UNLOCKING VALUE IN ENERGY'S DIGITAL SUPPLY CHAIN

The Energy Industry's eCommerce Landscape in 2025

OFS PORTAL
TRUSTED ENERGY SUPPLY CHAIN NETWORK

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EXECUTIVE SUMMARY

In the dynamic eCommerce landscape of 2025, the digital revolution continues to reshape supply chains, including Energy. This paper explores key trends such as blockchain, Internet of Things (IoT), and big data analytics, alongside the impact of digital marketplaces.

Digitization has transformed Energy Industry practices, advancing electronic procurement (e-procurement) and field tickets management. Blockchain integration enhances security and transparency, fostering trust and enabling exploration of digital marketplaces.

IoT not only facilitates remote monitoring and autonomous systems, but it also enhances operational efficiency and safety. The growing data volume necessitates leveraging big data analytics for strategic insights, especially in digital marketplaces, emphasizing the need for robust data security measures.

To thrive, organizations must continue to embrace digitization, harness blockchain, leverage IoT, and master big data analytics.

The growing data volume necessitates leveraging big data analytics...

INTRODUCTION

Our white paper explores the transformative journey of the Energy Industry's supply chains in the digital age, examining both the historical foundations and the emerging trends that shape operations in 2025 and beyond. Beginning with Electronic Document Management (EDM) and e-procurement, we explore how these technologies have revolutionized traditional paper-based processes, enabling seamless order placement, approval, and monitoring from any location. Cloud-based services have played a crucial role in facilitating these advancements, addressing initial concerns about data security and fostering the growth of collaborative platforms and supplier networks.

As we progress through the digital transformation landscape, we encounter the critical concerns surrounding transaction security and reliability, particularly heightened by the proliferation of IoT devices, blockchain technology, and digital marketplaces. Compliance becomes essential for ensuring both legal conformity and operational efficiency amidst this digital shift. Robust software solutions automate processes, validate compliance, and mitigate risks associated with evolving requirements.

In parallel, the utilization of big data for actionable insights presents both significant opportunities and challenges. Effective data management and analysis are imperative to navigate the deluge of information generated by digitization successfully. This entails leveraging advanced technologies and human expertise to extract valuable intelligence and drive informed decision-making.

Looking towards the future, the digital supply chain promises to revolutionize traditional practices, offering boundless opportunities for heightened productivity, operational efficiency, and enhanced customer service. Success in this evolving landscape hinges on organizations' ability to embrace digitization, harness blockchain, leverage IoT, and master big data analytics. By adopting these strategies, businesses can navigate the complexities of eCommerce successfully and position themselves for sustained success in the Energy Industry's rapidly evolving supply chain landscape.

LEGACY BUSINESS DRIVERS

EDM has undergone significant evolution, spurred by internet-based technologies, continuous innovation, and enhanced interconnectivity among diverse technological components. This evolution mirrors the transformation seen in everyday activities like shopping, permeating every facet of business operations.

Evolving from traditional paper-based processes, e-procurement has matured over the past decade, offering improved functionality and capabilities. The digital supply chain's revolution hinges on user-friendly and mobile-friendly systems, facilitating seamless order placement, approval, and monitoring from any location.

