Project Report

by Dr. Vikas Gupta

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Term Project

"Strategic Integration of Demand Forecasting and Resilience in Global Supply Chains for Enhanced OTIF & Customer Satisfaction"

(EMBA-408)

Submitted by

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(23/EMBA/31)

Under Guidance of

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CERTIFICATE

This is to certify that Sambhu Nath Jana Roll No.: 23/EMBA/31, student of Master of Business Administration (Executive 2023-2025) at Delhi Technological University (DSM), Delhi, has accomplished the project titled "**Strategic Integration of Demand Forecasting and Resilience in Global Supply Chains for Enhanced OTIF & Customer Satisfaction**". Under my guidance and to the best of my knowledge completed the project successfully, for the partial fulfilment of the course- Dissertation in 2nd semester of the course Executive MBA.

Signature of Mentor

Prof. Anil Kumar

DECLARATION

I hereby declare that the submission is my own and that, to the best of my knowledge and belief, it contains no material previously and return published or written by any other person nor material which to a substantial extent has been accepted for the word of any other degree or diploma of the university and other institute of higher except where due acknowledgement has been made in the text.

_____

Sambhu Nath Jana

23/EMBA/31

Date:

ACKNOWLEDGEMENT

I ……., wish to show my deep sense of gratitude to my project, guide Prof. Anil Singh for his support and guidance and secondly for providing necessary information during the project work.

Sambhu Nath Jana

Abstract/Executive summary:

This study delves into the critical examination of how skills within Operation personnel significantly influence key factors associated with Term Project on **"Strategic Integration of Demand Forecasting and Resilience in Global Supply Chains for Enhanced OTIF & Customer Satisfaction"**. With an emphasis on technical competence, problem-solving skills, and planning abilities, the study seeks to clarify the complex relationships between these competencies and important performance indicators like Demand Forecasting, MRP, Inventory management which are the study used a mixed-methods approach, integrating surveys and interviews with my seniors, to offer a full understanding of how OTIF is seen. It highlights the significance of skill development in maximizing Demand Forecasting Skill, Forecasting Accuracy, Inventory Management Skill, MRP skill to enhance OTIF, Resilience in Global Supply Chain & Customer Satisfaction.

The findings contribute to a deeper understanding of the impact of skills on Demand forecasting, Material Requirement Planning, Forecasting Accuracy, Inventory management in an organization & providing valuable implication for OTIF, Resilience in Global Supply Chain & Customer satisfaction.

Keywords:

Demand, Demand Forecasting, Purchase Requisition, Purchase Order, EOQ, MOQ, Lead Time, Supplier Performance, Safety Stock, Stock sufficiency, Dispatch Planning, Material Requirement Planning (MRP), Forecast Accuracy, Delivery Performance, Toos used like Oracle, Power BI, ASCP (an advanced supply chain planning application), Excel, and Daily OTIF , Monthly OTIF, Global Supply Chain, Risk management, Diversification, Disruption and supply chain resilience.

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CHAPTER- 1

1.1 Introduction

Achieving customer satisfaction through timely material delivery is a primary concern for companies trying to maximize supply chain efficiency, lower inventory levels through material planning, and gain a competitive edge in the present competitive landscape of the sector. At the core of this effort is the MRP (material requirement planning) technique, Demand Forecasting, a comprehensive approach that goes beyond traditional material management techniques to foster with ahead of material availability for customers' irregular and regular demands and fulfil OTIF.

The primary goals of material management are to: Provide a thorough bill of materials in accordance with customer demand; Ensure customer satisfaction by delivering top-notch materials on time; Provide vendors with a rolling forecast for standard parts and timely purchase orders; Monitor stock levels, make decisions regarding non-moving goods, regularly estimate demand, and compare it to actual dispatch, and ultimately meet the OTIF.

1.2 Define the key terms and concepts:

Demand: The amount of an item or service that customers are willing and able to buy at different prices within a specific time frame is referred to as demand.

