



"Investing in technology that can help lower the cost per unit making it more competitive in a market which is driven by price."
- Aditya Vazirani



"The first technology bouquet transforming supply chains is digitization, which ensures that distribution systems are intelligent."
- Amrit Bajpai



"DataKart enables brand owners to share accurate and updated SKU data with retailers/e-tailers in a structured manner."
- S Swaminathan



"QR codes, bluetooth, IR, bar codes, and their scanners are being deployed to digitise and track consignment movement."
- Anjani Mandal

A CHANGING GAME

IOT HAS THE POTENTIAL TO CONNECT VIRTUALLY ANYTHING AND ACCELERATE DATA-DRIVEN LOGISTICS. EVERYDAY OBJECTS CAN NOW SEND, RECEIVE, PROCESS, AND STORE INFORMATION, AND PARTICIPATE IN LOGISTICS PROCESSES.

BY MOLLY R

1. Robotics solutions are entering the logistics workforce, supporting zero-defect processes.

RECENT TECHNOLOGICAL ADVANCEMENTS have changed the face of the supply chain and logistics industry. During the early days of the pandemic, the rise of e-commerce has played a huge role in shaping the way warehouses operate, as have consumer expectations for speed of delivery, customization, product availability and much more. With the growing complexities of customer demands and the globalization of many retailers due to e-commerce, warehousing trends have shifted to keep up with the ever evolving and increasing demand of customers.

Amrit Bajpai, COO, WayCool Foods, says, "A successful supply chain ensures free and seamless real-time flow of material, information and money across all stakeholders from the source to the customer. Supply chains of the future should use technology to improve visibility end-to-end. This will support companies' ability to resist external shocks, such as the pandemic or any other future black swan event. The first technology bouquet transforming supply chains is digitization, which ensures that distribution systems are intelligent, autonomous, and au-



"We are working on building a dock management system to monitor and optimize the unloading time taken by incoming vehicles."
- Anamika Jain

2 & 3. Each product needs to be represented accurately and consistently in potentially thousands of different places online.



tomated. Big data analytics and machine learning will be the additional layers sitting on top of digitised supply chains."

The second technology set that will transform supply chains is automation. Automation will dramatically transform productivity of different parts of the supply chain, reduce effort and errors and bring controls to prevent leakages. IoT, Smart Sensors and robotics will be critical, from the large bouquet of emerging technologies on offer, in the push for supply chain automation.

Alexandre Amine Soufiani, MD and CEO, FM India Supply Chain, says, "Blurring the lines between the digital and physical worlds, augmented reality (AR) will provide new perspectives in logistics planning, process execution, and transportation. By adding virtual layers of contextual information onto a heads-up display or other digital device, AR empowers workers by providing the right information at the right time and in the right place with absolute accuracy. Globally, FM Logistic uses AR to train its warehouse staff on handling and operating complex processes with higher levels of detail. We use the same technology to demonstrate our capabilities to our clients."

Anjani Mandal, co-founder & CEO, TruckNet Digi-

tal, says, "Companies are adopting warehouse management and yard management tools and automation. They are looking to do geo fencing solutions (using GPS or SIM tracking) and security gate digitisation to know when empty trucks are reaching the gates/periphery of their warehouses to be loaded. When you are managing 40 or 50 trucks a day, it is difficult to know where these trucks are. Digitisation manages the warehouse yards and truck movement. QR codes, bluetooth, IR, bar codes, and their scanners are being deployed to digitise and track consignment movement. These IoT and digital mechanisms can be connected to weigh bridges, security gates, ERP systems and TMS (Transport Management Systems)."

Aditya Vazirani, CEO, Robinsons Global Logistics Solutions believes that investing in technology that can help lower the cost per unit making it more competitive in a market which is driven by price. Outsourcing non-core functions to professionals who can provide a flexible solution.

But before Indian companies start considering their implementation, they will need to be equipped with the right foundational tools. Aik-Jin Tan, Ver-

tical Solutions Lead, Zebra Technologies Asia Pacific, says, "In the case of warehouse automation, there are five phases before they can reach full maturation with the ability to fully sense, analyze and act on their data to unlock opportunities for productivity, accuracy and efficiency and overcome the challenges. While most companies may think of the utilization of advanced technology systems, the reality is that even modernization of basic data capture, analysis and distribution workflows can make big difference. Mobile computers like TC83, MC93, MC33, printers like ZT610, ZT411, scanners like DS3678, DS2X, tablets like L10, ET5X and wearables like RS5100, WT6000— all of which are seemingly commonplace technologies in today's digitally-driven society – are not always common sights in warehouses that were built years ago. Yet these are the foundational elements that give a modern warehouse a good structure it needs to continue to grow and flourish in the future."

STAYING AHEAD OF THE GAME

Technology is not about only robotics and automation, it also about building better visibility and ana-



"While companies may think of technology systems, the reality is that even modernization of basic data capture, analysis and distribution workflows can make big difference."
- Tan Aik Jin

4 & 5. Implementing paperless operations with bar code scanning is just the initial steps towards an automation journey.

