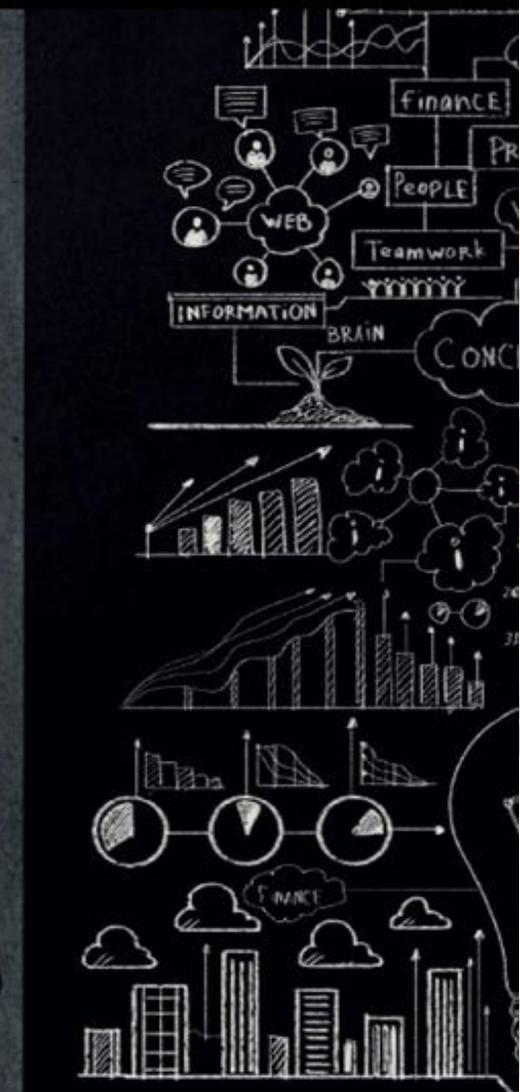




NOESIS- THE OPERATIONS CLUB OF SIMS
|ACTIONS SIMPLIFIED|

LEAD TIME

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WHAT'S INSIDE

- Symbiotic Partnership: Future of Operations
- Changing Inventory Management Using Big Data
- Advanced Planning and Scheduling (APS) & Operations Management

Symbiotic Partnership: Future of Operations

The symbiotic partnership mentioned above is about AI and Humans, Artificial Intelligence is becoming good at many human jobs such as automation in factories, diagnosing disease, virtual assistance, translation, providing customer service and it is fast venturing into new fields.

This is raising fear amongst humans that AI will ultimately replace human workers throughout the economy. But that's not the case here, not even close. While AI will radically alter how work gets done but the technologies larger impact will be in complementing and augmenting human capabilities. Through such a Collaborative intelligence AI and humans enhance each other's complementary strengths such as leadership, teamwork, creativity and social skills of humans and quantitative capabilities of the AI.

To take full advantage of this partnership companies must understand how humans can augment Machines and how machines can enhance human performance and how to redesign business process to support and make full use of this partnership.

Five principles that can help them do so:

1. Reimagine business processes;
2. Embrace experimentation (employee involvement);
3. Actively direct AI strategy;
4. Responsibly collect data and
5. Redesign work to incorporate AI

Human role

Training machine to perform tasks, explaining outcomes of those tasks and sustaining responsible use of machines by preventing robots from harming humans. Empathy and contextual awareness are essential to human interaction, and we are born with a great intuition for both. Throughout our lives, we'll further develop these skills greatly. This skill converts our intelligence into wisdom (at least occasionally). Currently, AI systems are notoriously bad in understanding the question behind the answer. Let alone the question behind the question.

For example, safety engineers focus on anticipating and trying to prevent harm by AIs. The developers of industrial robots that work alongside employees pay careful attention to ensuring that they recognize humans nearby and don't harm them. These experts also review analysis from explainers when AIs do cause harm, for example when a self-driving car is involved in a fatal accident.

Machines augmenting human capabilities

Machines are helping humans by improving their performance in 3 ways

By amplifying cognitive strength, interacting with customers and employees and embody human skills to extend our physical capabilities.

Artificial intelligence boosts our analytical and decision-making abilities by providing the right information at the right time and not just this, it also increases our creativity. For example how AUTOCAD software helps designers in making exceptional designs.