THE DIGITAL SUPPLY CHAIN'S REVOLUTION HINGES ON USER-FRIENDLY AND MOBILE-FRIENDLY SYSTEMS
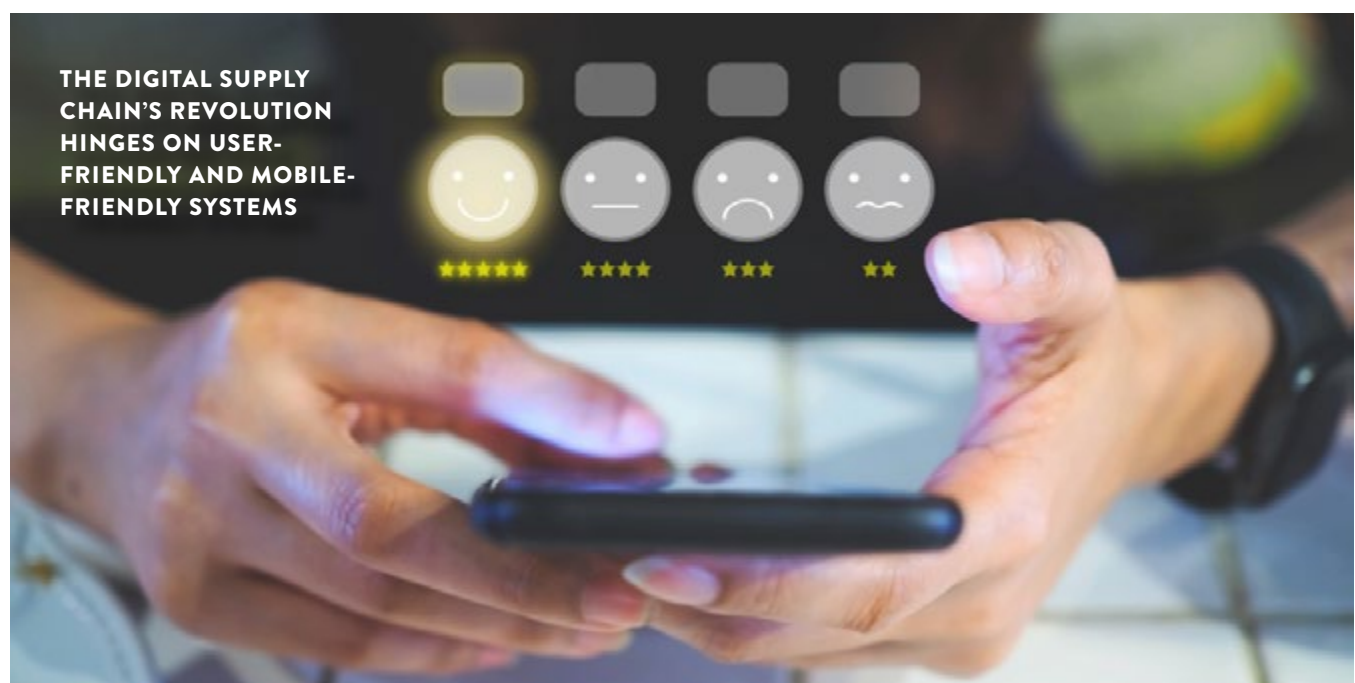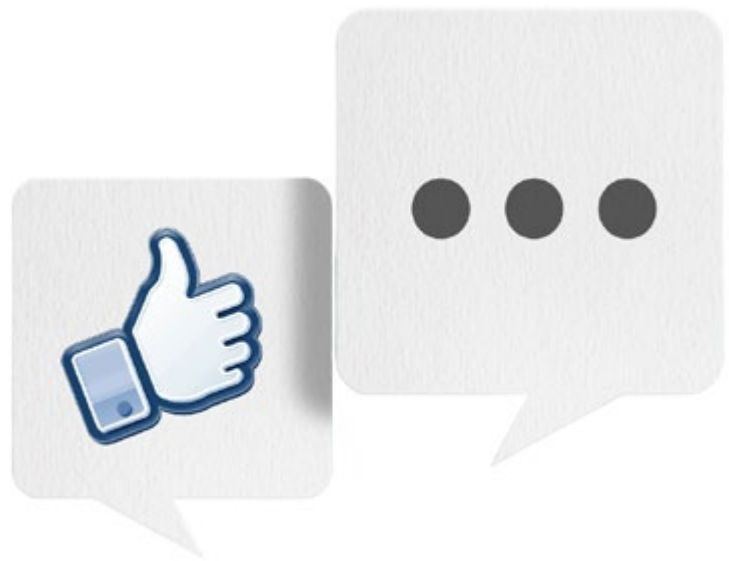
Trading networks, initially rooted in electronic data interchange (EDI), now offer expanded functionalities beyond mere data transfer, including supply chain finance and dynamic discounting. These networks increasingly resemble social media platforms, fostering swift communication and collaboration among participants.

In international trade and shipping, initiatives are underway to digitize traditionally paper-intensive processes like bills of lading. Despite complexities, digitization promises expedited payments, reduced administrative burdens, and decreased legal disputes.

Cloud-based services have played a pivotal role in enabling these advancements, overcoming initial concerns about data security outside organizational networks. This acceptance has facilitated the growth of supplier networks and collaborative platforms.

These networks ... resemble social media platforms, fostering swift communication and collaboration ...

Field Tickets, crucial in industries like oil and gas, underscore the digitization of documents supporting business processes. Traditional manual processes are being replaced by digital solutions, streamlining operations and reducing delays and disputes.