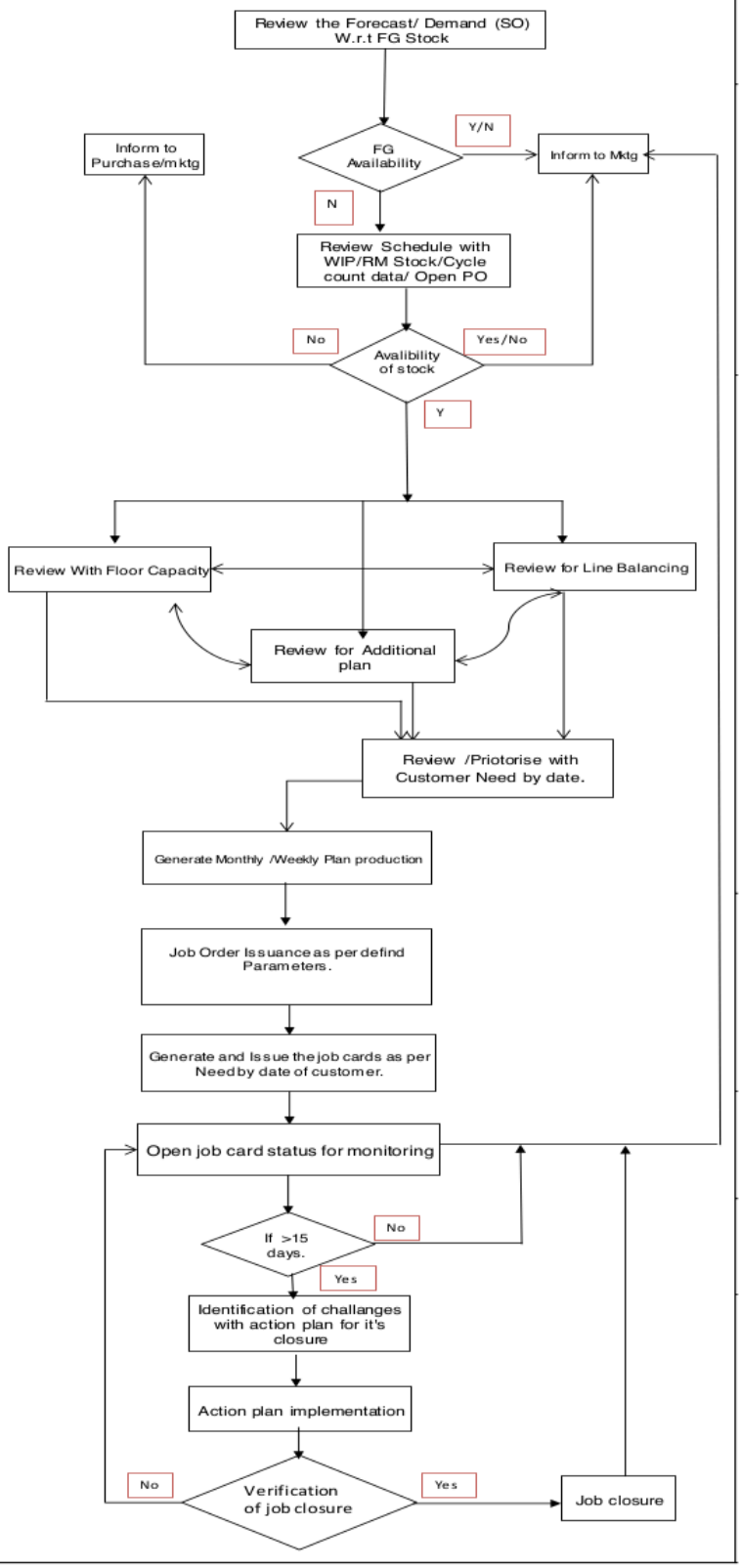
Demand Forecasting:

Demand forecasting is the process of prediction about the future customer orders which are coming from historical data inclusively moving average or weighted average.

Process Flow:

Demand, MPS, MRP, Material availability, Mange Inventory and dispatch are the first steps in Supply chain resilience, OTIF Process & Customer Satisfaction.