Reimagining business

In order to gain most out of it from this partnership, operations need to be redesigned and to do this, first company need to identify an area that can be improved.

Next, companies must develop a solution through co-creation—having stakeholders envision how they might collaborate with AI systems to improve a process.

The third step for companies is to measure and then sustain the proposed solution.

Flexibility

For Mercedes Benz inflexible process was a growing concerns as customers demanded individualized cars and ‘dumb robots’ were of no help .so, Mercedes replaced some of those robots with AI-enabled cobots and redesigned its processes around human-machine collaborations.

At the company’s plant near Stuttgart, Germany, cobot arms guided by human workers pick up and place heavy parts, becoming an extension of the worker’s body. This system puts the worker in control of the build of each car, doing less manual labor and more of a “piloting” job with the robot.

Scale

For many business processes, scalability is the primary obstacle. That’s particularly true of processes that depend on intensive human labor with minimal machine assistance.

Decision making

By providing employees with information and guidance, AI can help humans make better decisions.

This would be especially valuable in customization process where when making unique individual product.

The Need for New Roles and Talent

Reimagining a business process involves more than the implementation of AI technology; it also requires a significant commitment to developing employees with what we call “fusion skills”—those that enable them to work effectively at the human-machine interface.

Conclusion

Most activities at the human-machine interface require people to do new different things (such as train a robot). So far, however, only a small number of the companies have begun to reimagine their business processes to optimize collaborative intelligence. But the lesson is clear: Organizations that use machines merely to displace workers through automation will miss the full potential of AI. Such a strategy is misguided from the word go. Tomorrow’s leaders will instead be those that embrace collaborative intelligence, transforming their operations, their markets, their industries, and—no less important—their workforces.

- **Aneesh Kumar**

E – 47 (MBA 2018 - 2020)

Changing Inventory Management Using Big Data

Big data is a term used to describe a massive volume of both structured and unstructured data that is so large it is difficult to process using traditional database and software techniques. In most enterprise scenarios the volume of data is too big or it moves too fast or it exceeds current processing capacity of current technology applications. Despite these problems, big data has the potential to help companies improve operations, profitability and can help management make faster, more intelligent business decisions.

The benefit gained from the ability to process large amounts of information is the main attraction of big data analytics. However having too much data without the proper technology infrastructure can create more problems than value. Large data volumes present the most immediate challenge to conventional IT structures as on premise solutions typically are not designed to manage the weight of large data sets. Big data is heavily influenced by the 4 main components including, volume, velocity, variety and veracity.



- **Volume** – The size of the data captured
- **Velocity** – The speed at which data changes
- **Variety** – The different forms of data sources
- **Veracity** – The uncertainty of data accuracy

The real value to businesses is the ability analyse data trends in real-time to extract business critical data for management and operational execution.

The data will involve data from a variety of sources, software and hardware, which is being collected from devices and products all over the world ranging from jet engines and heavy equipment to solar powered trashcans and electric toothbrushes. Companies are using big data to change the way they monitor product performance, research, development and innovation.

Big Data and Master Data Management

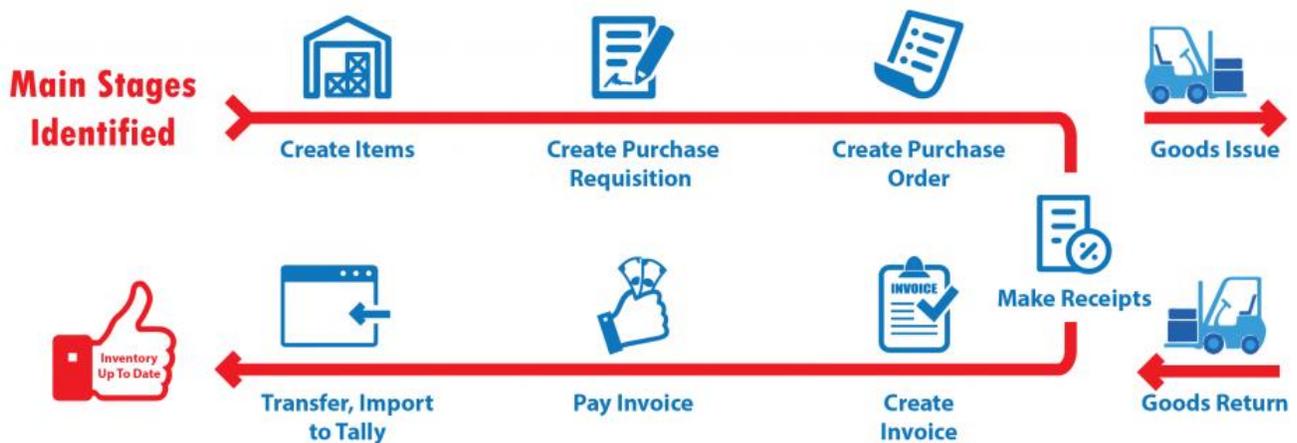
It is tempting to draw a direct comparison between big data and master data management (MDM), but the two terms differ. Big data exists in real-time and involves instantaneous access to data, alerts and control metrics through cloud computing systems. Where master data management data can have a shelf life, big data value is realized with how quickly patterns and trends can be identified.