Service providers are driving this transformation, offering platforms to automate and digitize processes, enhancing efficiency and accuracy. These platforms enable seamless synchronization, real-time notifications, and streamlined end-to-end processes, significantly reducing processing times and enhancing revenue realization.

PLATFORM

| SEAMLESS SYNCHRONIZATION | REAL-TIME NOTIFICATIONS | STREAMLINED END-TO-END PROCESSES |

While these legacy business drivers remain foundational, newer drivers such as reliability and data security in transactions, the ability to implement digital supply chain connections instantly with new trading partners through vast improvements in interoperability using 4-corner networks, alongside advancements in IoT, blockchain, and digital marketplaces, are gaining prominence.

THE NEW DRIVING FORCES OF DIGITAL TRANSFORMATION

In our exploration of the digital transformation in the Energy Industry, we uncover the driving forces behind the adoption of emerging technologies. These drivers represent a shift in focus towards ensuring the security, reliability, and interoperability of data in transactions, as well as the seamless implementation of digital supply chain connections.

1. **Transaction Security and Reliability**

   In our exploration of the digital transformation in the Energy Industry, one of the paramount concerns is the security and reliability of data in transactions. As digitalization proliferates within the Energy Industry, sensitive data traverses complex supply chains, necessitating robust security measures. The rise of IoT devices, blockchain technology, and digital marketplaces has intensified the urgency for enhanced data protection, especially considering the escalating cyber threats observed in recent studies, indicating increases in cybersecurity breaches over the past year.
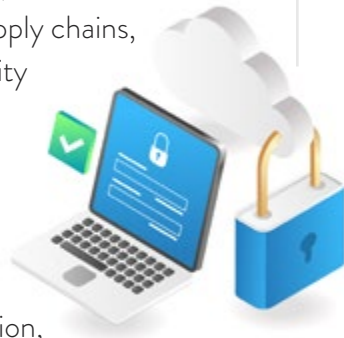
2. **Integration and Interoperability**

   The ability to seamlessly integrate digital supply chain connections with new trading partners is essential for driving operational agility and efficiency. Traditional supply chain networks often suffer from interoperability challenges, hindering the seamless exchange of data and information between disparate systems. However, advancements in interoperability, particularly through the implementation of 4-corner networks, are revolutionizing supply chain integration. These

% OF REPORTED BREACHES

2023   2024

According to Check Point's 2024 Cloud Security Report[1]:

- Cloud Security: 61% of organizations reported breaches in the last year, up from 24% in 2023.

- Cyber-attacks: In the first quarter of 2024, organizations experienced an average of 1,308 cyber-attacks per week, a 28% increase from the last quarter of 2023 and a 5% increase year-over-year.

- Breach types: Phishing is the most common type of breach, affecting 84% of businesses and 83% of charities. Other common types include impersonation in emails or online (35% of businesses and 37% of charities) and viruses or malware (17% of businesses and 14% of charities).

- Breach sectors: The sector with the most breached records and incidents is "multiple".

- Breach costs: The average cost of a healthcare data breach is $10.93 million, which is more than double the average for all industries. The cybersecurity report predicts that the cost of cybercrime will reach $9.5 trillion in 2024 and over $10.5 trillion in 2025.

- Vulnerability exploitation: This method of entry accounted for 14% of all breaches in 2024, which is three times greater than 2023.

- Human element: 68% of breaches involve a non-malicious human element, such as an error or social engineering attack.

