BEING RESILIENT

SUPPLY CHAIN COLLABORATION IN THE POST-PANDEMIC WORLD
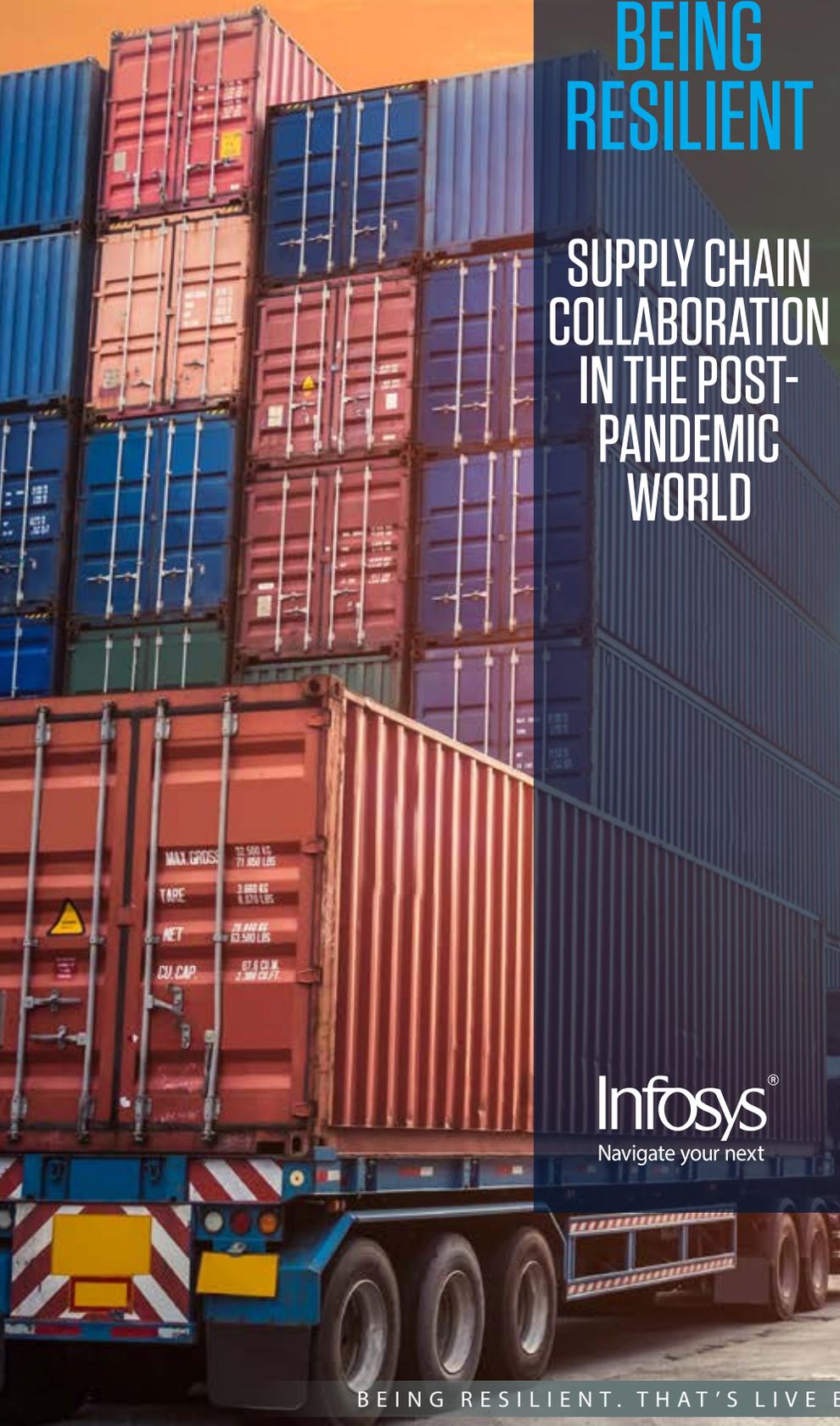
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Organizations, and the world at large, continue to grapple with the unprecedented havoc that COVID-19 pandemic has wreaked upon us. The impact of this global pandemic is so pronounced because we now live in a world that is more interconnected than ever. Over the past few decades, be it enterprises procuring raw materials from one country and getting them assembled through an outsourced vendor in another country, or an end consumer using mobile apps to buy everything from medicines to cooking ingredients sourced from the other side of the globe, our lifestyle is increasingly dependent on seamless movement of goods and information exchange across geographical boundaries. While the ongoing pandemic has altered consumer behavior and buying patterns, resilient enterprises that are able to sense market dynamics timely and strategize their business operations to respond to these changes with agility will be the ones to flourish once the dust settles.