Whilst MDM involves collating company-wide information from different departments and bringing it together on one file, this will still be basic information that involves smaller data sets. It may involve inventory levels, customer information, sales and other basic data that can be moved onto one file.

In contrast, big data will take information from a variety of sources such as scanners, CRM, sales systems, web-based data and enterprise resource planning tools, and accounting systems to collate this information into a high-velocity real-time overview of operations. The speed and size of this type of data would overwhelm conventional processing and storage systems.

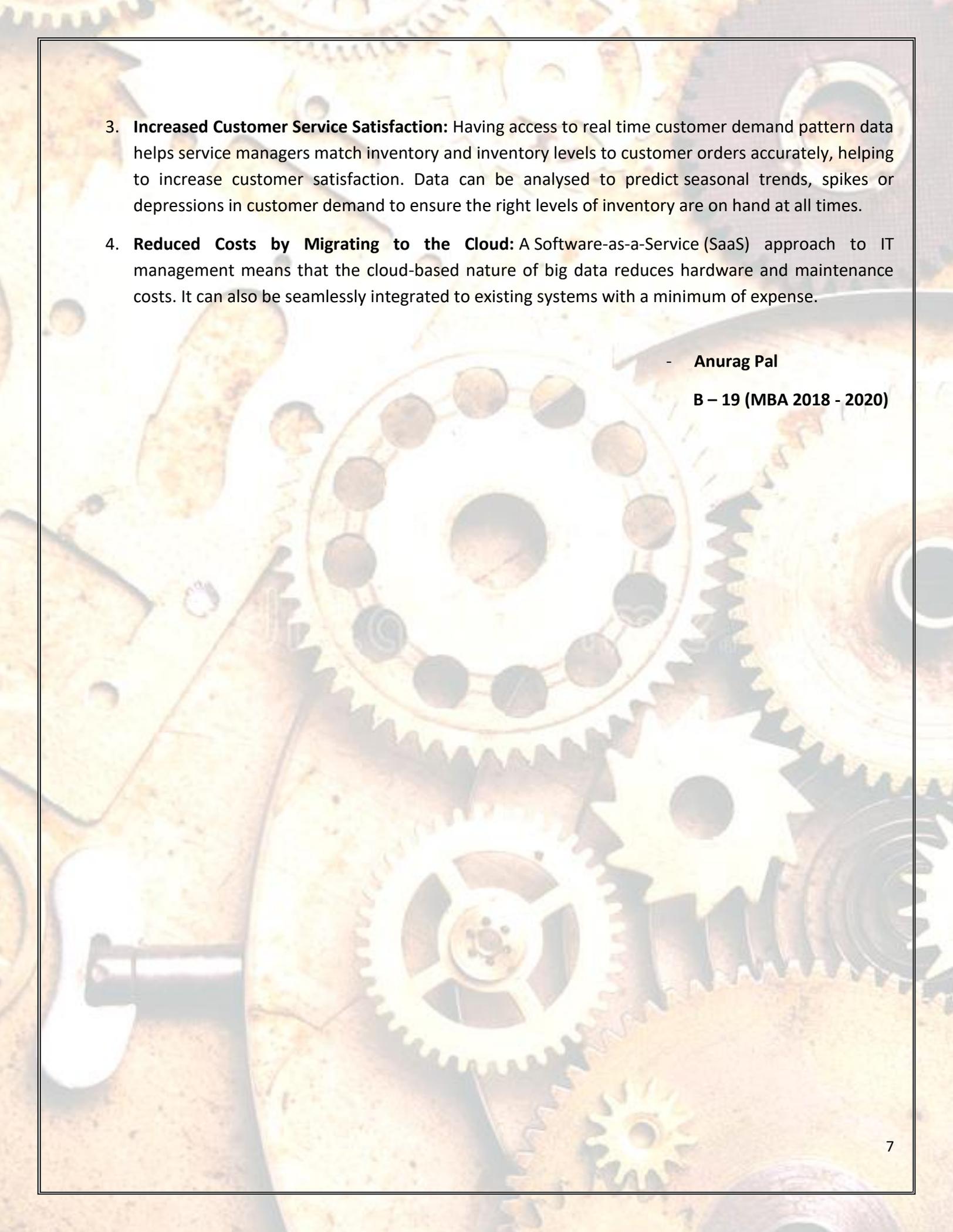
Inventory Management using Big Data

Inventory Management



In the wholesale distribution of non-perishable goods, big data is helping to integrate business systems to improve operational efficiency enterprise wide while delivering higher profits than ever before. Innovative leaders in the supply chain industry are realizing the following benefits that are the result of harnessing big data analytics across supply chains. Below are 4 ways Big Data is changing the way companies manage inventory.

1. **Improved Operational Efficiency:** Operations managers have a minute-to-minute overview of the operation helping to remove bottlenecks and improve efficiency, owing to better access to metrics. Big Data enable supply chains to proactively enhance efficiency and performance compared to older reactionary models.