networks facilitate instant connectivity and data exchange between multiple stakeholders, enabling real-time visibility, collaboration, and decision-making across the supply chain ecosystem. By embracing interoperable solutions and standardized data formats, Energy companies can accelerate digital transformation initiatives and drive competitive advantage in a rapidly evolving market landscape.
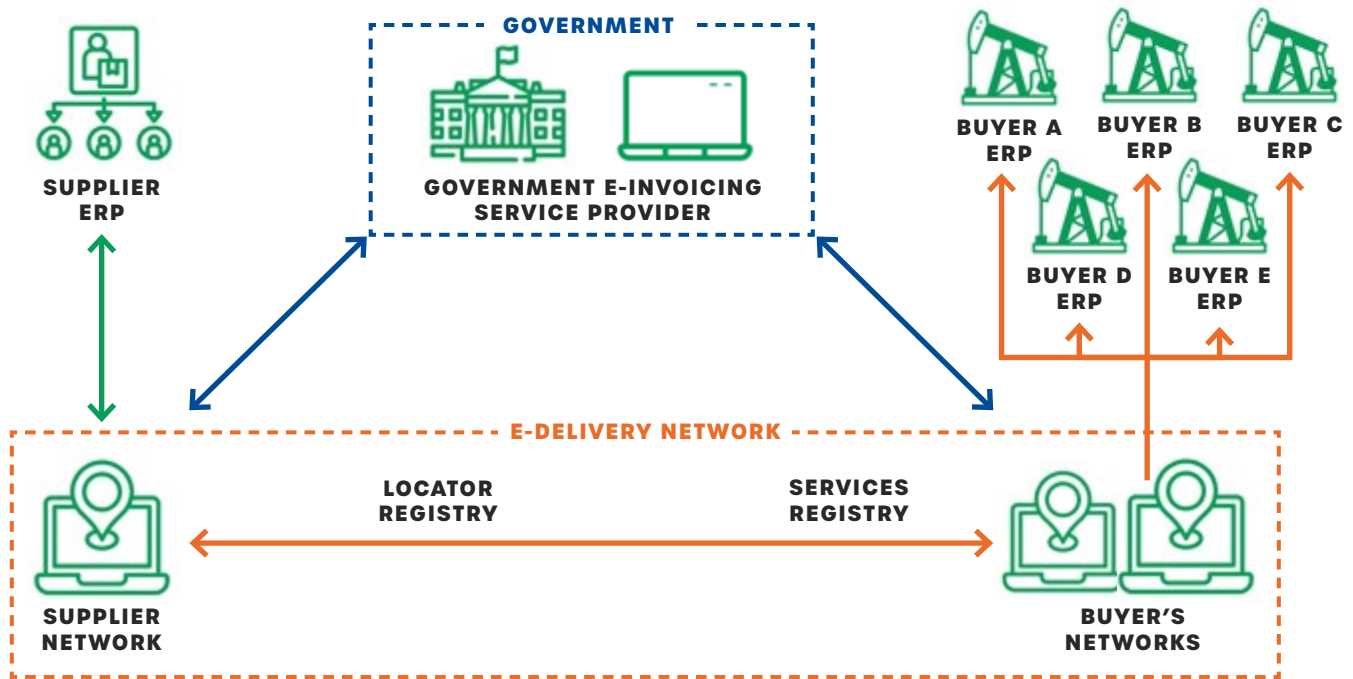
3. Surge in Adoption of IoT Devices

According to a new report from Berg Insight2, the Energy Industry's adoption of IoT devices will continue to surge. They predict a big jump in wireless device installations by 2028, from 7.8 million to 18.8 million. These devices are mainly used for remote asset monitoring. Cellular devices, especially Long Term Evolution Machine Type Communication (LTE-M) and NarrowBand-Internet of Things (NB-IoT tech), are getting popular, especially for remote tank monitoring. Other tech like Low Power Wide Area Networking that functions on Long Range wireless technology (LoRaWAN) is also catching on for monitoring tasks with low bandwidth needs.

4. Digital Marketplaces Will Continue to Strengthen

In recent years, the Energy Industry, particularly oil and gas, has shifted towards digital marketplaces driven by technology, consumer trends, and supply chain needs. Specialized online platforms offer a wide range of products, empowering buyers to compare and decide. The COVID-19 pandemic accelerated this trend, emphasizing the resilience of digital markets. Looking ahead, digital marketplaces will continue to thrive, shaping the industry's future through innovation and efficiency.

5. Utilizing Tech and Best Practices for Country-Specific Compliance

In the Energy Industry's digital shift, compliance ensures legal conformity, smooth transactions, and operational efficiency. To effectively comply, leveraging technology and best practices is key. Robust software automates processes, validates compliance, and reduces risks. Partnering with compliance-focused tech providers facilitates seamless integration with evolving requirements.

UTILIZATION OF BIG DATA FOR ONGOING TRANSFORMATION

The third aspect driving digital transformation in the supply chain is the continued utilization of "big data" – harnessing the immense volume of data generated by digitization for actionable insights. As we've discussed, the digitization of supply chain documents and the proliferation of IoT devices are already generating vast amounts of data, a trend expected to grow exponentially.

Managing this data deluge presents a significant challenge for businesses. The key lies in effectively sorting, analyzing, and presenting the data to extract valuable intelligence. However, the risk of data overload looms large, threatening to overwhelm organizations and obscure critical insights.

