SUPPLY CHAIN TRIBE
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We are living in an interesting era where the rules of the game have changed dramatically – from global to local and from centralized to decentralized. The Covid-19 pandemic has proved to be a great teacher in making companies realize how dependencies on one company can lead to unimaginable disaster in such times. While earlier such strategies used to be the norm, they have been put to test in the last two years and what emerged because of it is that companies need to take the decentralization route when it comes to their supply chain. **Abhishek Behl (Management Development Institute, Gurgaon, India) & Nirma Jayawardena (Griffith University, Australia)**, through this article, unravel immense possibilities that a decentralized supply chain backed by disruptive technology can offer...

Dr. Abhishek Behl is a faculty at MDI, Gurgaon, and is an expert in gamification. He has earned his second Ph.D. from the Indian Institute of Technology, Bombay where his research is in the area of crowdfunding and gamification. He holds rich experience in teaching, research, and consultancy. He has also served as a Senior Manager- Research at Centre for Innovation Incubation and Entrepreneurship, IIM Ahmedabad. His research is in the area of business analytics and decision sciences with a focus on gamification, stakeholder engagement, sustainability, and e-commerce start-ups.

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COVID-19 has caused damage to global supply networks. Multiple lockdowns around the country continue to impede, if not entirely halt, the flow of raw materials and finished goods, putting businesses at a disadvantage. Since digital literacy and technology solutions aided the pandemic response, a significant split has risen between high-income/upper-middle-income nations and poorer countries after the COVID-19 epidemic. Supply, demand, and logistics are all facing disruptions in global supply chains. Due to COVID-related closures and lockdowns, factories have functioned at a fraction of their total capacity. The pandemic has resulted in employee shortages and losses for many organizations. As a result, the supply chain has been adversely affected, exacerbating, and hastening previously established issues.

Disruptive technologies have permitted several responses to the COVID-19 epidemic in emerging economies despite the restrictions. One of the main advantages of a decentralized supply chain is that it may dramatically reduce local logistics expenses. Because operations are located close to the end client, shipping expenses are reduced significantly. Nodes that have access to local suppliers may also be able to reduce incoming expenses. Despite capital outflows from emerging nations, technology businesses in these regions continue to garner investor attention. For example, 54Gene, a two-year-old Nigerian start-up that collects genetic data, secured $15 million in equity fundraising in mid-April. At the same time, BigBasket, an online shopping network

in India, raised $60 million during the country's shutdown. A system like this makes it simple to reward participants for working together, resulting in a more efficient supply chain—MNCs' attempt to grab market share through centralized supply chains in today's globalized economy. This is opening possibilities for disruptive technology as disruptive technology is a technological advancement that alters how consumers, industries, and businesses operate. It has the potential to replace age-old practices. Such changes are more prevalent in a few business areas than in the supply chain.

In a decentralized supply chain, operations are dispersed throughout a network of nodes. Small offices and warehouses are frequently used as nodes, as they are meant to be closer to the organization's ultimate client. It is not uncommon for companies not to own their nodes. It is relatively common for organizations that wish to expand but do not have the funds to purchase their premises to outsource certain operations to partners who possess the appropriate facilities. Companies may even rent space in a shared warehouse. Some of the advantages of a decentralized supply chain include reducing costs at the local level and higher flexibility.

Disruptive online healthcare, blockchain-based platforms for epidemic monitoring, robots that deliver food and medications and monitor patient temperatures, online education, and home-based work solutions; and augmented reality and 3D printing technologies that address social distancing in manufacturing facilities are among the technologies that have been adopted to address these challenges. The government has employed digital platforms, big data analytics, and artificial intelligence to conduct social welfare initiatives typically supported through mobile money. Individual units in a decentralized supply chain make decisions based on local knowledge. To ensure products reach the end customer in today's globalized world, supply chain professionals collaborate with other business units within the same organization and across different organizations. As part of this process, supply chain managers are faced with the challenge of controlling inventories and costs while maximizing customer satisfaction.

