WHITEPAPER

BUILD VS. BUY: WEIGHING THE OPTIONS FOR OPERATIONAL AUTOMATION IN COMMODITY AND ENERGY TRADING

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Commodity Technology Advisory

CTRM Market Research, Analysis and Insights

EMPOWERING OPERATIONS WITH AI-BASED AUTOMATION TOOLS

The current market environment is marked by geopolitical uncertainty and intensifying regulatory pressure. Companies must navigate sudden tariffs and sanctions, disrupted transportation routes, newly introduced regulations, and frequent changes to existing policies. The sheer volume and variability of regulations, tariffs, and taxes across the supply chain are becoming increasingly difficult to manage.

At the same time, trading portfolios are expanding across regions, and new commodities – such as hydrogen, biofuels, and a wide range of environmental products – are emerging as part of the energy transition. As a result, the time required for logistics operations and back-office activities continues to grow, along with the risk of human error when handling the complex, document-heavy processes that define trading, logistics, and settlement.

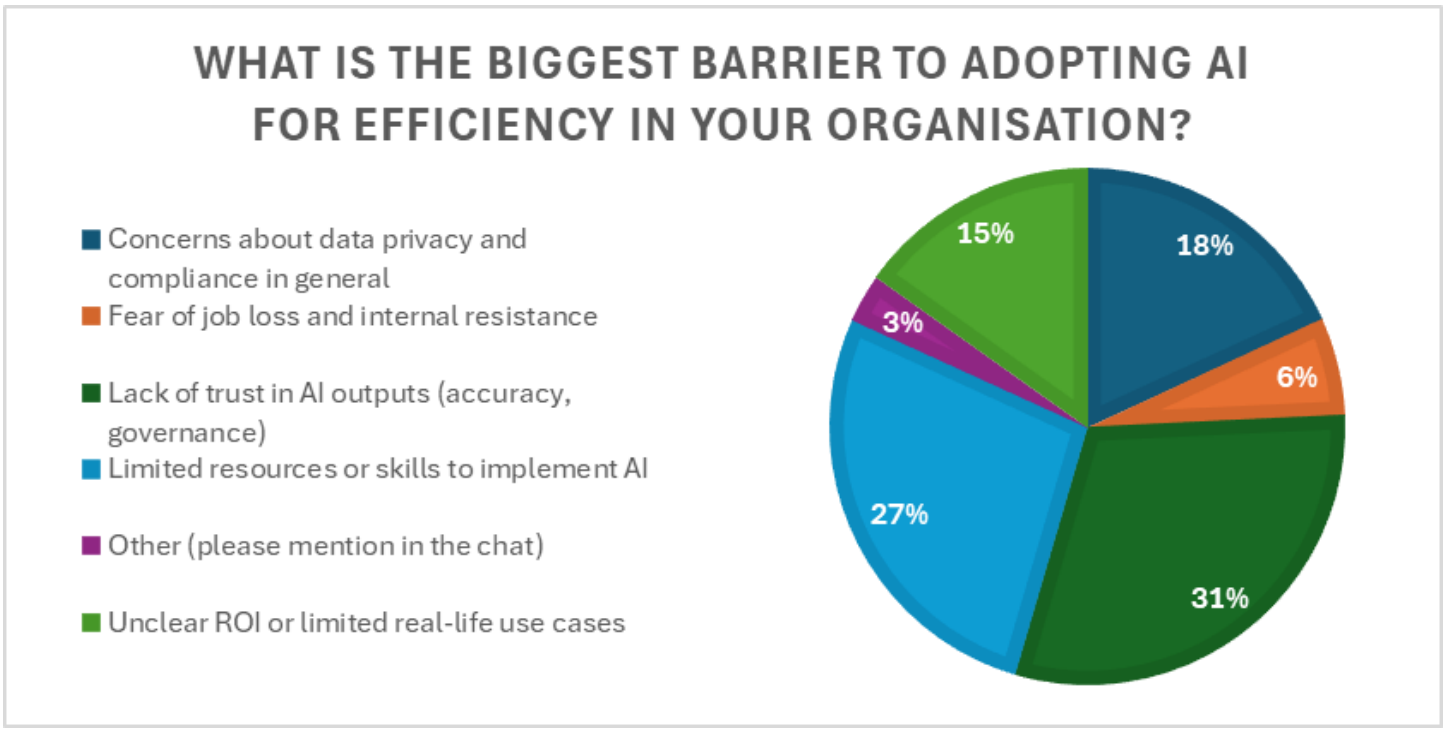
Automation would bring huge benefits. It will result in faster execution, cleaner data, and a foundation for the next generation of operational intelligence in commodities. It is no surprise that many companies are seeking greater automation and real time insights for their operational workflows.

