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SCHOOL OF BUSINESS AND MANAGEMENT

LEAN OPERATIONS AND SYSTEMS

FROM THE EDITORS DESK

Greetings Readers!

It is our pleasure to bring before you the Sigma Newsletter August 2022 edition.

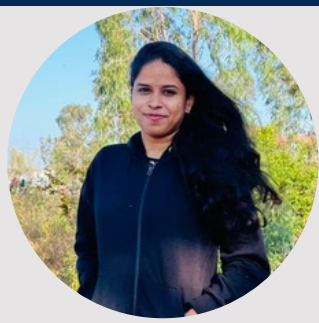
The articles in this issue throw light on Enabling Supply Chain Analytics For Enterprise Information Systems, Supply Chain Analytics and AI in Driving Relevance, Resilience and Responsibility, Supply Chain and IOT, Supply Chain Automation Changing the Landscape, Supply Chain Analytics in Data, Drone Delivery and a Crossword. We hope that the Newsletter will help the readers get an overview on the recent trends in Supply Chain.

We, Team Oasys, express our sincere gratitude to our Dean, Dr. Jain Mathew and the entire leadership team, Head of Specialization, Dr. Ramakrishnan N, Faculty Coordinator Dr. Saibal Kumar Saha, faculty members of the Department and all those who have contributed in developing this edition of the newsletter.

Wishing the readers, a happy reading.

Best Wishes
Team Oasys

ENABLING SUPPLY CHAIN ANALYTICS FOR ENTERPRISE INFORMATION SYSTEMS



BEHARA SONIA
2128238

As supply chain academics and practitioners, we are living in an exciting time because of technological progress and the possibility of a new industrial revolution. Supply chain execution and planning, such as inventory replenishment, demand-supply synchronization, and more precise supply and demand planning, are the focus of the buzz. Researchers assessed the use of analytics in supply chain planning. They determined that the claimed benefits did not materialize in practice, despite all of the potential benefits of utilizing corporate data in the supply chain. They found that specialized planning software, often necessary for advanced planning and what-if analysis, is underutilized in the industry.

A summary of recent studies in the field of analytics

Businesses are under tremendous pressure to improve supply chain planning and performance due to increased unpredictability and competitiveness. A range of new technology and process-based solutions have been introduced by the manufacturers to achieve and maintain a competitive advantage over their competitors. Business analytics, often known as supply chain analytics, is gaining traction (SCA). SCA refers to using data and quantitative methods and procedures to improve supply chain management operational performance. KPIs like order fulfillment and flexibility are often measured. Data management resources are a group of three forms of data and IT-enabled SCM resources that make up SCA. To obtain, store, and retrieve data, businesses use various analytical and information technology techniques.

Identify the supply chain competitive advantage enablers

The six enablers include organizational structure, internal relational behavior, customer relational behavior, top management support system, information sharing, and a mechanism for measuring business performance.

SUPPLY CHAIN ANALYTICS AND AI IN DRIVING RELEVANCE, RESILIENCE AND RESPONSIBILITY

CHITRANGINI SRIVASTAVA
2128004

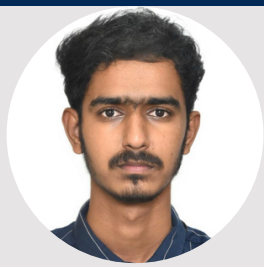
IOT,ML and AI are just a few of the burgeoning industries that have allowed businesses and brands to achieve things they never could before. As a result, these cutting-edge technologies can assist businesses in establishing a brilliant supply chain that can assess, monitor, and predict the impact of any decision they make. As a result, the organization's ability to manage these three goals, which all supply chain leaders are willing and expected to achieve, is critical.

Customers and organizations must be relevant in order for them to continue to flourish in the future. A study revealed that 76 percent of the employees believe that firms need to drastically re-engineer processes and experiences that bring people and technology together. Secondly, Operational Resilience ensures viability and profitability in the aftermath of COVID-19. According to a poll, many supply chain officers are considering reprogramming their supply chains, including the processes and operating models. Today, customers are more conscious of where products are sourced from, how sustainable they are, where they are made, and other factors that contribute to a safer and prosperous planet. As a result, a sustainable supply chain is the best value proposition for organizations. Customers have become more responsible of where products are sourced from, how sustainable they are, and where they are made.

AI is essential for addressing relevance, resilience, and accountability simultaneously. According to research, many leaders are using these strong tools to scale up and, as a result, are getting an early advantage in capitalizing on both human-created and machine-created key possibilities.

