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BADRINATH SETLUR says proper implementation is key for results when deploying predictive analytics.

Ageing assets and workforce, an influx of networked micro-grids, and the proliferation of intelligent devices that form the smart-grid on the traditional power grid are challenging utilities to identify more effective and efficient processes to manage and monitor their critical assets – and to do so with high safety, reliability and compliance.

Traditional and smart asset management have a common objective – to aid in the reduction, minimisation and optimisation of asset life cycle costs across all phases, from asset investment planning, all the way to operation and maintenance.

At present, preventive maintenance schedules prescribed by manufacturers are not enough to help utilities avoid asset failures. In order to improve customer satisfaction, utility organisations need to work towards avoiding unexpected outages, managing asset risks and maintaining assets before failure strikes. Reducing outages and shortening restoration times are the most significant challenges in the area of power distribution, with 58 percent of respondents recognising the need for a mechanism to predict equipment failure, the Ventyx Electric Utility Executive Insights annual survey found in 2013.

More than ever before, utilities are looking towards predictive analytics to extend the life of assets, as well as to bring greater predictability to performance and health. By applying predictive analytics to smart asset management, utilities can realise asset life cycle cost reduction while improving the accuracy of their decision-making, allowing them to plan and prioritise maintenance activities.

By working proactively to collect and distil historic and current information to create predictive models for future events, utilities can enhance customer satisfaction, reduce total cost of ownership and optimise the field force, as well as improve compliance.

Customer satisfaction and power reliability are two important measures of a utility's performance. Unexpected equipment failures can impact both. Customers expect planned outages to be communicated in advance for the purposes of planning for electricity consumption. As a result, utilities also require proactive maintenance of assets prior to failure, so as to avoid penalties governed by strict outage regulations.

Each asset has multiple associated costs, mainly in terms of procurement, installation, operations and maintenance, as well as failure and decommissioning. Unexpected failure cost is the leading expense component of any asset. These costs include the expense of the asset in service, collateral damage cost, regulatory penalty, disposal of damaged asset, lost revenues and intangible costs.

By preventing key equipment failure, utilities can save a sizeable amount of money through predictive maintenance practices. Accurate modelling techniques utilise historical data from multiple sources, enabling the generation of predictions and risk scores. They also produce interpretable information to allow the understanding of implications of events, so enabling the right response to be implemented.

A comprehensive understanding of asset health can serve utilities well in terms of work planning, prioritisation and scheduling. Unexpected equipment failure often requires reallocation of crews from other work locations to restore the outage, hiring of extra labour and, often, an entire rescheduling of other planned maintenance activities. The percentage of work done in reactive activities can be effectively applied for predictive maintenance – improving crew response time and utilisation, while also reducing total maintenance duration and asset downtime.

Predictive asset analytics proactively addresses potential safety risks by integrating data from multiple sources – SCADA (supervisory control and data acquisition), EAM-GIS (Enterprise Asset Management - Geographic Information System), online monitoring systems, weather channels along with non-operational data and so on. They enable utilities to identify safety risks and deploy suitable operational actions to mitigate these risks in a shorter span of time.

As organisations venture forward on their predictive analytics journeys, the need to ensure that a predictive asset analytics solution fits into the overall strategy and future business requirements is vital. Organisations need to clearly define the immediate objectives of the solution, understand future business requirements and assess the scalability prerequisites to support additional applications. Once these aspects are established, the analytics platform and statistical method for the solution will naturally flow.

In deploying predictive analytics, implementation quality determines how well utilities achieve projected results from predictive analytics programs. In order to mitigate the implementation risk for comprehensive end-to-end predictive solutions, an effective way is to harvest the best-in-class solution from multiple providers – data management, systems integration, analytics engines and operational technology integration. The time has come for organisations to adopt a data-driven culture. ●

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