Flow chart: 01

Sr. No.	Input	Activity
1	Customer Schedule / Cycle count data	
2	Reviewed Customer Schedule/ Cycle count data/ RM Status/ WIP Status	
3	RM Status / Customer Schedule/ CS & Purchase feedback	
4	Production Plan	
5	Job Card Creation	
6	Aging of Job card	
7	Follow up actions	

Master Production Schedule or MPS:

A method for efficiently planning, scheduling, and controlling the acquisition and utilization of materials needed for the manufacturing process is employed in manufacturing and production management. It comprises procuring raw materials, monitoring, and managing inventory levels, and scheduling manufacturing operations to meet demand while cutting costs. These processes are made possible by MRP systems, which use computer-based software to help firms optimize their resources and raise overall operational effectiveness.

Material Requirement Planning or MRP:

Material needs planning, or MRP, is a rigorous approach to arranging and managing the supplies needed for manufacturing. Determining what resources are needed, how much is needed, and when it's needed is necessary to meet production demand. MRP systems help businesses ensure timely material availability, maximize stock levels, and streamline the procurement process. Among the essential elements of MRP are

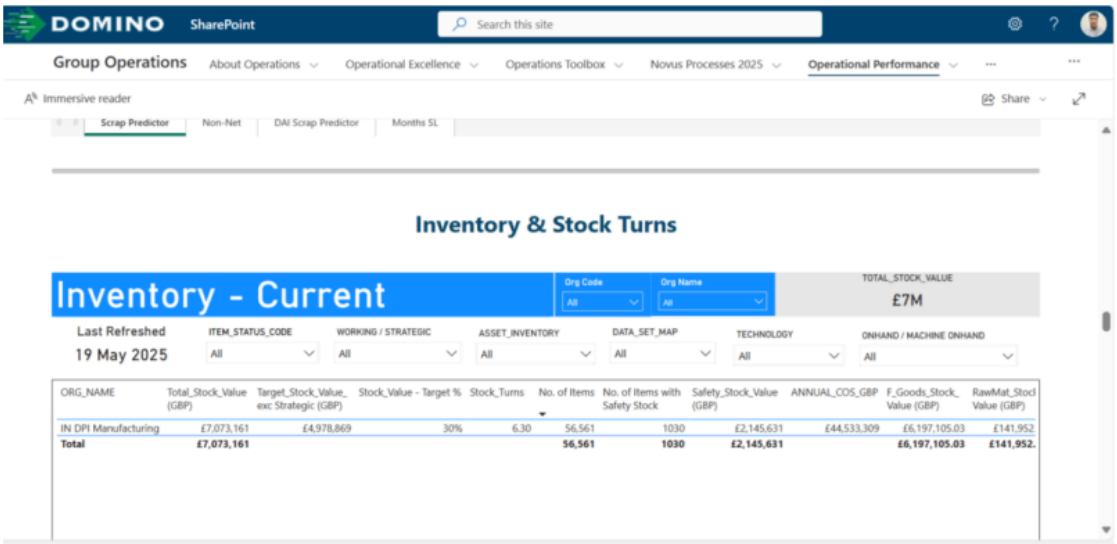
Bill of Materials (BOM):

A large stock of the components or materials required to make a product.

Inventory Levels:

Monitoring and managing the available inventory to avoid surplus or shortages.