Many organizations are investing millions of dollars in AI-enabled linked goods, AI virtual assistants' aides, sophisticated data analytics, intelligent automation, IoT (Industrial Internet of Things) sensors, and AI-enhanced linked devices and products.

SUPPLY CHAIN AND IOT



ARAVINTH L
2127807

A game-changing technology is Internet of Things for every primary industry, including retail, transportation, banking, healthcare, and energy. Fleet managers can use management, forecasting, and supervisory tools to improve distribution operational efficiency and transparency in decision-making. The Internet of Things can help with every aspect of the complex supply chain process.

Automation

This technology's full potential is fulfilled when handling enormous warehouses for significant retail and logistics organizations. Inventory drones connected to infrastructure for warehouse condition monitoring and remote control are examples of Internet of Things applications in supply chain management that help automate warehouse operations. Warehouse managers can benefit from the human-technology synergy by increasing efficiency, lowering costs, and increasing supply chain resilience.

Asset management- Asset monitoring and management are made easier using IoT technology. Managers may now update the status of all assets only through software rather than manually logging data or using traditional inventory devices. Supply chain managers can track each item and provide instant access to crucial information about each delivery, such as parcel contents and storage manuals, using sensors, RFID tags, beacons, and intelligent materials, similar to asset tracking in retail.

Forecasting Accuracy- It decreases the impact of human mistakes in data collection dramatically. It captures data at any time or predetermined intervals, saving hours of labor time that would otherwise be spent manually collecting data. Finally, it enables firms to collect information that would otherwise be difficult or impossible to obtain.

SUPPLY CHAIN AUTOMATION CHANGING THE LANDSCAPE

GOKUL KISHORE
2128010

Supply chain automation makes use of digital technologies to improve efficiencies, integrate applications, and streamline processes throughout the supply chain. Supply chain automation frequently employs intelligent technologies such as Digital Process Automation, Robotic Process Automation, Artificial Intelligence, and Machine Learning.

Thanks to breakthroughs in robotics and artificial intelligence, automation technology can now accomplish tasks that people used to do manually. Improving the supply chain's speed is the pressing necessity of the day. It employs digital technology to cut operating expenses and increase efficiency across the supply chain's whole process and activities.

The activities that can be automated are identifying and automating repetitive operations, especially those that are time-consuming and prone to errors, is the foundation of automation. Process-oriented tasks are required in supply chains, and it is critical to ensure that they are completed effectively and efficiently. Automation is possible in almost every part of the supply chain. However, three sorts of automation, including back-office, transportation, and warehousing, will assist a firm.

Back office- A significant portion of the supply chain takes place behind the scenes. This includes obtaining documents such as delivery orders, receipts, and other bills, which must be manually sorted and documented before the manufacturing step can begin. The back-office process takes time; implementing automation in this process can considerably boost the speed and efficiency of jobs. In this department, automation will significantly reduce the likelihood of human mistakes, eliminating the possibility of misplaced or wrong documents. Transportation would offer real-time tracking so that it is easy to track the trucks, know what products are in transit, and when any possible delays occur. This optimizes the transfer of resources and products

throughout the supply chain, lowering costs and speeding up delivery. Some companies have already begun to use self-driving vehicles, such as trucks and drones to optimize transport supply inside their networks. These vehicles may not require drivers, giving more flexibility when transporting products. Warehouse-Automation in warehouses can significantly reduce warehousing costs ensuring that space is optimized to maximize value. Supply and demand automation is one technique to automate this. This system will track inventory changes automatically, giving details of the number of products in stock and modifying them accordingly. This knowledge makes it easy to detect out-of-stock or stock-at-hand items faster, ensuring that the system appropriately reflects actual inventory.

Forecasting is another outstanding automation technology. Forecasting can be used at various points across the supply chain, but it is most useful when predicting demand. This can also be used to track and forecast customer orders, helping to prepare inventory ahead of time and guarantee that there is enough supply to satisfy demand. Why Automate?-Several reasons could justify the importance of supply chain automation; the two essential reasons are saving time and money. A supply chain must have advanced analytics-driven forecasting and optimization capabilities to attain lower manufacturing costs. In the Annual Warehouse and Distribution Center (DC) Equipment Survey conducted as of April 8, 2022, only 30% of DC respondents said they automate daily throughput measurement, but 69 percent said they would do so in the next two years similarly, while just 27% have an automated system for tracking order cycle times, 54% plan to do so within the next two years. Another is dock-to-stock cycle time, which is now assessed automated by 25% of respondents, but 55 percent expect a more automated method within two years.