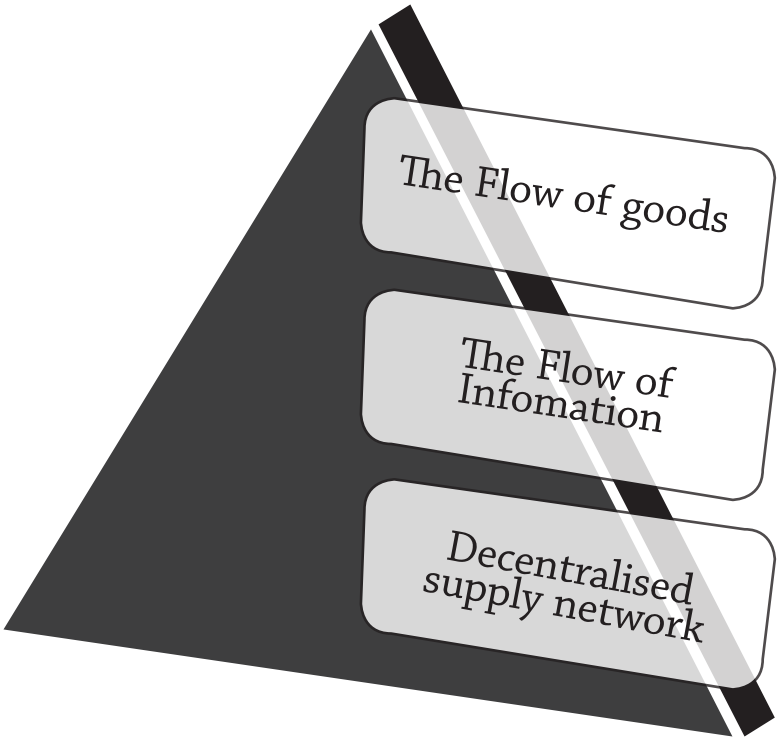

Figure 1: The flow of decentralized supply chain

What does a decentralized supply chain offer?

One of the main advantages of a decentralized supply chain is that it may dramatically reduce local logistics expenses when considering reducing costs. Since operations are close to the end client, shipping expenses are reduced significantly. Nodes that have access to local suppliers may be able to reduce incoming expenses too. Decentralized nodes can function more flexibly than centralized hubs. They have the semi-autonomy to go into a local market and maybe test new items if there is an opportunity. Furthermore, suppose a company is already skilled at managing its supply chain from afar. In that case, it may find it simpler to expand its reach into new countries with no established node – especially if it takes advantage of outsourcing possibilities.

THE FLOW OF DECENTRALIZED SUPPLY CHAIN

Information management is critical for many businesses and is seen as one of the most significant components in achieving success in a competitive market. The logistics industry benefits from using information systems, and research on information systems in logistics has been performed since the 1990s. Ira Lewis and Alexander Talalayevsky 1997 mentioned that they concentrated their first study on the potential of information systems in management and their influence on organizational structures. Findings indicated that. According to studies on organizational structures, information technology impacts the strategy and capabilities of logistics organisations in terms of competitive advantages. Figure 1 shows the flow of the decentralized supply chain as mentioned below.

THE FLOW OF GOODS

The re-allocation of physical items is the most basic operation in the logistics process. To be more specific, logistics ensures that items are delivered to clients on schedule and in sufficient quantities. The complexity of this operation is determined by the number of shipping and receiving sites. The control of the flow of commodities becomes increasingly

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challenging as the system's complexity grows. Information systems assist in the management of products flow. According to Lewis and Talalayevsky (1997), logistics is driven by a proliferation of products, increasing customer demands, just-in-time manufacturing, and a globalized market. It is reflected, for example, in the availability of custom-made products and next-day delivery. A successful flow of physical goods depends on the flow of information, which means shipping information should be communicated before the goods arrive.

THE FLOW OF INFORMATION

To add value to the logistics process, managing the flow of information is just as crucial as managing the movement of physical items. In logistics, the function of information systems is to turn data into information to aid managers in their decision-making. Numerous parties are involved in the logistics process; therefore, information is shared not just inside a single business but also between multiple companies. Prajogo and Olhager in 2012 recommended exchanging strategic information with partners to enhance demand estimates and planned production. However, sharing strategic knowledge is not without danger, and the partner may raise pricing because of this information. Based on a magazine published in Harvard Business Review magazine, exchanging strategic information flows benefits buyers and suppliers financially and non-financially. They say that there is a danger of abusing the parties involved, which might result in losses. The sensible distribution of wealth from a decentralized supply chain fosters greater macroeconomic growth by increasing consumer buying power and lowering taxes. Since each actor has a lower impact on the overall supply chain, those with opportunistic behavior have less to benefit. Each decision-maker has fewer earnings to lose by behaving opportunistically and a more extensive client base to gain by working in the supply chain's best interests. As a result, the fragmented supply chain results in smaller businesses and a lesser likelihood of mergers and acquisitions.

DECENTRALIZED SUPPLY NETWORK

A decentralized supply network promotes cooperation over rivalry among supply chain participants. Decentralization increases overall customer satisfaction while also resulting in stronger long-term connections with end consumers by placing a more significant focus on creating a relationship with them. The supply chain's decentralization also leads to more flexibility and decentralized decision-making. It improves customer satisfaction by ensuring product delivery via a different route if the usual supply chain is disrupted by unanticipated events such as natural catastrophes or social and political unrest. Decentralization has also performed well in developing market cooperatives, urban logistics, and micro-retailing, among other areas.

ROLE OF DISRUPTIVE TECHNOLOGY TOWARDS DECENTRALIZED SUPPLY CHAIN

Like most other industries, the logistics business is undergoing significant transformation, which carries with it both danger and opportunity. New technologies, new market entrants, new consumer expectations, and new business models have emerged recently. There are a variety of approaches for the sector to evolve to face these difficulties, some evolutionary and others revolutionary. The concept behind digital transformation is to use technology to increase a company's performance and reach dramatically. Today, many technologies are available, such as cloud computing, mobile apps, the Internet of Things, social networks, data analytics, machine learning, robotic process automation, augmented reality, virtual reality, and blockchain.

The supply chain and manufacturing industries have historically been slow to take advantage of the opportunities presented by the digital revolution. Technological advances are on the