Diagram:01



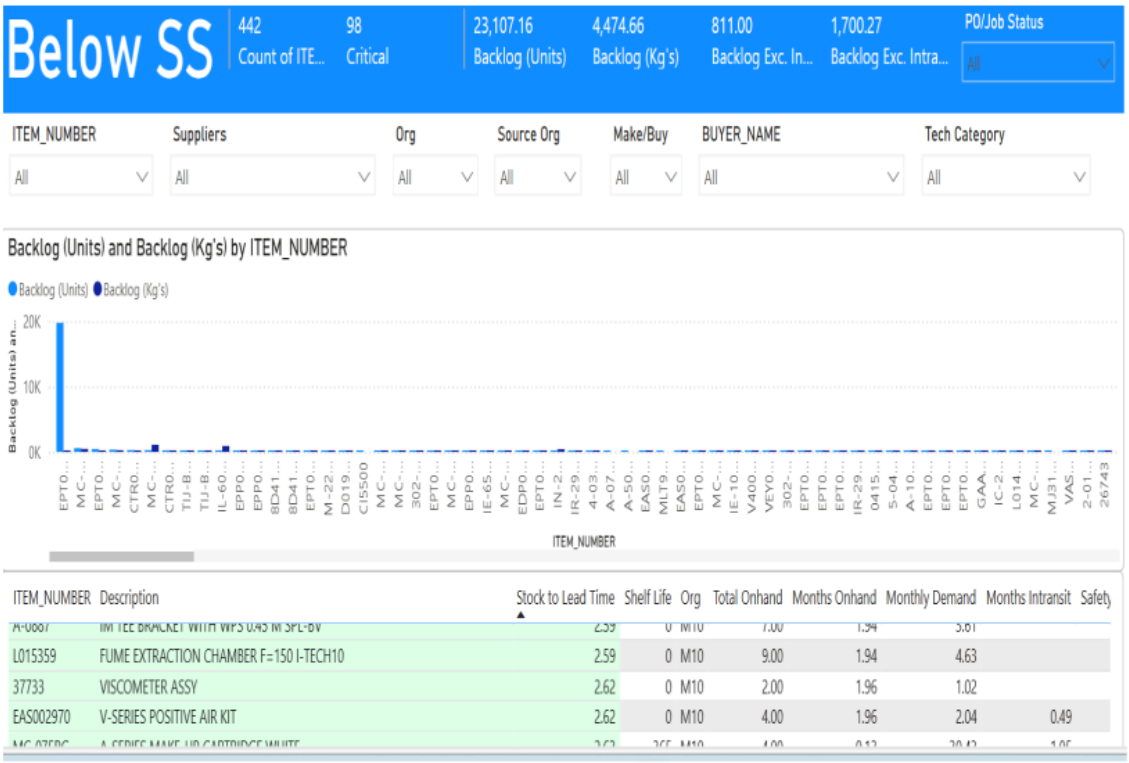
Lead Time:

How long does it take for materials to be delivered after an order is placed?

Safety Stock:

By identifying the masterpieces that move slowly, swiftly, or not at all. The intake patterns from the preceding six months are frequently used to track movements.

Diagram: 02



(The above diagram collected from Domino Share point)

Forecast Accuracy:

The degree to which a predicted value agrees with the actual result or observed value is referred to as prediction accuracy. It's a gauge of how successfully a model or forecasting technique projects future trends or events. Forecast accuracy is usually assessed using a variety of statistical techniques to compare predicted values to actual data.

Printer	Forecast (P01)	Sale Qty (P01)	Forecast Accuracy (P01)
Ax350	65	62	-5%
Ax550	5	5	0%
Ax 40 Micron	2	2	0%
Ax 50 Micron	1	1	0%
Ax Opq	2	2	0%
Ax DUO	40	36	-10%
Ax130i	64	55	-14%
J322A/B	1	1	0%
Gross	180	164	-9%