We are already observing global economies reopen with supply chains working their way through these disruptions and organizations reviving their operations with cost optimizations in these uncertain times. More than ever, enterprises are realizing the need to embrace innovative technologies in order to enhance their visibility into outsourced operations and products and go beyond the limited one-up, one-down view that organizations currently have in their business chains. The need of the hour for organizations is to pivot towards digital transformation, and break the existing silos in supply chain from upstream sourcing to downstream distribution. This will ensure extended and near real-time transparency across these tiers.

Blockchain holds the potential for industry ecosystems to come together and form a trusted, robust, resilient network for improving various supply chain functions. According to the World Economic Forum, the removal of barriers through adoption of this distributed ledger technology could result in more than US$ 1 trillion of new trade in the next decade[1]. In a statement, WEF has emphasized that resilience in supply chains depends on trust, transparency and integrity. Blockchain technology can assist in tackling the supply chain failures exposed by the COVID-19 pandemic and provide a boost to the economic recovery process.[2] The benefits of Enterprise blockchain can further be amplified if the blockchain network works in tandem with other technologies such as IoT, Artificial Intelligence and predictive analytics, as well as interface with existing ERP systems. This is a win-win for companies who have been using centralized ERP applications for their internal operations, yet have poor visibility beyond their organization's boundaries. Blockchain is purpose fit for suppliers, manufacturers, distributors, retailers and supporting organizations to collaborate over a private, permissioned network conduit. It not only enables secured sharing of relevant data and transactions from their ERP applications with other participating stakeholders, but also ensures confidential or business-sensitive information is not accessible to competitors on the same network.

Based on a quantification of the monetary impact of more than 90 use cases, McKinsey & Company estimates blockchain's strategic short-term value lies in reducing costs before creating transformative business models.[3] Multiple phases of a complex supply chain have different paradigms and performance indicators. However, each of these stages requires inter-system, inter-department or inter-organization exchange of business information, which may pass through multiple levels of intermediaries; hence, making a strong case for applicability of Blockchain across these various supply chain facets.
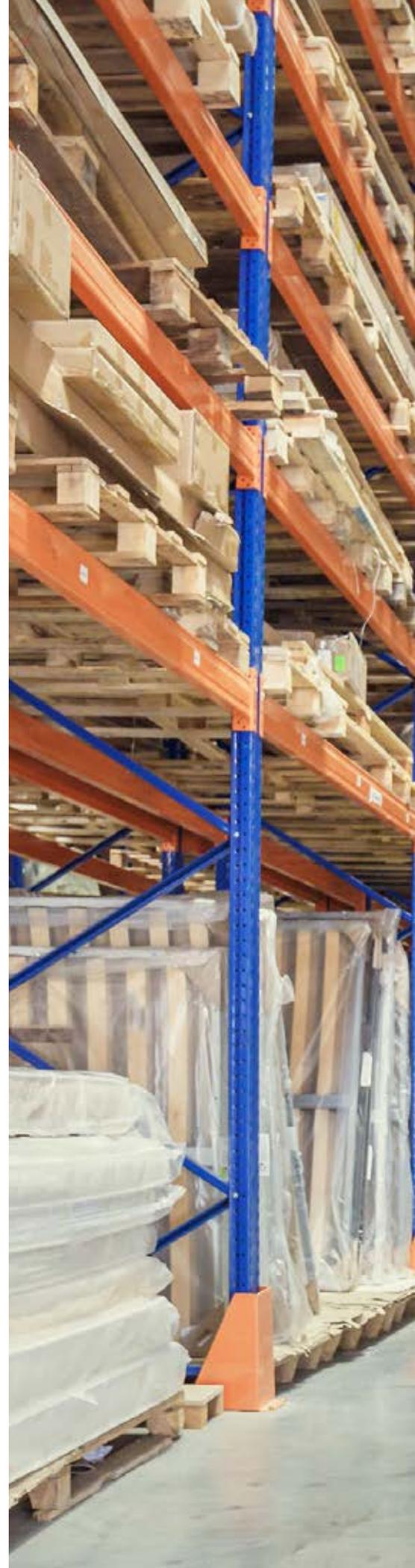
• Planning and Procurement

One of the key learnings from the pandemic has been to hedge risks associated with being overly dependent on limited set of suppliers or a single geography for procurement needs. Enterprises have realized that diversifying their upstream sourcing to a larger group of vendors spread across multiple geographies is critical to ensure that inflow of raw materials and critical components can be effectively managed, even when a particular supplier or country is unable to fulfil their demand. Building this resilience in the supply chain comes with the added risk of dealing with new suppliers and ensuring that contractual obligations are clearly agreed upon and consistently met.