Technology is now stepping in to help. AI makes it possible to automate processes which are impossible to automate using conventional tools. AI is capable of intelligently understanding context, extracting data, normalizing it against commodity-specific knowledge bases, and delivering reconciliation automations integrated with CTRMs, ERPs, and other applications. A major advantage of these tools is their ability to automate processes across diverse software environments – an essential capability for companies with large ecosystems of solutions.

Furthermore, AI Agents, built on AI-based frameworks, can be configured to automate various non-standard business processes. At the core of this concept are specialized agents trained to perform specific tasks. These agents can be orchestrated into workflows that require partial automation but cannot be fully automated.

Despite significant progress, concerns about AI adoption remain. Recent polls by Commodities People indicate that, in the energy and commodities sector, the greatest challenges relate to trust in AI-generated output and limited internal resources or skills needed to implement AI (see the figure below). These are precisely the areas where ClearDox can provide support.

The following section outlines the most common AI-powered automation use cases offered by ClearDox. Subsequent sections explore implementation options for AI technologies and highlight the advantages of using standardized solutions, particularly in addressing challenges related to trust, skills, cost, and time to market.



The source of the diagram is the result of polling questions performed at the Commodities People webinar "Digitalisation in Commodities Session: Beyond the AI hype: Cost cuts, compliance, and real-world impact on commodities markets".

CLEARDOX IMPROVES BACK OFFICE AND LOGISTICS PROCESSES THROUGH AI-DRIVEN AUTOMATION

Modern technologies are transforming how commodity companies manage back-office and logistics operations. This section provides examples of complex manual processes in commodity and energy businesses and explains how ClearDox empowers organizations to reduce operational risk, improve efficiency, and automate these manual workflows.

Logistics and inventory management sit at the heart of every commodity business. Yet many firms still rely on fragmented data and manual processes from reconciling inputs from multiple locations to processing unstructured data from emails or PDFs. The lack of real time visibility into inventory movements leads to delayed decisions and costly errors. ClearDox provides real time visibility across all inventory locations and transportation modes, automated document matching, data validation, and contract reconciliation.

AI-driven digitalization enables high speed, accurate checking of reports, bills of lading, truck tickets, and pipeline statements. Built-in audit trails and real time status tracking ensure that compliance is seamlessly embedded in daily operations.

Energy trading involves non-standard deal structures which require complex **deal life cycle management** from contract negotiations to reconciliation of volumes, quality KPIs, confirmations, and settlements. Non-standardized long-term contracts often include hidden clauses such as demurrage or quality waivers, creating potential for disputes and penalties. ClearDox's AI-driven automation normalizes data from broker recaps to confirmations and contracts, detects discrepancies in volume, price, and quality, and surfaces risky clauses before they become costly. Real time insights into operational KPIs make deal lifecycle management far more efficient and transparent.

Letters of Credit (LCs) are essential in international trade, ensuring payment once the commodity is delivered and contractual conditions are met. However, their lifecycle from validation and negotiation to final acceptance often involves numerous manual steps and inefficient communication. ClearDox digitizes and automates LC workflows by extracting and validating commercial terms, reconciling LC details with trade documents such as invoices, certificates, and shipping instructions, and then flagging discrepancies in real time. A configurable rules engine supports LC term reviews, negotiations, approvals, and document categorization, delivering full transparency and compliance.

Reconciliation of vendor and supplier invoices against transport and secondary cost documentation remains one of the most resource-intensive back-office tasks with high impact on the company's revenues. Accounts payable (AP) teams struggle with fragmented data, inconsistent formats, and growing pressure to manage costs and risks. ClearDox Payment Processing eliminates manual entry and automates reconciliation between invoices, supporting documents, and internal records, thereby scaling AP operations, improving working capital management and derisking cash flow processing.

These are a few examples of the inefficient manual processes in the commodity and energy business which can be automated using modern technology. As global trade grows more complex, companies increasingly recognize the need to digitize, derisk, and future-proof these functions. The decision on how to proceed rapidly becomes strategic.

When both the challenges and the technical means to address them exist, the remaining question is whether to develop a solution in-house, buy it from a vendor, or adopt a hybrid approach where a vendor provides the framework and the company customizes it for its own tasks. This paper weighs these options and examines their respective pros and cons.

