Electric utilities

Future business models and role of IT

Generation and distribution utilities will innovate in search of newer business models for all-round sustainability of enterprise and IT will play a crucial enabling role, says Rajeev Singh.

Electricity is one of those modern amenities that we take for granted and most other technological advancements, including automation in any sphere, depend on a reliable electrical supply system. In this context, one wonders if traditional business models will still suit the emerging challenges and demands on them. Electric utilities have been going through transformation in many ways. Depending on its evolution in a given region or country, we may observe lead or lag and for the sake of discussion, we could use the Indian context though it could be extrapolated to other regions.

We will discuss factors that may influence traditional business models and try to anticipate what new business models can emerge as a result. Information technology (IT) already plays a significant role in day-to-day operation of utilities (and together with operational technology (OT) is likely to do even more so). So we will look at the role of IT in the context of potential future business models (or changing business models) and confine the discussion to generation and distribution utilities as transmission utilities tend to be natural monopolies and may be less subjected to these pressures. So let us look at some key factors or trends and analyse the business models that may emerge. The role of IT is discussed alongside.

Rising cost and uncertainty around fossil fuel: Traditional business models will come under pressure to deal with risks and costs pertaining to fossil fuel. Since fuel is the most important input for generation, it will be interesting to see what innovations emerge in business model to deal with it. There are new power plants in India that are idle owing to high cost or unavailability/uncertainty of fossil fuel or related issues. Recently, a few power plants in Tamil Nadu declared that they would be shutting down due to the high cost of imported coal.

Now the question is, can generation utilities tackle this fuel linkage challenge through innovation in business model? For example, we have seen efforts towards backward integration in the fuel supply chain. Or will there be other innovations to ensure that the risks and returns are shared by fuel suppliers and generation utilities to ensure that interests are completely aligned and profit margins stable and shared in the value chain (fuel supply to generation)? The key role of IT will be that of an enabler to support this. Traditionally, IT has focussed on providing what is known as ‘enterprise systems’, but the very definition of enterprise will change. A seamless interchange of enterprise information is what is required. In this particular case, information from fuel production through to the fuel supply chain should seamlessly flow in a manner that generation plants remain completely aware of it in order to respond at the plant level in the optimal way. It is quite possible that entire fuel supply chain information is delivered through cloud computing which should easily interoperable with generation enterprise systems.

Environmental regulation and carbon market: Till a decade or so ago, a negative externality like emission/pollution wasn’t a cost to utilities. It now represents a significant cost and also a significant opportunity through carbon markets. So it is already playing a central role in business planning in generation utilities. Will it give rise to shifts in business models, and it could be an interesting speculation if carbon credits will be a differentiating factor in profitability more than the margin from traditional business. Reminds one of the case of Ford Motor company’s vehicle financing creating better margins than vehicle manufacturing a few years ago. What is clear though, the emission monitoring, its audit and verification, carbon trading, integration between generation and trading will require a new thinking around IT. We will need IT and OT infrastructure for emission monitoring, emission certification and eventually trading.

Emerging market for energy efficiency: It is anticipated that with rising energy costs and supply uncertainties and shortages, there will be a growing...
market for energy efficiency. According to some estimates, by 2030, energy efficiency and consumer behaviour changes will offset more CO2 than all the new wind, solar, and other alternative energy generation methods combined. Does it mean that utilities will look at new business models in which they help their customers reduce energy consumption by helping them become energy-efficient? Quite possible and there is evidence of the same. The traditional utility business model is ill-suited to support and reward utilities for investing in energy efficiency of customers’ homes, offices, businesses, institutions and industries. There may emerge new business models in which utilities earn an additional margin/reward by helping consumers reduce their energy bills and associated gains (including carbon credits earned) resulting from reduced energy consumption. Such a business model again works only around easily verifiable results. Energy efficiency and energy conservation programmes anyway require robust, fully integrated, real-time systems with the use of artificial intelligence perhaps to enable energy consumption, and equipment efficiency monitoring. Robust business intelligence architectures will be deployed to ensure near real-time analysis of huge amounts of data and to support the energy efficiency programmes.

*Project risks and stakeholder dissatisfaction:* Many power projects are suffering from land acquisition related issues. If we keep the politics around land acquisition and policy/legal inadequacy around land acquisition, there is enough evidence of genuine resentment against land acquisition. Undercurrents of anger and resentment pose a challenge even after land might have been legally acquired. Poor/inadequate stakeholder engagement is often a reason. Will utilities be able to take the stakeholder engagement forward the way several companies have successfully done by making employees the share-holders? Will we see a new metric like power generated per square yard of land used, or profits per square yard and that a part of this profit is shared with original landowners that engage them on a sustained basis? Another innovation can be by integrating the CSR activities through a cooperative organisation whose members are landowners. The role of IT again will be to enable effective engagement with such stakeholders through effective information sharing. And the very definition of enterprise systems will undergo a fundamental rethink.

*High AT&C losses for state utilities:* Most state utilities are completely unviable and it is going to be almost impossible to turn them around without deploying alternate business models. The distribution franchisee model is one such attempt. Privatisation is another option that has yielded results. Rural cooperatives could be another business model that may emerge wherein the consumer’s stake is linked to ownership and hence profits earned. The traditional business applications will need to support new business processes.

**THE ROLE OF IT**

Utilities will continue to innovate in search of newer business models to ensure economic, social, and environmental sustainability of business enterprise. IT will have to play a crucial enabling role. The key elements could be as under –

*Architecture:* Open IT architecture will be the key to support emerging business architectures/models. Enterprise applications will be selected for their architecture more than for anything else.

*Cloud computing:* Some critical aspects of utility business model such as carbon market is likely to be supported through cloud computing.

*IT and OT integration:* Several critical elements of the new business models will depend on reliable and accurate data in real time. Emission monitoring in power plants, energy consumption details from consumer installations are some examples. IT and OT will have to go beyond an occasional handshake to hug each other wholeheartedly.

4. **Real-time analytics:** With the enormous amount of data coming through key measurements in real time, analytics will play a key role.

5. **Smart grid-related IT infrastructure:** This is one of the most intensely talked about set of technologies, and will play a key role in supplier as well consumer-led business model innovations.

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