BEFORE INDIAN COMPANIES START IMPLEMENTATION, THEY WILL NEED TO BE EQUIPPED WITH THE RIGHT FOUNDATIONAL TOOLS.





"By adding virtual layers of contextual information onto a heads-up display, AR offers the right information at the right time and in the right place."
- Alexandre Amine

6 & 7. Automated monitoring of labour productivity in the warehouse is another technology advancement.

IOT AND DIGITAL MECHANISMS CAN BE CONNECTED TO WEIGH BRIDGES, SECURITY GATES, ERP SYSTEMS AND TMS.

lytical ability which in most cases will have a positive ROI for important and recurring processes. Anamika Jain, director and head of operations, AAJ Enterprises, says, "We are working on building a dock management system to monitor and optimize the unloading time taken by incoming vehicles. Automated monitoring of labour productivity in the warehouse is another technology advancement we are working on – once we are able to collect correct real time

data, we will use machine learning to create resource plan for the labour requirement at the warehouse. In a warehouse with fast moving, high value items and large number of SKUs order to the picker system may be particularly useful – where robots may be particularly useful and increase productivity by cutting down travel time of pickers to near zero."

Consumers and regulators want real-time product updates and "beyond the label" data such as product origin and ingredients. Each product needs to be represented accurately and consistently in potentially thousands of different places online. Today's consumers expect to seamlessly research, purchase and interact with the products they want to buy, no matter where they shop. S Swaminathan, CEO, GS1 India, says, "To address the challenges faced by the industry on account of lack of accurate and consistent product information, GS1 India has setup a national registry of retailed products called DataKart. DataKart is a repository of information on Indian retailed products with details of each attribute (ingredient, product image, MRP, net content, dimension etc). It enables brand owners to share accurate, trusted, and updated SKU data with retailers/e-tailers in a consistent, structured, and standardized manner, in real time. DataKart provides foundational data for several B2B, B2G, B2C requirements, which include faster product listing, optimized planogramming, efficient trucking and warehouse management, product recall alert, compliance with statutory labelling/marketing guidelines, license/certificate validation. Brand owners & manufacturers upload product information and related attributes to this portal and the retailers and etailers consume the data published on the portal."

Thirukumaran Nagarajan, co-founder and CEO of Ninjacart, says, "Our tech-enabled supply chain helps us to work closely with the farmers helping them with the data driven recommendations on what crop to grow and communicate accurate pre-harvesting pricing information and demand pat-



terns. We act as a one-stop solution for both the farmers and the retailers. Farmers can concentrate on farming and focus on learning new cultivating processes, while retailers can enjoy the convenience of the fresh produce delivered at their doorstep without visiting the market in the morning."

Santosh Nair, Digital Marketing Manager, Ocean Insights (a project44 company), says, "Blockchain helps eliminate or reduce the extensive & time-consuming paperwork on which the shipping industry operates. It helps expedite the overall process by creating a paperless, digital environment wherein every involved party can access their data & transactions in real-time and in a secure, encrypted environment with a proper audit trail. With AI, the shipping industry has been able to bring in landmark innovations such as: automated processes at container terminals; route-optimization to save fuel; reducing carbon footprints; improved analytics for decision-making during incidents such as bad weather, port congestion, etc; and improved safety by vessel recognition capabilities."

The first wave of automation using collaborative robotics has arrived in the logistics industry. Driven by rapid technological advancements and greater affordability, robotics solutions are entering the logistics workforce, supporting zero-defect processes and boosting productivity.

Warehouses are constantly faced with the chal-

BIG DATA ANALYTICS AND MACHINE LEARNING WILL BE THE ADDITIONAL LAYERS SITTING ON TOP OF DIGITISED SUPPLY CHAINS.

lenge of efficiently optimizing space. It is critical for warehouses to run as efficiently as possible and work on warehouse space optimization which calls for the deployment of innovative logistics solutions. The goal is to increase the quantity of stock that can be stored in the available space and to ensure it can be located and moved safely but efficiently.

The government of India's focus on making India a global manufacturing hub has caused warehousing clusters to expand rapidly beyond the top cities and into Tier 2 and 3 cities. Also as most of the Tier 2 and 3 cities in India are aligned with industrial hubs the demand for A Grade warehouses in these cities has increased substantially. Parallely, the increasing internet penetration in rural areas in addition to rising household income and the government's push on digital in rural areas, has increased the pressure on manufacturing organisations to move closer to their customer base in these areas. In this endeavour to cater to the hugely untapped rural customer base, organisations have realised the importance of developing quality and world-class warehousing facilities as these facilities not only offer operational excellence but also facilitate cost optimization. ■



"Our tech-enabled supply chain works with farmers with recommendations on what crop to grow and accurate pre-harvesting pricing information and demand patterns."
- Thirukumaran Nagarajan



"Blockchain helps eliminate or reduce the extensive & time-consuming paperwork on which the shipping industry operates."
- Santosh Nair

8 & 9. It is critical for warehouses to run as efficiently as possible and work on warehouse space optimization.