WHY DO COMPANIES CONSIDER A "DO IT YOURSELF" APPROACH?

There are valid arguments in favor of a "do it yourself" approach, especially for major industry players with large IT teams. These arguments can be divided into 3 groups which we consider in this section. Some of the arguments are typical and valid arguments used in various business cases and not only for operations, others are related to the current phase of development for AI-driven operations solutions and can be viewed as temporal, and finally the third group of arguments is specific to the AI-driven technology and is important differentiator of the modern software tools from the historical examples.

Typical arguments for in-house solutions

Here are arguments which companies, especially those with strong IT resources, typically use to prioritize solutions made in-house.

One of them is requirement for a tailor-made solution for specific workflows. Especially large companies with multi-market trading and logistics tend to emphasize uniqueness of their processes. If they ever think about purchasing the software, they require highly customizable solutions. While smaller companies with less development resources are ready to adjust their workflows to best practice approaches suggested by vendors, the major companies require software to adjust to whatever historically grown workflow is accepted in the company. No matter if we are talking about CTRM, ERP or operational intelligence tools, the requirements for modeling sophisticated individual workflows are typical for major industry players and justified by company's expertise. However, not only in-house built solutions but also highly flexible vendor solutions or solutions based on customizable frameworks would be able to satisfy these requirements.

The next point is related to intellectual property considerations. Companies consider their solution as their know-how and key competitive advantage and therefore would be reluctant to agree to use tools which are shared with other companies. This is especially valid when considering the solutions underlying core business of the company. An example of these kinds of solutions is given by so-called aggregators – companies that consolidate multiple distributed resources into a virtual power plant to trade them on specific markets. As the study conducted by ComTech (VPP Market Study – ETT Center) shows, most of the aggregators consider the underlying software tools as their core business and develop them in-house. Some of the aggregators – e.g. Octopus – have separated software

development and aggregator business into different units and market the software as a separate revenue stream.

However, intellectual property concerns are usually less important when considering the automation tools for operational workflows, since these tools are helping to reduce risk of mistakes and time spent on the non-revenue generating parts of the business such as back-office operations or logistics and consequently free more time for the revenue generating activities of the company. The upside-based risk reduction and efficiency increase is high, whereas concerns about losing competitive advantages are low.

Direct control is the next frequently used argument for internal development. Companies want to keep control over priorities, functions and features, and be able to perform changes in their solutions when business requires such changes without the need to reach out to a vendor for help. This is a valid argument, especially looking at the quickly changing market conditions, regulations, etc., requiring quick adjustment of the solutions in response to those changes. However, the solutions offering high degree of flexibility and customization can satisfy this requirement as well. Combined with proper user training programs and AI-driven user assistance the work on adjustments of these flexible solutions can be performed in-house or by third parties without the need to reach out to a vendor.

Another approach that commodity companies can take to enable quick adoption to various changes is to use vendor's managed services on the top of SaaS solutions. Many vendors offer services which include full responsibility for the solution and implementation of any needed adjustments. This approach also ensures against loss of know-how in case in-house specialists leave the company.

Typical arguments for in-house solutions

Looking at the history of energy and commodity trading software, we see a clear pattern: in-house tools emerge to support each new wave of market change first, standard tools come later. When energy trading first appeared, companies built in-house tools to manage their activities. Later, experienced traders founded IT firms to develop the first ETRM systems. Initially, there were only a few, but as the market matured, more solutions appeared, some designed for large players with high flexibility, others offering out-of-the-box functionality for smaller firms.

A similar evolution occurred with intraday automated trading in the European power market. What began as internal developments was soon complemented by standardized tools for smaller participants. Today, this space is dominated by platforms that provide market connectivity, core functionality, and flexible frameworks for building bespoke algorithmic strategies.

Operational intelligence tools powered by AI are only beginning to enter the market. Vendors' solutions remain few, but awareness of their benefits is spreading

quickly across energy and commodity businesses. At this early stage, the temptation to "build it yourself" is strong, but, as the following sections explain, the "buy" approach offers significant advantages. As the market matures and more vendor solutions emerge, these benefits will become even clearer.

Availability of technology

One of the defining features of modern technological development is its broad accessibility. Open-source libraries and low-cost LLMs create a sense of vast possibilities and technological freedom. Unsurprisingly, data scientists in corporate IT departments are eager to experiment and quickly apply these tools to internal workflows.

