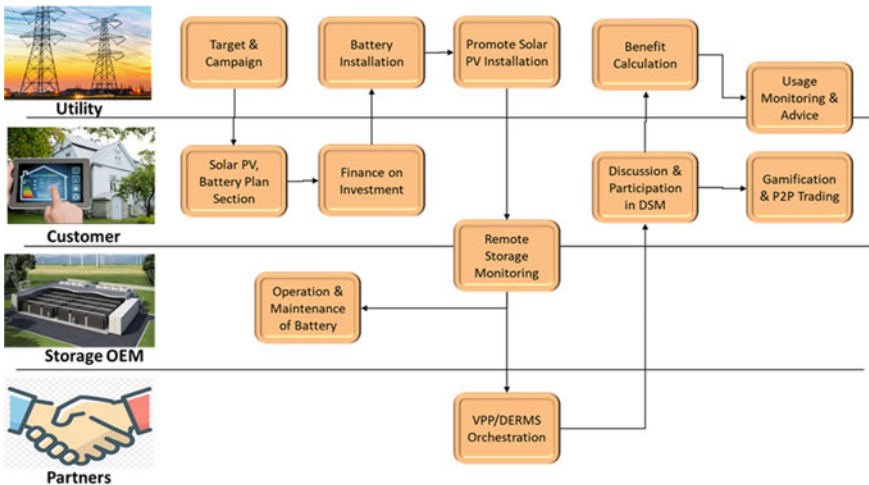
Fig. 7 Customer centric distributed energy ecosystem

6 Customer Management Framework for Utilities

We are seeing utilities are adopting a very structured approach in managing the customer experience across 6 key dimensions—Anytime Anywhere, Hyper Personalization, Trust and Transparency, Communication and Collaborate, Quick and Simple and Customer Empowerment and Engagement.

Anytime Anywhere focuses on 24 × 7 presence in customer preferred channel along with providing seamless uniform experience to customer across channels.

Hyper Personalization focuses on the contextualized proactive offerings/alerts to customer like advice on appliance on/off, recommended deal for the Electric Vehicle charging station near to customer location, and so on.

Trust and Transparency focuses on building trust with customers across multiple transaction points like billing, meter reading, pricing, complaint management and so on.

Communication and collaboration emphasis on keeping the customer informed about the new offerings, latest changes and so on.

Quick and simple is all about having an experience that focuses on the first time right.

Customer Empowerment is all about providing the right tools and platforms to the customer for better decision making like when to use the battery to the grid or how to optimize the energy consumption (Fig. 8).

In order to support the architectural framework digital technology has a pivotal role to play. Overall stakeholder communications are expected to be both-ways and to be backed by new edge robust technical foundation. There are 3 layers via which entities will be serviced—interaction layer, experience layer and digital fulfilment layer.

While prosumer or partner or utility agents can collaborate using common platform across channels i.e. portal, mobile, telephone, e-mail, social media, etc. the information and knowledge is generated, processed and furnished for consumption with the help of digital technologies like analytics, robotic process automation (RPA), cloud computing, etc.
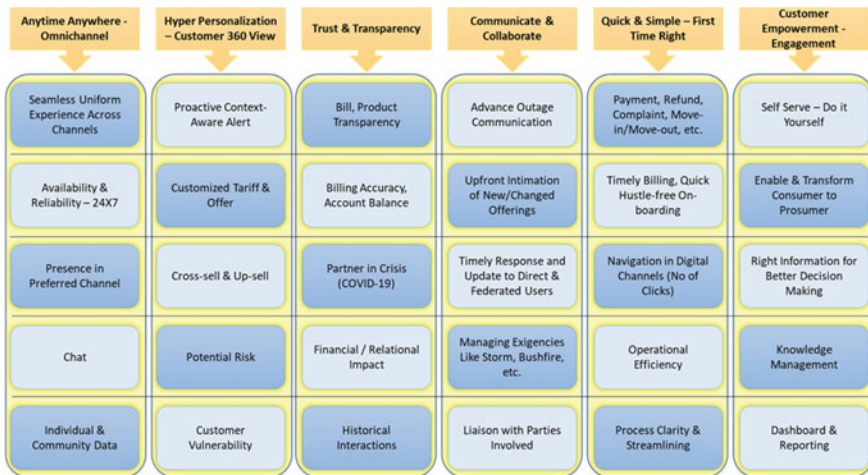

