The Evolution of IT in Energy Risk

Over the past 20 years, the importance of information technology in the energy community has grown significantly, but there is still room for improvement in areas such as risk identification, risk measurement and risk treatment.

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In 1992, Francisco Fukuyama wrote *The End of History and the Last Man*, a successful book that asked important questions about where we stood as a society. Today, the energy trading and risk management industry is similarly pondering its fate. For example, from an evolutionary perspective, are we the last energy traders and the last risk managers on Earth?

Well, coming back to Fukuyama, he later noted that the message of his book was misunderstood. He was not predicting the end of the world, but the end of history; e.g., political institutions, at a certain point, will stop evolving.

Will we see something similar in trading and risk management? Will it stop growing and moving forward?

This would be a pity, as we (energy traders and risk managers) only started to have fun relatively recently. Let’s not forget our origins. Oil markets had been dominated for nearly 100 years by fully-integrated companies, preserving a market where prices were low and stable. For other reasons, the same was true for other energy sources, such as gas and power.

"Our history" started in the 1970s, when the two oil shocks, embargoes and revolutions prepared the ground for the first energy trading companies. Remember, in 1974 in Switzerland, Marc Rich & Co. was founded - the same company that 20 years later became Glencore.

Is there a chance that we will come back to the pre-1970s environment? No. Recent events have clearly demonstrated that this is impossible.

However, if energy trading - and oil trading, in particular - is going to be around in the future, and if the evolution is not over, then we should try to identify the probable changes and trends. Those will certainly impact risk management, because risk management is closely intertwined with other major business processes of energy companies.

If companies evolve over time, and if their business processes change, then risk management also needs to change; otherwise, it will become outdated and useless.

The Information Technology Wave

For a long time, the common view was that energy production and trading was an old-fashioned business, running processes that did not need information technology (IT). Indeed, there was some thought that IT could not deliver sizeable value-added benefits. However, this has proven untrue.

Liberализed natural gas and power markets, for instance, heavily rely on IT. In fact, their liberalization probably would not have been possible without the deployment of modern technology. Examples of the rise of IT in the energy sector include the 1999 launch of Enron Online (which at the time was the world’s largest e-commerce website) and the 2000 debut of the all-electronic Intercontinental Exchange (ICE).

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http://www.garp.org/risk-news-and-resources/2014/september/the-evolution-of-it-in-e... 02/10/2014
**Risk Identification.** The identification of the sources of risk crucially depends on the acquisition of data from the business, and data capture and management is far from being automated. All communications rely on traditional means—e.g., physical contracts are still exchanged, and data continues to be manually captured and managed. What’s more, physical markets are still bilateral—the goods need to be precisely described and identified, because they differ a lot.

Significant resources (both time and human) are needed to make information flow. However, at both company level and market level, crucial data are still missing. The recent port probe in China, where the same cargo was used to obtain financing multiple times, is a good example. The good news is that significant change has already begun. For example, electronic bill of lading (eBL) solutions—which automate the processing of documents—have been introduced. Considering the fact that document processing has required manual labor for centuries, this is a major step forward.

**Risk Measurement.** The process that assigns values to the probability and consequences of a risk is better positioned in terms of IT deployment. However, IT is limited to companies that have actually introduced modern measures for risk. Risk analytics is quite advanced and, when embodied in business processes, heavily relies on IT. Without a properly-shaped IT architecture, it is difficult, and probably impossible, to run risk measurement as a business process.

**Risk Treatment.** The objective of risk treatment is to reduce or increase the amount of risk, in line with the risk appetite of the company. In energy trading, this is normally achieved by trading energy derivatives financial instruments (e.g., futures, swaps and options) that represent an effective way to hedge or speculate in these markets. In derivatives trading, IT is largely available, but currently applied in a patchwork manner: futures are completely automated and traded in electronic markets; swaps, on the other hand, are traded via traditional means (e.g., phone and emails), but cleared electronically in the post-execution process.

In general, there is a mixture of IT-based processes and manual processes in the energy sector. More and more companies, however, are adopting complex IT-based models to take advantage of opportunities.

**Pausing Thoughts**

Risk management is a complex business process that uses data to produce other data; consequently, data quality is paramount. To maintain data quality, it is important for a firm to remain consistent with IT. For example, if data capture is automated, then other risk management steps (e.g., risk identification and measurement) should also be managed electronically. This IT consistency not only preserves the integrity of data and processes but also reduces operational risks.

Recently, companies active in physical energy trading have tried to ramp up their use of IT by implementing (and, in many cases, conceiving from scratch) so-called Energy/Commodity Trading and Risk Management Software (ECTRMS). These complex IT systems have been designed to manage front-to-back office processes for crucial functions such as trading, risk management, treasury and accounting.

Moving forward, IT will continue to play an important and innovative role in energy risk management. While energy trading companies have, overall, made great strides in implementing and using IT, they still have a long way to go before realizing its full benefits.

Alessandro Mauro is a veteran risk practitioner. He recently worked as the head of the risk management department of LUTASCO S.p.A, the international trading and supply company of Lukoil. At LUTASCO he was responsible for market risk identification and measurement, as well as for the post-trade management of financial derivatives. Earlier in his career, he was a risk manager at Sorgenia (a primary Italian gas and electricity trading firm), where he established the risk management function, structured innovative products and traded derivatives.

He has published several articles on energy and risk management, and is currently a member of GARP’s Energy Oversight Committee.