However, this path comes with significant challenges. The first is the need for a solid data foundation to ensure AI-powered technologies deliver reliable results. Companies often underestimate the complexity of data timeliness and quality, governance, security, sensitivity, sharing policies, and privacy. Also, maintenance of AI-powered tools is more challenging than usually expected. Beyond data, organizational resistance and questions of trust in AI pose additional hurdles. Convincing people to change workflows, trust new systems, and overcome fears of job loss to AI are among the most serious internal struggles. Moreover, in-house data scientists and IT teams often lack experience managing such transformation projects within organizations. All these considerations are described below in more detail.

BENEFITS OF THE "BUY" OPTION

Experience, best practices and speed of implementation

When it comes to automating operational tasks, the main challenge is rarely technology - tools are widely available and becoming more affordable. The real difficulty lies in workflow analysis, designing processes that span multiple teams, and developing a deep understanding of what exactly needs to be automated. Effective platforms typically combine document recognition, data extraction, matching and rules engines, workflow orchestration, and low-code tools for end users. Building such a system in-house requires not only data scientists but multiple specialist teams and that's just the beginning.

Even for companies with strong and motivated IT teams, project initiation alone involves problem identification, architectural design, and resource allocation. Aligning vision and resources across the organization can be a major obstacle. Adding organizational resistance – such as fear of job loss – and timelines quickly extend far beyond those of a vendor solution implementation. Experience shows that the average implementation of ClearDox solution takes 4 to 7 weeks depending on complexity, which is often shorter than the design phase alone of an internal build, even before a single line of code is written.

Vendor teams bring another critical advantage: expertise. The same specialists who created the solution have implemented it across many customers, gathering best practices and refining methods with each project. Their accumulated know-how allows them to apply technology effectively in the context of complex operational processes and recommend best practices to their customers.

Specific challenges of AI deployment and maintenance

An effective intelligence platform is far more than just an AI model. Commodity companies often underestimate the challenges of data management, deployment, versioning efforts, testing and maintenance of AI-powered tools. Vendors with implementation experience are well aware of the pitfalls that arise from taking data management too lightly.

An operational intelligence platform must unify automation for diverse data inputs including documents and unstructured or semi-structured formats to create a normalized data foundation. The issue goes even beyond technical interoperability: governance, ownership, security, sensitivity, traceability, and auditability must all be considered when data is shared across an ecosystem of solutions. Only then seamless operations across workflows, analytics, agentic functions, and interactive capabilities can be achieved.

It is worth noting that AI-based solutions are especially challenging to maintain. While developing and deploying AI tools can be relatively fast and cheap, keeping them reliable over time is both difficult and expensive. The behavior of AI-driven tools depends heavily on input data, which is constantly changing. For example, an AI-powered email reader must continuously adapt to new and more sophisticated forms of spam. Unit testing of components and end-to-end system tests are useful, but insufficient in a dynamic environment. Ensuring reliability requires continuous live monitoring of system behavior in real time, combined with automated responses and human checks.

Software vendors, on the other hand, are better positioned to track technological trends, integrate new developments, and ensure smooth transitions between software versions. Their release processes and dedicated support capabilities provide reliable, long-term maintenance that is difficult for commodity companies to replicate internally.

Cost effectiveness

The cost–benefit ratio is always higher when each company focuses on its core profit-generating business. This holds true both for commodity companies and for software vendors. Technology is evolving rapidly, and for organizations where technology is not the core business, keeping pace with these developments is a significant challenge.

Developing solutions in-house requires substantial resources not only for project design, implementation, and testing, but also for user training, change management, release management, and long-term maintenance. Product maintenance is often underestimated: the original team that created the solution may leave, requiring new staff to be trained; surrounding ecosystems evolve, forcing interface updates; and new workflows emerge in response to shifting business needs. Each of these events demands adjustments or even new software releases. Choosing the "build" option means maintaining a permanent support team with deep knowledge of the solution – an ongoing cost that diverts funds away from the company's core business. By contrast, vendor software allows firms to focus on their main activities, making it the more cost-effective path.

Some companies do treat in-house solutions as part of their core business and are prepared not just to bear the costs but to turn them into revenue streams. A strong example is Octopus, the UK-based aggregator. It developed its own software to integrate renewable technologies used by households and C&I businesses into a virtual power plant. The software, now marketed as Kraken, underpins Octopus's aggregation business but can be also licensed to other aggregators across Europe and beyond, serving millions of customers worldwide. This illustrates that when a company chooses to build a complex AI-driven solution in-house, it must commercialize it as a vendor product to achieve cost-effectiveness.