Fig. 8 The framework for managing customer experience

Insights about the required information will be at the fingertips to assist in making the right decision at the right point. The siloed approach with scattered sources of information will be replaced by common platform, onboarding all the stakeholders under a single umbrella and thus increasing the cumulative efficiency of the integrated processes (Fig. 9).

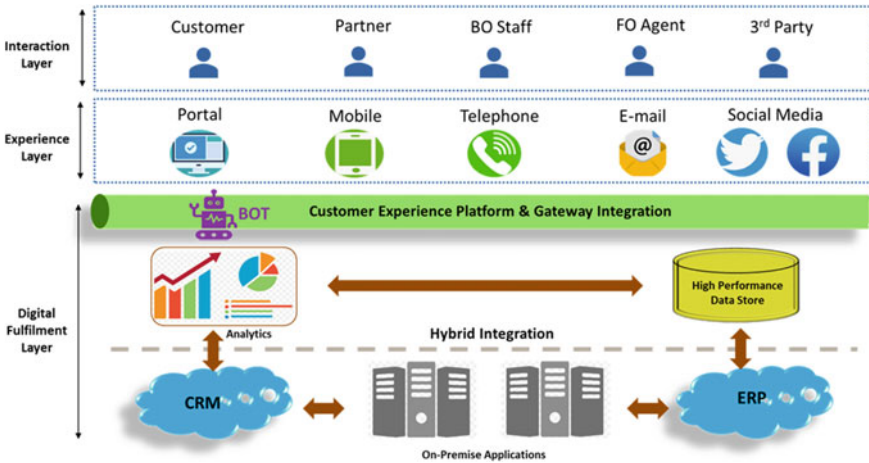The digital technology platform has 4 underlying levers—agile, automation, intelligence and cloud (Fig. 10).

Fig. 9 Digital technology platform as an enabler
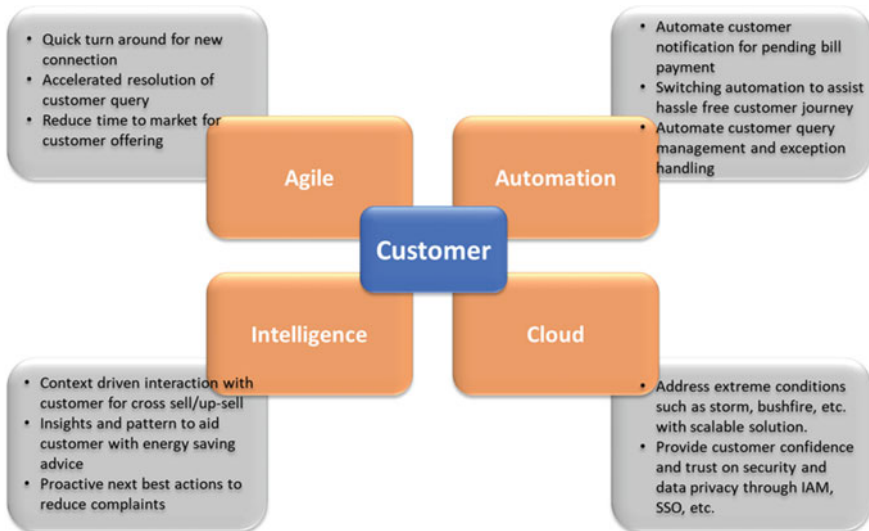
Fig. 10 Levers of digital technology platform

Agile—with the growing adoption of agile methodology, utilities are aiming to provide better services to customer. The lead time of key business processes such as new connection, meter to cash, etc. is being reduced. Customer queries are resolved quicker than what it used to happen earlier. Owing to agile driven reduced time to market, product offerings to the customer are made simple, fast and apt.