Every stage of the supply chain can be optimized by integrating end-to-end supply chain automation. These capabilities can better equip any business to handle significant volumes of data and customer orders with no additional load on team members. Automation in the supply chain further helps in reducing the time consumed for manual tasks, allowing employees to concentrate on core activities that require more human supervision and thought processes.

SUPPLY CHAIN ANALYTICS IN DATA

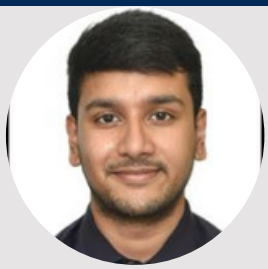
NITHYASHREE N
2128347

Supply Chain process includes moving and processing raw resources into finished goods, delivering those goods, and selling them to end customers. At the same time, Data analytics refers to the methods for evaluating data to increase efficiency and business advantage. Data is collected from various sources, cleansed, and categorized to identify distinct behavioral patterns. Different techniques and instruments are used depending on the business or individual.

Data analytics is becoming increasingly vital for industrial companies that deliver their consumers' requests and expectations. Most manufacturing companies use advanced analytics to successfully manage their inventory, warehousing, sales, and CRM activities. Analytics refers to a system's ability to make data-driven decisions using sophisticated algorithms and data visualization tools. On the other side, supply chain analytics is concerned with effectively managing data connected to supply chain activities. Daily, supply networks generate large amounts of data, which is understandable. According to experts, this data has a hidden value that might provide much information about existing SCM strategies and their efficiency.

Much of the data in the supply chain, however, is unstructured. As a result, sophisticated software tools are needed to use data better and find hidden patterns so that relevant insights can be gained. Analytics in logistics also encourages the use of sophisticated analytics and other technologies. Data analytics is utilized in the supply chain in various ways, including planning the process's capacity for determining the production quantity to client needs. The use of data analytics assists the organization in maintaining an excellent numerical. The most compelling rationale for utilizing data analytics is using it to foresee future occurrences for sales and operational planning. Predictive analytics and forecasting are examples of data analytics. It also employs a data mining technique to predict future events accurately.