Having concrete evidence of suppliers adhering to contract terms, quality standards and safety guidelines is imperative, in addition to continuous monitoring of operational aspects and procurement done through them. With the supplier ecosystem connected on a common blockchain network, enterprises can track the onboarded suppliers and capture their corresponding metrics in a more transparent manner to confidently conduct business with them. For instance, aerospace designer and manufacturer Moog Inc. has leveraged smart contracts with a range of suppliers, generating multiple purchase orders that detail the parts and components to be delivered, the price, and the delivery dates for diversifying their sourcing.[4]

With supplier data securely available to relevant departments with the enterprise in near real-time, reconciliation errors and disputes around procurement and admin overheads can be drastically brought down. The US General Services Administration, is developing a solution to reduce the review process for awarding IT contracts through blockchain and bring it down to from several weeks to couple of days.[5] Blockchain can additionally be integrated with advanced analytics to build a consolidated supplier scorecard that can help incentivize the right set of suppliers.

• Manufacturing and Production

While core manufacturing is largely considered an intra-organization function, a broader view spanning across multiple plants, with real-time tracking of stock levels, equipment state, maintenance records and overall factory health can further optimize production processes. The post-pandemic world is expected to continue witnessing sudden spikes in supply and demand; and manufacturers need instantaneous insights into inventory levels and output across their plants to deal with these changes in a cost effective manner. Manual intervention can be reduced through smart contracts deployed on a blockchain by triggering replenishment orders automatically to appropriate suppliers, as the network will provide a unified yet controlled view of key inventory data received through integrated ERPs of various suppliers and OEM plants.

Automated invoice generation can also be achieved through smart contracts that are able to refer appropriate versions of digitized contractual terms as well as data pertaining to delivery fulfilment on the same blockchain network. Seamless invoice processing ensures that suppliers and manufacturers can trust the single version of network-generated invoices, payments can thus be processed faster. Reconciliation efforts to match invoices against purchase orders and actual deliveries are also eliminated, hence, saving costs for both parties. Blockchain savings in freight spend are pegged at least 5 percent through improved invoice accuracy, reduction of overpayments, and disintermediation of third party service providers.[6]

• Asset Tracking and Logistics

Tracking shipments from first mile to last mile across each of the stakeholders along the various legs of product journey has remained a crucial need for supply chains even before the pandemic disrupted the world. Only a single shipment may produce a pile of around 200 communication documents, and the expense of handling and managing this documentation is evaluated to make up one-fifth of the total cost of transportation.[7]

With countries enforcing lockdowns and closing their borders, near real-time visibility into container positioning and regular updates on cargo movement has now become paramount for continuity of business operations. Improved predictability around delivery of containers is possible by integrating Blockchain with IoT sensors, to automate decisions around subsequent scheduling of fleets, determining alternate shipping routes and reduce errors in freight process.

Carriers, many of which are operating at partial capacity due to pandemic challenges, can expect massive cost savings through sharing digitized version of trade documents and other certificates on blockchain network. The current time for sharing bill of lading can be brought down from 10 days to 20 seconds[8], and issuance of letter of credit can be brought down to 4 hours from seven to ten days.[9] Single version of these digital trade documents are also made available to logistics partners, BCOs, shippers, brokers and custom authorities connected through Blockchain. These are bound to reduce gate-in and gate-out times at ports, as waiting on paper-based artifacts and extended verification process can be eliminated. Eventually, we see faster delivery of shipments and translating to annual savings to the tune of $4 billion.[10]

• Compliance and Sustainability

All tiers of a supply chain expend significant efforts in complying with established local guidelines, as well as towards meeting quality standards expected from target markets of finished goods. This process has assumed a more stringent dimension owing to practices that enterprises are putting into place to ensure their products are acceptable in these times of a global pandemic. Governments and regulators across the world have also laid down norms for enterprises around social distancing, employee health and safety procedures to be followed during production. Blockchain, through its inherent capability of immutable transactions, can establish this trust around adherence to these practices and provide this as concrete evidence not just to downstream stakeholders of the supply chain, but also to end consumers.

