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Revolutionizing Today's Supply Chain with Tomorrow's Intelligent Automation

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Executive Summary

Supply chains have undergone a massive transformation in the last few years with a steady injection of new-age technologies. Creating a completely digitized supply chain is no longer a dream and organizations are taking small steps by implementing structured workflow automation to streamline day-to-day manual processes—starting with the simple and gradually moving on to the complex. By transferring routine manual tasks such as documentation to automation, organizations have been able to reduce errors, speed up data transfer and processing time, eliminate error-prone complicated paper trails, and in the process ease friction in their supply chains.

According to Gartner, emerging technologies such as Artificial Intelligence (AI), Machine Learning (ML) and Predictive Analytics, Augmented Reality (AR), the Internet of Things (IoT), and Blockchain will transform critical supply chain operating models, which will become more complex and globalized in the coming years. The concept of 'digital control tower' will become rampant even as the IoT and advanced analytics rapidly gain force. There will be extended visibility into global supply chains, helping organizations make informed decisions based on the data gathered at every touch point in the value chain. Blockchain will undoubtedly emerge the most disruptive technology impacting supply chain transformation, and the impact of digitization on the supply chain will create more immersive user experiences at every node in the business ecosystem.

This whitepaper focuses on the role of automation in resolving complex supply chain challenges and the technologies currently disrupting global supply chain operations. This study also analyzes the various steps organizations need to take to future proof their supply chains and how a JD Edwards (JDE)-powered solution can help optimize fundamental supply chain operations. The need for a trusted partner who can skillfully implement JD Edwards for achieving end-to-end supply chain transformation cannot be emphasized enough. Information on why partnering with a trusted JD Edwards vendor is a business necessity today, along with recommendations on what to look for in a partner are further highlighted in this paper.

A Supply Chain on Steroids: Automation to Fuel Unparalleled Digital Transformation & Disruption

Trends shaping industrial supply chains are evolving by the day and it is a no brainer that automation has a big role to play in defining these trends. Raw materials and finished products are moving fast through multiple geographical locations and countless suppliers, manufacturers, distributors, and vendors—causing a 'blind' supply chain oblivious to the presence of all the concerned parties. The erstwhile supply chain ecosystem—largely driven manually—with its innumerable challenges leaves organizations in a state of confusion regarding supply chain visibility, traceability, and efficiency. At this point, it is important to quickly highlight some of the complex **supply chain challenges** faced by organizations.

Siloed departmental units and processes. This is one of the foremost challenges faced by organizations in effectively managing their supply chains. The presence of multiple teams and processes creates hurdles in efficient management of several interconnected processes and departmental entities.

Difficulties in processing tons of data moving through the enterprise. There is a massive amount of data coming from customers, suppliers, dealers, and other stakeholders across various geographical locations that moves through different departments at the same time. Analyzing and processing this data in real time in an error-free and speedy manner can overwhelm organizations, especially given the lack of labor and time to carry out these tasks.

Failure to ensure superior customer experiences. The amount of time spent manually on tracing and funneling multiple processes into a single supply chain compromises the customer experience factor to a great extent. Organizations fail in proactive customer interactions and are challenged to ensure faster delivery of products despite the increasing complexities of the supply chain.

How is Automation Transforming the Supply Chain?

Supply chain automation can help resolve complex challenges, enabling organizations to reap the benefits of lowered operational costs and increased bottom line efficiencies. The need for automation in supply chains is further augmented by an increasing demand for more transparency, speed, and compliance adherence. Automation enables organizations to ensure near-perfect logistics and achieve higher levels of productivity. The ability to bring together multiple disparate processes into a singular cohesive ecosystem is a key differentiator brought about by automation, creating a highly positive use case for supply chain digitization. Moving supply chains to digital platforms helps organizations implement agile change management processes and replace manual systems with an end-to-end digital workflow solution.