DRONE DELIVERY



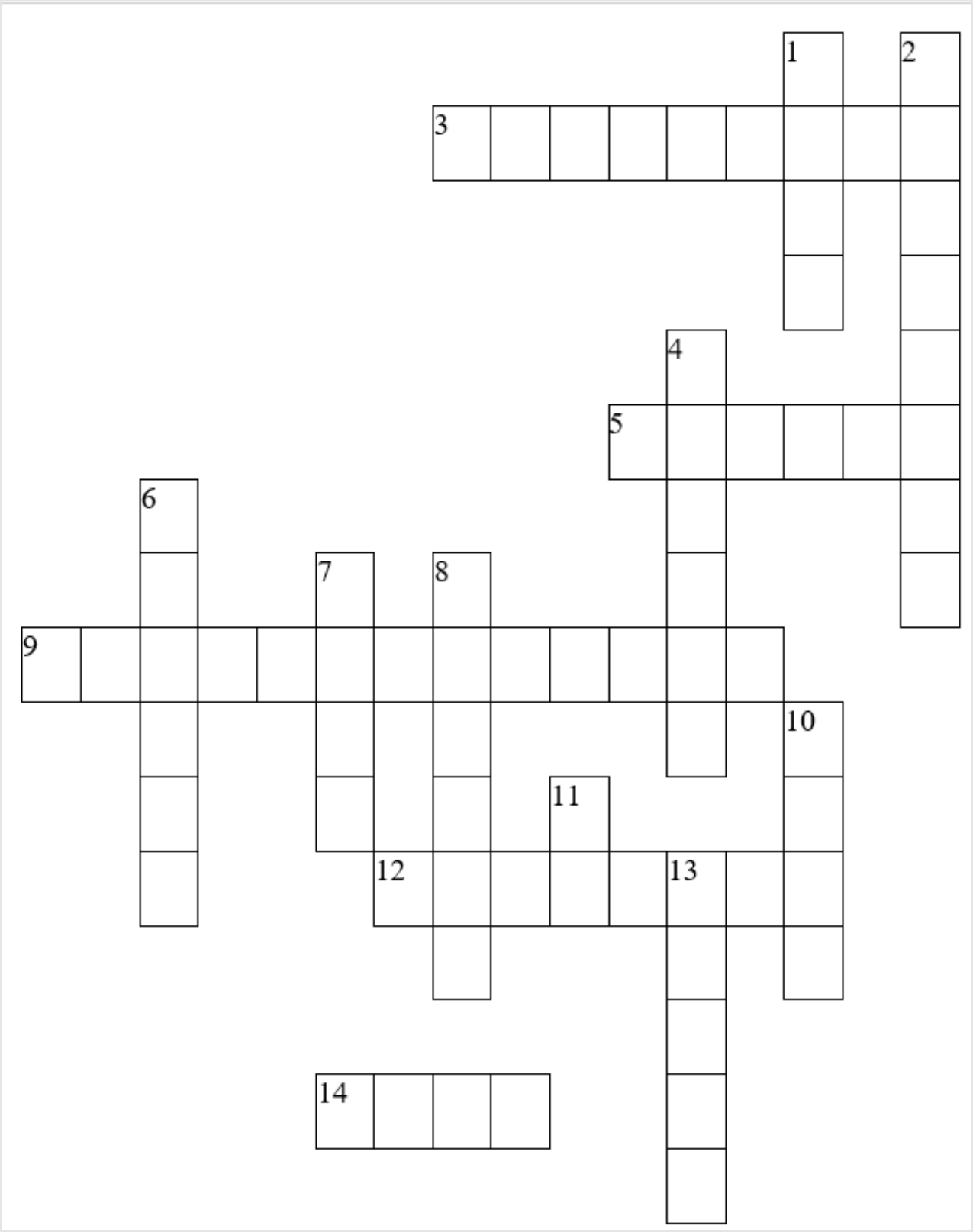
RAHUL SAHU
2128613

The supply chain in India and the world has come a long way. Earlier, it took weeks to deliver even a small letter, but now it can be done overnight. With digitalization and the use of technologies like Machine learning, Artificial Intelligence, Internet of Things, etc., the supply chain has become more tech-enabled and intelligent. Companies like Zepto, Blinkit, etc., have disrupted the industry by delivering the grocery items in under ten minutes. But due to this short time frame, there is an increased risk to the lives of the delivery partners. To reach within ten minutes, they drive rashly, because of which they might end up losing their lives or getting seriously injured.

Here comes the concept of drone delivery, wherein the drones are enabled with Artificial Intelligence which helps them reach the destination within ten minutes. The main challenge will be the initial implementation since data is required to train the algorithms and make them efficient and the high installation price at the initial stage. Not only the E-commerce industry can apply it, but the application of this can be done across different industries like quick-service restaurants, convenience stores, healthcare, and others. Currently, many countries are testing it to make it compatible for the general public and reduce the drawbacks associated with it. China, Japan, and some of the European nations are in the lead since a lot of development has been done in this by them. Currently, the South African government is using this form of supply chain to reduce the last mile problem in remote areas of the country. They deliver the essential supplies and required medicines through drones since there is no proper connectivity with roads.

Companies like Swiggy, Dunzo, etc., are in the trial phase of using drones for delivery. Recently Dunzo has joined hands with Skye Air Mobility and has been testing for drone deliveries in some areas of the country. Not only did start-ups see potential in this, but conglomerates like Reliance also have an eye for this sector. In 2021, the global drone delivery industry was $1.01 billion, which grew to $1.46 billion in 2022, with a CAGR of 45%.

LEAN TERMINOLOGY CROSSWORD



Clues in the next page

CROSSWORD

Across

3. The time elapsed from the beginning of a work process request until it is completed

5. A reflection on what went well and what could have been done better with regard to an event, mission, project, or situation

9. An activity that takes time, resources, and cost, but does not add to the customer requirements

12. Prescriptive methodology for analyzing root cause and implementing corrective action

14. Scientific approach to process improvement or problem solving on a broader scale

Down

1. A work controlled method to ensure the oldest inventory is the first to be processed

2. The balancing of work amongst the workers during a period of time, both by volume and variety

4. Continuous improvement.

6. A visual/signal for an upstream process.

7. The movement of material or information

8. A specific number (data) that is utilized to measure before and after improvement initiatives

10. Methodology and tools for transforming processes to deliver customer value faster, improve work flow, and eliminate waste

11. A Lean manufacturing tool focused on work environment.

13. Japanese term meaning “the actual place” or “the real place” and implies that it is the place where value is created

Gayathri
(2127642)

-

ANSWERS

Across
3 CycleTime
5 Hansei
9 Non Value Added
12 Six Sigma
14 PDCA

Down
1 FIFO
2 Leveling
4 Kaizen
6 Kanban
7 Flow
8 Metric
10 Lean
11 5S
13 Gemba

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