Technical considerations

Finally, interoperability within a software ecosystem is typically higher when proven, standardized solutions are used. Although the industry lacks true standardization of interfaces and formats, AI agents can help bridge gaps by building interfaces and interpreting unstructured or semi-structured data, addressing one of the most critical challenges in today's IT landscape for energy and commodity firms. As Everest Group notes, leading vendors "are constantly investing in expanding the library of pre-built models and out-of-the-box packaged solutions, especially for industry-specific use cases and document types." [Everest Group Intelligent Document Processing (IDP) Products PEAK Matrix® Assessment 2025 – Focus on HCLTech]

Such pre-packaged solutions make system integration far easier. Moreover, standardized and market-tested products are more reliable, as they embody the collective experience of numerous projects and the requirements of many customers.

ClearDox, for example, offers pre-built digitizers covering hundreds of counterparties. Each new customer benefits from this accumulated experience. Internal builds would need to create every digitizer, extractor, and workflow from scratch.

Also, vendor solutions undergo more profound testing as their test cases are based on requirements of multiple projects, and the scope of their testing scenarios is significantly broader.

CONCLUSION

The decision on "Build" vs. "Buy" is ultimately strategic. Both approaches have their merits. For the "build" option, the main arguments such as a tailor-made solution based on in-house expertise and full control over the product are valid and important considerations. However, if a vendor solution is flexible, highly customizable, and easily integrates with third-party tools, it can meet most of these requirements. In fact, when purchasing a platform with a library of AI agents that can be orchestrated into custom workflows, the solution can effectively function as tailor-made.

By contrast, the arguments for the "buy" option, such as faster implementation, access to best practices, lower costs, standardized interfaces, pre-packaged AI agent library, and continuous technological updates through release cycles are harder to dispute.

For a commodity company to meet these requirements with an in-house solution, it would need to establish a dedicated software development unit to maintain and evolve the system. But in order for such a unit to be financially viable, the software would need to be licensed to other companies. In that scenario, the commodity firm effectively becomes a software vendor, creating a second line of business and the solution becomes a vendor solution and not custom built one.

For companies without the intention of building and running such a unit, the smarter choice is to focus on their core business and leave software development and maintenance to specialized vendors.

In a market where competitiveness depends on implementation speed and efficiency, the case for buying rather than building is compelling. Established solutions prevent internal teams from wasting resources on duplicating existing tools, enabling them to direct their resources towards areas that are core for the business. Companies that take this path not only accelerate modernization but also gain a stronger position to lead their industry.

ABOUT **CLEARDOX**

ClearDox helps commodities trading operations to illuminate every stage of the trade lifecycle, reducing operational risk, increasing efficiency, and driving profitability.

The ClearDox Commodities Intelligence Platform is built specifically for the complex, fast-paced demands of today's commodity operations. It uses industry-specific artificial intelligence to eliminate manual data chaos and operational blind spots by digitizing, organizing and analyzing limitless volumes of information while automating critical operational tasks with the power of Agentic AI and its suite of Intelligent Applications.

ClearDox Intelligent Applications include Trade Confirmation, Operations Intelligence, Finance Optimization and Payment Processing. They proactively flag operational risk, reduce manual workload, and improve decision-making speed and accuracy. Embedded risk indicators help identify issues like duplicate invoices, incorrect accruals or misaligned contractual terms before they escalate into costly problems. With built-in generative AI and automations via ClearDox CoPilot + Agents, users can access contextual insights, automate workflows, and accelerate execution with confidence.

ClearDox supports companies across energy, agriculture and other commodity sectors. The technology connects directly with existing CTRM/ETRM, ERP and financial systems, enabling fast, low-lift deployments without disrupting ongoing operations. Data is safeguarded with ISO/IEC 27001-certified infrastructure, TLS encryption, and role-based access controls with SOC II, Type 2 compliance.

ClearDox

ABOUT

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Commodity Technology Advisory (ComTech Advisory) is the leading analyst organization covering the Energy and Commodity Trading and Risk Management (E/CTRM) and Energy Transition technology markets. Led by Dr. Gary M. Vasey, along with affiliate analysts Dr. Irina Reitgruber and Kevin Mossop, ComTech Advisory provides invaluable insights, backed by primary research and decades of experience, into the issues and trends affecting both the users and providers of the applications and services that are crucial for success in markets constantly roiled by globalization, regulation and innovation.

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