Automation—the reduction/removal of manual interventions in the utility processes are of high importance to bring more operational efficiency. It is being observed that automation in customer query management, bill and collection, exception handling are few critical areas where utilities are panning their focus to improve customer satisfaction.

Intelligence—for example the smart home systems use intelligent energy-saving technology to cut costs, reduce wastage and improve convenience. From rooftop solar cells to wirelessly controlled washing machines and heating that adapts to users' needs, intelligence touches on many aspects of domestic life. By adding artificial intelligence into the mix, systems can learn to optimize energy usage based on preferences (e.g. when householders like the heating to be on), and by exploiting real-time electricity prices (e.g. buying-in extra power at times of lower market prices).

Suspicious metering points such as unstable or unexpectedly large consumption, gives an early warning into unusual behavior. However, detecting these metering points requires contextual knowledge.

Insights from data clearly helps solve this situation. Machine Learning and data analysis facilitate customer clustering based on consumption patterns. Utility receives automatic detection of suspicious consumption data to proactively help the customer in finding the cause of the unexpectedly high bills.

Also, some utilities are developing a channel-agnostic, AI-powered chatbot to resolve customer complaints on issues such as outages and bills. Utilities are now able to reduce customer churn and develop deeper insights into their consumer needs.

Cloud—during the extreme scenarios such as storm, bushfire, etc. the scalability benefit of cloud infrastructure is being widely used by the utilities to address high volume customer interactions. Also, the data encryption, identity and access management (IAM), single sign-on (SSO) are some of the unique features of cloud computing that help utilities manage the security and privacy of customer information effectively.

7   Selected Examples from Global Utilities in Managing Customer Experience

Across the globe, we are observing that utilities are taking 4 key approaches in improving the customer experience leveraging the digital.

New Product and Services—we are seeing utilities are coming up with offerings such as subscription model for electric car with home charging facilities, online only

brand for tech savvy cost-conscious customers or dynamic tariff for price conscious consumers.

New Sources of Revenue for Prosumers—Utilities are bringing new sources of the revenue for their prosumers by rewarding or incentivizing them if the prosumer enrolls their solar or storage in the VPP program of utilities for managing the peak load.

Platform for Energy Management/Convenience—Utilities are coming with various new platforms for energy management by the customers such as demand side management where customers can change or shift the load against the instruction of the utility. We are also seeing customer convenience platforms for end-to-end customer journey management starting from enrollment to Empowerment.

Joint journey with Customers—In their journey to renewable, utilities are working very closely with the customers to design and develop the renewable roadmap. The joint journey is a win–win situation to both as it helps the customer to have renewable energy and helps the utility to meet its sustainability agenda [6, 7] (Fig. 11).

Fig. 11 Examples of customer engagement

8 Conclusion

Utilities today are in search for new roles and responsibilities around the empowered prosumers. While most of these new roles are focused towards providing an affinity services around the lifestyle of the empowered consumer such as smart home, green energy and beyond the energy, the core of the customer service such as trust and transparency and keeping the power on still play an equal important role in improving the customer experience. The success of the customer improvement lies how utilities can provide affinity services without affecting the core of the customer services.

Last but not the least, involving the customer from the beginning in defining all of these customer journeys; not only to obtain the customer buy-in and their empathy captured, but also include a feedback loop from the customer to correct the course of journey at the all the way through.

References

1. UK Customer Satisfaction Index. The state of customer satisfaction in the UK, July 2020
2. American Customer Satisfaction Index Energy Utilities Report 2019–2020
3. Energy Consumers Australia, Energy Consumer sentiment Survey, December 2020
4. The revival of customer loyalty: How regulated utilities can reshape customer engagement. McKinsey article
5. https://www.cisa.gov/critical-infrastructure-sectors
6. TCS Blog. https://www.tcs.com/blogs/renewable-energy-utility-industry-future. How Renewable Energy is Transforming Utilities with the Prosumer at the Center
7. TCS Blog. https://www.tcs.com/blogs/utilities-future-experience-efficiency-ecosystem. Experience, Efficiency and Ecosystem. Decoding the DNA of New Digital Utilities