To navigate this challenge, businesses must leverage the right tools and technologies to sift through the data effectively. While advancements in artificial intelligence offer promising capabilities for data analysis, human expertise remains indispensable. Organizations need skilled professionals who can interpret data analysis, deploy effective strategies, and drive execution.

In the oil industry, for example, companies have long relied on expert geoscientists to analyze seismic data and identify optimal reserves. Similarly, in the realm of procurement and supply chain management, the combination of data analytics and human intelligence holds immense potential.

Several emerging areas demonstrate the value of combining data with human insight:

1. **Spend Analytics**
   New platforms are emerging that integrate spend data with performance metrics, providing buyers with deeper insights into procurement decisions. For instance, analyzing the performance of medical implants in the healthcare sector can reveal discrepancies between cost and health outcomes.

2. **Mapping and Visualization**
   With the exponential growth of data, visualization tools become crucial for making sense of complex information. Interactive mapping tools enable supply chain visualization, facilitating scenario analysis and risk assessment.

3. **Benchmarking and Comparison**
   Numerous tailored platforms offer field ticket systems designed for the energy industry's procurement and supply chain needs, housing extensive valuable data. While maintaining data ownership is crucial, internal benchmarking can reveal avenues for improvement. Additionally, artificial intelligence tools augment analysis by pinpointing cost drivers and efficiency measures.

While big data offers unparalleled opportunities for insights and optimization, harnessing its full potential demands a fusion of cutting-edge technologies and human expertise. Organizations can unlock the benefits of digital transformation in their supply chains by investing in robust data analytics capabilities, fostering a culture of innovation, and empowering their teams as proficient end users.

NAVIGATING THE DIGITAL SUPPLY CHAIN FRONTIER

In our exploration of the digital transformation sweeping through the Energy Industry's supply chains, we've witnessed a convergence of pivotal trends reshaping the very fabric of commerce. From the migration from physical to digital documents to the burgeoning potential of the IoT where physical objects gain digital identities, the trajectory is clear: data proliferation is accelerating at an unprecedented pace.

This surge in data generation heralds the dawn of the "intelligent supply chain," offering boundless opportunities for those astute enough to seize them. From heightened productivity and operational efficiency to enhanced customer service and competitive insight, the dividends of embracing this digital evolution are manifold.

The digital supply chain promises to revolutionize traditional practices, ushering in an era of greater agility, responsiveness, and forward visibility. Critical domains like asset management, logistics, and transportation, particularly vital in the oil and gas sectors, stand to benefit immensely from these advancements. Even in areas where document management remains a challenge, such as with field tickets, digitization promises significant enhancements to existing processes.

> **The digital supply chain promises to revolutionize traditional practices...**

The impact of the digital supply chain extends far beyond operational efficiencies, reshaping supply chain jobs and human interactions. While certain conventional roles may evolve or diminish in the face of automation and e-enablement technologies, the need for human judgment, expertise, and commercial acumen remains undiminished.

For individuals, especially those in senior technical or managerial roles, cultivating an understanding of the digital supply chain landscape is imperative for preserving and enhancing their value to organizations. By staying abreast of these developments and embracing a culture of continuous learning and innovation, professionals can navigate this digital frontier with confidence and chart a course towards sustained success.

ABOUT OFS PORTAL

At OFS Portal, we are proud pioneers in revolutionizing B2B eCommerce integrations for Energy Industry suppliers and service providers. Founded by twelve leading oilfield services firms, including ABB, Baker Hughes, BJ Services, Cooper Cameron, ENSCO, FMC, Halliburton, National Oilwell, Schlumberger, Smith International, Transocean Sedco Forex, and Weatherford, OFS Portal has been at the forefront of standardized electronic catalog and service agreement information since our inception.

As the trusted Energy Supply Chain Network (ESCN) for over two decades, we have facilitated seamless digital transactions globally, connecting multinational and regional leaders in the Energy sector. Our collaborative network ensures secure and efficient transactions, empowering supplier members to expand operations while maintaining data security, sovereignty, and compliance with industry regulations.

Today, our membership includes a diverse array of industry leaders, leveraging our robust framework to streamline operations and drive profitability. Whether you're a current member or considering joining us, explore our comprehensive catalog services and discover how our legal framework supports your business and operators alike.

The current membership includes prominent companies such as Baker Hughes, Halliburton, Select Energy Services, and Wellbore Integrity Solutions. Moreover, the OFS Portal community and model have been embraced by over 620 operators, encompassing 18 out of the top 20 Fortune 250 companies, alongside 50 network providers.

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