By integrating IoT sensors and biometrics with the underlying network, organizations can capture proof of source, people involved, processes and product certifications in an automated fashion; thus, bringing down costs associated with quality assurance and redundant paper-based audits. Blockchain makes it easy to administer certificates and licenses more efficiently in order to fight fraud and avoid situations faced by the Philippines in 2016, when the Department of Agriculture cancelled and recalled all import permits on meat products to tackle meat import fraud, having found that old permits were being recycled to smuggle imports.[5]

Even in the post-pandemic era, digital certificates that accurately capture environmental, social and economic impacts, and link them to business transactions at various stages of the supply chain can continue to enhance business and consumer confidence around compliance to fair trade and sustainability practices.

• Distribution and Retail

With the world economy reeling under the pandemic impact, distribution warehouses and retail stores are facing challenges in sensing demand, leading either to stock-outs or excess inventory. Blockchain networks can help improve visibility by providing an aggregated view of inventory levels across distribution centers and other channels Real-time updates of purchases can be captured by integrating the network nodes with POS and online systems of participating stakeholders to ensure that demand variations can be anticipated faster and more accurately. Thus enabling distributors and retailers to plan for fulfilling consumer demand through alternative sources. In one such trial, a business to business logistics platform used blockchain in conjunction with machine learning algorithms to enable 220 small food retailers in Kenya, increasing their order size by 30 percent and improving profits for each of the retailers by nearly 6 percent.[11]

Delivering products ordered online is fraught with risk both for delivery teams as well as end consumers receiving their booked orders, as state and federal governments have tagged COVID-19 hotspots and imposed restrictions in containment zones. By bringing state agencies together with last-mile logistics companies on a common network, information related to safe zones, health conditions of individuals, pending deliveries across e-retailers can be assimilated. Smart contracts can leverage this consolidated information in an anonymized manner to trigger appropriate routes, identify priority deliveries and determine delivery protocols in real-time to ensure safety of delivery folks as well as receivers. Adherence to sanitization procedures can continue to be recorded through sensors and pushed to the other network participants, thus preventing spread without compromising on privacy of individuals.

Distributed applications powered by Blockchain are being espoused by enterprises to automate their operations through smart contracts deployed on the network, reduce reconciliation efforts by making single source of data available to relevant stakeholders and enhance accountability through tamper-proof transactions. In a recent study, it was estimated that that the deployment of blockchain technology in investment banks could ensure savings of 30% by establishing more efficient processes and improving transparency and compliance.[12] Likewise, the use of blockchain technology for supply chain processes including import and export procedures and getting better visibility across inbound and outbound operations, could generate considerable savings across participating stakeholders.

While social distancing is the much-needed "new normal" in current times, the opposite needs to happen in the case of enterprise distancing. Supply chains embracing distributed ledger technology in the post-pandemic world will usher their businesses as well as their business partners towards increased collaboration, controlled transparency and shared value, thus forming more predictable and trusted networks.

Infosys, as a recognized leader in Enterprise Blockchain, offers assessment tools, strategic advisory, consulting services, end-to-end implementation, integration and operationalization support to help enterprises setup and manage blockchain-powered business networks. We have production-grade business accelerators leveraging private, permissioned blockchain platforms. Infosys aims to view to lower the entry barrier for Blockchain adoption and help our clients derive operational efficiencies and transform their supply chains into resilient, value-driven, collaborative ecosystems.

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Puneet has rich industry experience in Consulting, Product management and Software development spanning across various roles in business analysis, product development and project management. He works extensively with clients across Retail, CPG and Manufacturing domains, and provides strategic guidance and consulting services around relevance and fitment of Enterprise Blockchain. He engages with supply chain functions of various industry verticals to help them identify contextualized use cases with their ecosystem partners for deriving shared business value, and supports them in their innovation journey towards Blockchain-powered digital transformation.

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Bhrigu has a blended experience with excellent business and technology acumen in blockchain domain. He has spearheaded the development of various solutions for customers in the Financial Services and Supply Chain sector. His expertise lies in use case ideation, conceptualization of functional designs and process workflows for deploying enterprise applications. He is working with digital and emerging technologies focused on transformational initiatives for clients, with a strong interest for digitalization to optimize processes in their extended supply chain.

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