2. **Maximized Sales & Profits:** In the wholesale distribution industry, access to real-time data is helping finance directors to manage traditionally tight profit margins with greater insights to ensure that maximum profits can be realized from investment into inventory.

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3. **Increased Customer Service Satisfaction:** Having access to real time customer demand pattern data helps service managers match inventory and inventory levels to customer orders accurately, helping to increase customer satisfaction. Data can be analysed to predict seasonal trends, spikes or depressions in customer demand to ensure the right levels of inventory are on hand at all times.
 4. **Reduced Costs by Migrating to the Cloud:** A Software-as-a-Service (SaaS) approach to IT management means that the cloud-based nature of big data reduces hardware and maintenance costs. It can also be seamlessly integrated to existing systems with a minimum of expense.

- Anurag Pal

B – 19 (MBA 2018 - 2020)

Advanced Planning and Scheduling (APS) & Operations Management

Advanced planning and scheduling (APS) is a type of system that tracks costs based on the activities that are responsible for driving costs in the production of manufactured goods. An APS allocates raw materials and production capacity optimally to balance demand and plant capacity. Advanced planning and scheduling (APS) software is becoming a top choice for manufacturing operations and can effectively be integrated into single or multi-plant facilities. Advanced planning and scheduling software can augment your ERP or MES operations management software through a variety of capabilities such as:

- Drag and Drop
- Capacity Planning
- “What-If” Scenario
- Real-Time Scheduling

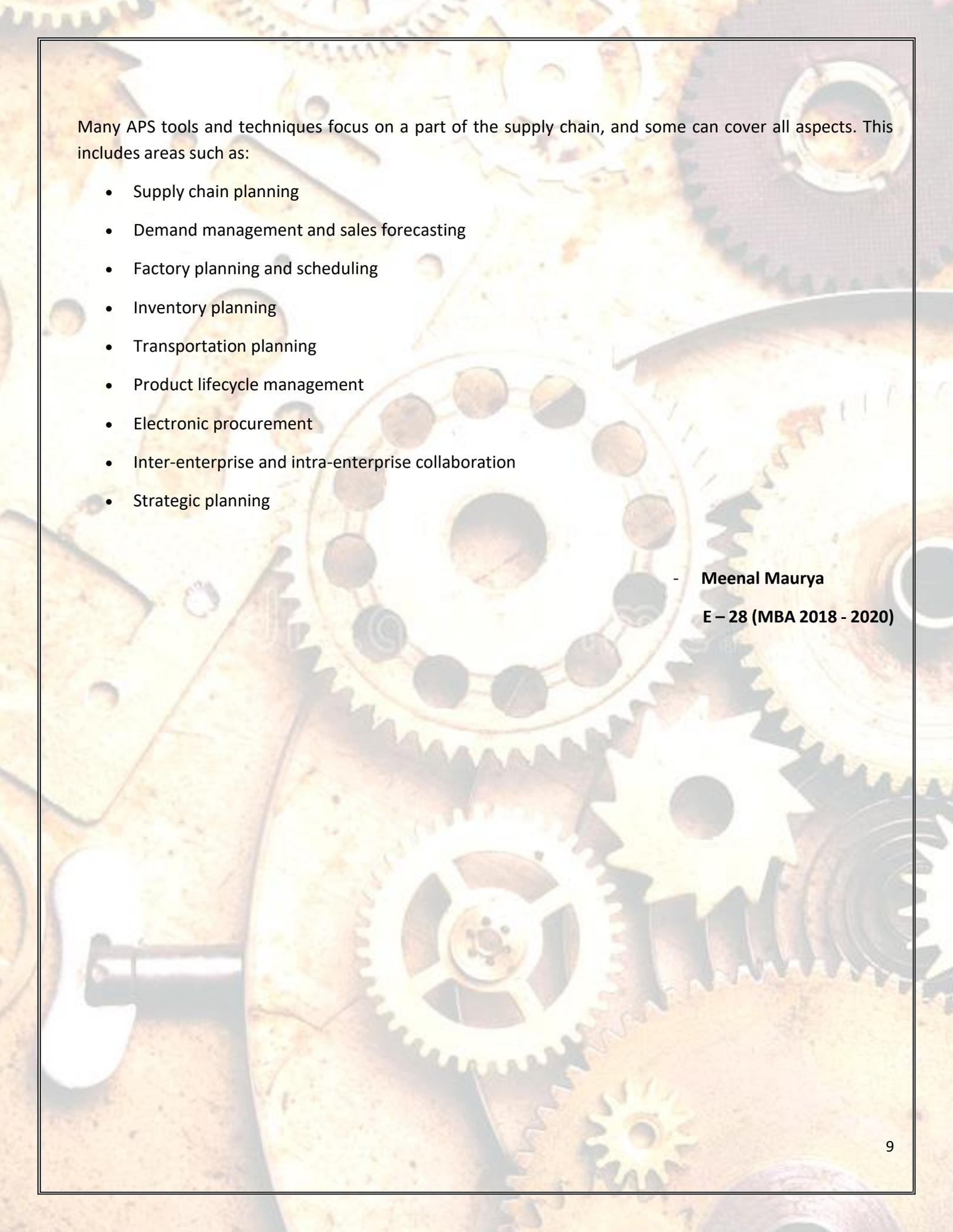
Implementing an Advanced Planning and Scheduling (APS) system into your manufacturing operation is a step toward production optimization. APS is especially well-suited to environments where simpler planning methods cannot adequately address complex trade-offs between dependence competing priorities. Production scheduling is intrinsically very difficult due to the (approximately) factorial of the size of the solution space on the number of items/products to be manufactured. APS systems have improved the integration of materials and capacity planning; bridge the gap between the supply chain complexity and the daily operative decisions.

How to benefit from Advanced Planning and Scheduling systems?

APS incorporate some form of computerised optimisation, using one or more mathematical algorithms. They can operate on individual transactions e.g. customer orders without the batching characteristic of MRP. In manufacturing, APS provides a method of concurrent synchronisation of material and capacity with customer orders.

APS systems are not transactional systems. They prepare plans and schedules but then need to be linked to a transactional system like ERP to manage the execution of the plan or schedule.

APS systems can be stand- alone systems or part of suites of systems (“enterprise solutions”), especially in larger organisations. Data interfaces are required to automatically receive input data and send results to other systems.



Many APS tools and techniques focus on a part of the supply chain, and some can cover all aspects. This includes areas such as:

- Supply chain planning
- Demand management and sales forecasting
- Factory planning and scheduling
- Inventory planning
- Transportation planning
- Product lifecycle management
- Electronic procurement
- Inter-enterprise and intra-enterprise collaboration
- Strategic planning

- **Meenal Maurya**

E – 28 (MBA 2018 - 2020)