Workflow automation streamlines supply chain processes, allowing personnel to focus on the human aspects of their work. Some of the top benefits of supply chain automation can be summed up as under:`

- **IoT-enabled real-time monitoring of the supply chain combined with Blockchain's shared distributed ledger creates a significant proof of concept for a robust trace-and-track mechanism, leading to more accuracy and supply chain improvement.**

- **Blockchain is expected to significantly impact some of the biggest supply chain use cases including logistics and distribution improvement, asset maintenance tracking, product quality improvements, prevention of counterfeit products, and creating digital product marketplaces.**

- **IoT and Blockchain enable manufacturing units to implement digital twin initiatives across their business value chain.**

- **Blockchain helps organizations detect supply chain anomalies, ensure better regulatory compliance, and improve supplier performance management and trade finance.**

According to McKinsey, Blockchain combined with the Internet of Things has the capability of generating anything between USD 80 Billion and USD 110 Billion in value by redefining supply chains across seven key financial sectors

Ref: https://www.forbes.com/sites/louiscolumbus/2019/01/13/top-10-ways-internet-of-things-and-blockchain-strengthen-supply-chains/#15e77e895e4e

Technologies Reshaping the 21st Century Supply Chain

With the technological landscape evolving every year, it is but a given that automation will fit hand in glove with the supply chain ecosystem to deliver more robust, cost-effective, and timely solutions to manufacturers. Let us look at the top four technologies that are shaping the supply chain today:

The Internet of Things

IoT has magnified the operational scope of supply chains across the globe and a few manufacturers are even exploring the idea of assessing the business value derived from moving beyond their current digital technology adoption. IoT is capable of profoundly impacting the supply chain especially

regarding improving asset utilization, achieving a higher uptime, enhancing customer service and support, and boosting superior supply chain performance, visibility, and reliability. In the realm of supply chain management, two core IoT concepts are widely being discussed today:

- **Digital Thread**

  an interconnectivity between enterprise assets, data, and processes to produce enhanced business outcomes. Digital threads drive effective use of IoT data within multiple enterprise application workflows.

- **Digital Twin**

  a dynamic representation of processes and machinery in digital format that provides a virtual view of the existing supply chain in real time. Digital twins offer a comprehensive schematic of the physical functioning of enterprise assets along with their interactions with other systems and processes. Digital twins validate IoT implementation by replicating the core operations in a supply chain.

Machine Learning and Predictive Analytics

Data collected using IoT technology can be processed effectively using advanced machine learning and data analytics techniques to re-align critical supply chain operational strategies. By identifying issues at the instance of occurrence, machine learning helps supply chains move from a reactive to a proactive approach, resulting in accurate operations and demand forecasting, further leading to both time and cost savings for the organization.

Augmented Reality

This is an addition to the IoT technology ecosystem that will likely take the supply chain to a whole new level. A combination of an AR interface operating on top of a digital twin can transmit real-time data from cloud enabled data analytics tools. This will help hasten diagnosis procedures related to machinery maintenance or quality control along the supply chain.

Blockchain

Blockchain with its network of distributed ledgers is the mother of supply chain automation. By providing visibility at every nodal point across the supply chain, Blockchain enables organizations to ensure regulatory compliance, reduces operational risks, and improves overall performance of the supply chain. Integrating Blockchain into the supply chain helps thwart potential challenges inherent of any complex, dynamic supply chain. Blockchain solutions for the supply chain currently include processes and technologies covering databases, middleware, security, analytics, data verification, as well as contractual and other identity management protocols. However, the real use case of Blockchain lies in asset traceability, visibility, and security.

Future-proofing the Supply Chain Landscape: What Solution Is the Best Solution?

While the relevance of automating the supply chain has been clearly established, industry experts opine the need to take a structured approach to future-proof the supply chain to ensure maximum functionality and productivity. Organizations are now moving towards creating agile, connected, and responsive supply chains capable of speedy order fulfilment to meet the demands of customers.

Adopting the Right Delivery and Economic Model to Boost Supply Chain Functionality

Supply chain-intensive industry players including manufacturers, wholesale distributors, pharma and oil and gas companies require top-notch ERP systems to optimize core business and operational costs. These industries have been hesitant in making the shift to emerging technologies owing to the high-risk factor as well as the huge Capex involved. The already wide gap between modern and legacy systems continues to broaden for several organizations across these industries, and companies feel the move to cloud relatively inexpensive when compared to digitizing their supply chains. Having said this, enterprises are realizing the importance of boosting their supply chain functionalities by adopting the right delivery and economic models. One solution that helps organizations fully automate their supply chains is JD Edwards from Oracle.

JD Edwards Cloud Deployments for a Seamless and Optimized Supply Chain Framework

JD Edwards is a leading ERP software functionality for industries with highly complex supply chains. Organizations are leveraging the benefits of digitalizing their critical supply chain functionalities using inbuilt digitally enabled functionalities in new JD Edwards versions. This provides levers to organizations to automate their supply chain ensuring delivery of the right product at the right time to the right place and in the right condition, thereby ensuring repeat business from happy customers. Some of the JD Edwards features that enable digital adoption include:

- JD Edwards IoT Orchestrator with certain components of the Oracle Cloud IoT solution for:

  - Processing of complex events
  - Device identity management
  - Device security
  - Data storage (high-volume and long-term)
  - Big data analytics

- Enterprise mobility integrated with automatic identification and data capture (AIDC) tools such as RFID technology, barcodes, wireless devices, voice-enabled technology, and automation software to increase supply chain accuracy and productivity.

- Automation of the supply chain may also require seamless integration of the JD Edwards ERP system with standalone applications. JD Edwards has a robust integration framework with both standard business interfaces and a toolset to easily build new business interfaces. These business interfaces enable customers to support additional business processes by combining the rich industry functionality and efficient business processes inherent in JD Edwards EnterpriseOne with other applications.

- The ease of deployment of JD Edwards on cloud provides organizations a lever for higher business growth, greater business agility, and lower costs and risks. Organizations need to be agile to respond to ever-changing business environments necessitated by process automation levers fueled by new-age technology. JD Edwards on cloud will enable organizations to exploit these new-age technologies by providing seamless integration.

The Need for an Experienced Supply Chain Automation Partner

Digitization of the supply chain is by no means an easy task and while there are a slew of technologies that can accomplish this effectively, the presence of a trusted partner with the relevant experience and expertise can make all the difference. Building intelligence into the existing supply chain architecture requires structured planning and design as well as creation of blueprints and roadmaps prior to the implementation.

An IT partner with deep domain and technical skills and proven business expertise can ensure easy and seamless upgrades to automated supply chains. Given that no two supply chains are similar, an implementation partner with a proven history of designing effective solutions for diverse businesses is capable of adding more value to an organization's supply chain automation initiatives. Supply chain management models need to evolve in line with emerging technologies and changing customer expectations into more flexible, interconnected, agile, and proactive entities capable of maximizing business outcomes.

It is imperative to have an experienced technology partner who can transform the JD Edwards landscape and help enterprises realize maximum business value from their technology investments through a robust framework encompassing:

- **Modernization of the existing JD Edwards ecosystem with AI enabled automation to ensure long-term sustenance**

- **Optimization of JD Edwards by refurbishing existing applications without changing the underlying system architecture**

- **Digitization of the overall experience by accelerating innovation through IoT, mobile, analytics, and other enterprise platform offerings**

Conclusion

Automation has revolutionized the supply chain ecosystem in a big way with newer technologies being periodically added to the mix. We are talking about additive manufacturing (3D printing), advanced industrial robotics, autonomous vehicles—all capable of redefining the paradigms of digital supply chains as exist today. The ramifications of this technology boom are immense—especially when we look at creating a world where automation and technology join hands to deliver products to end consumers with zero human intervention.

The data dependency here is immense and it will require a robust set of tools and enhanced capabilities to process this data and interpret it to glean insights for informed decision making. Collaboration with a trusted partner with the necessary domain expertise and technical wherewithal will help organizations up their supply chain game and retain competitive edge in the long run.

Author

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Sunil has over 36 years of experience in IT and Supply Chain industry. He also has worked extensively in downstream Oil & Gas domain. He has a wide range of expertise including Practice building, Presales, IT consultation, and Managing large-scale global programs. He specializes in maintaining high client satisfaction and innovative ERP solutions that have delivered substantial cost and value benefits. Sunil has delivered multiple speaker sessions at leading events like Oracle OpenWorld, JD Edwards User Group forums, LTI sponsored events, etc.

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