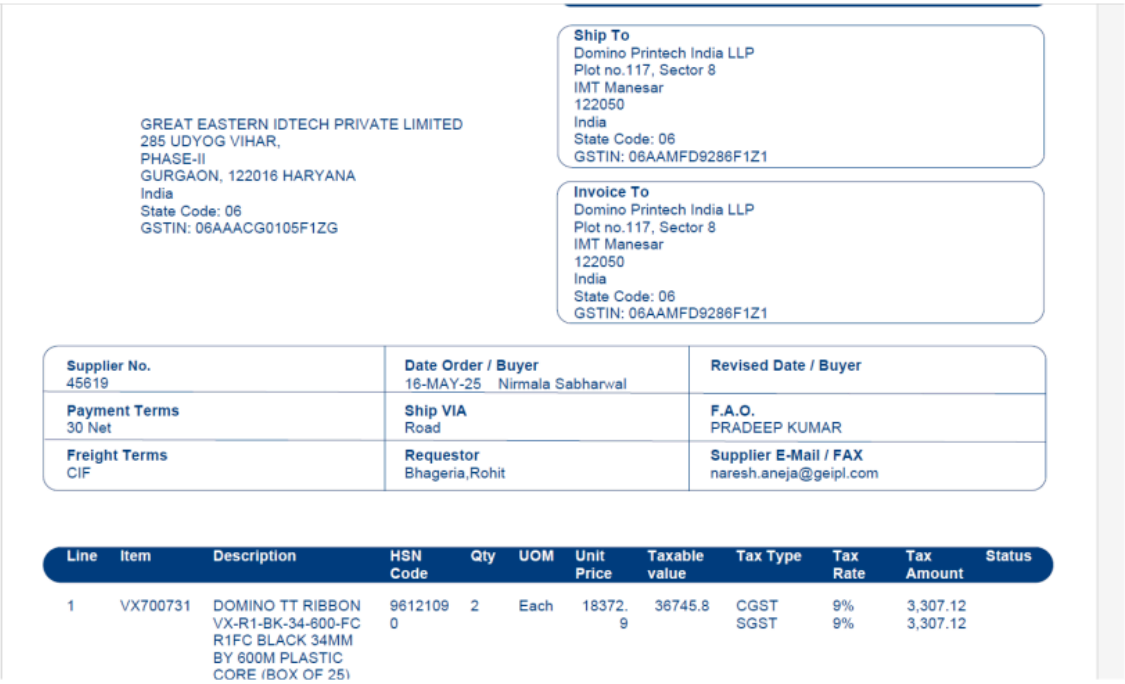
Printers (GX & VX)	Forecast (P01)	Sale Qty (P01)	Forecast Accuracy (P01)
Gx OEM Controller	7	6	-14%
Gx Printhead - EXT Multi	5	5	0%
Gx Printhead - EXT Top	5	6	20%
Gx Printhead – Multi	43	45	5%
Gx Printhead - OPT Multi	5	5	0%
Gx Printhead - OPT Top	5	5	0%
Gx Printhead – Top	43	44	2%
Gx150i Controller (OC7 - 7 inch)	46	48	4%
Gx350i Controller (OC10 - 10 inch)	6	6	0%
Vx150i	22	21	-5%
Vx350i	2	2	0%
Vx50i	90	89	-1%
Gross	279	282	1%

Purchase Order:

A purchase order, or PO, is a business document that a buyer issues to a seller specifying the kind, amount, and price at which the buyer wants to buy goods or services. It outlines the terms

and conditions of the transaction and acts as a legally enforceable contract between the buyer and the seller.

Diagram-03



GREAT EASTERN IDTECH PRIVATE LIMITED
285 UDYOG VIHAR,
PHASE-II
GURGAON, 122016 HARYANA
India
State Code: 06
GSTIN: 06AAACG0105F1ZG

Ship To
Domino Printech India LLP
Plot no.117, Sector 8
IMT Manesar
122050
India
State Code: 06
GSTIN: 06AAMFD9286F1Z1

Invoice To
Domino Printech India LLP
Plot no.117, Sector 8
IMT Manesar
122050
India
State Code: 06
GSTIN: 06AAMFD9286F1Z1

Supplier No. 45619	**Date Order / Buyer** 16-MAY-25 Nirmala Sabharwal	**Revised Date / Buyer**
Payment Terms 30 Net	**Ship VIA** Road	**F.A.O.** PRADEEP KUMAR
Freight Terms CIF	**Requestor** Bhageria,Rohit	**Supplier E-Mail / FAX** naresh.aneja@geipl.com

Line	Item	Description	HSN Code	Qty	UOM	Unit Price	Taxable value	Tax Type	Tax Rate	Tax Amount	Status
1	VX700731	DOMINO TT RIBBON VX-R1-BK-34-600-FC R1FC BLACK 34MM BY 600M PLASTIC CORE (BOX OF 25)	96121090	2	Each	18372.9	36745.8	CGST SGST	9% 9%	3,307.12 3,307.12	

(The above diagram collected from Domino Share point)

A global supply chain:

This is a network of businesses, manufacturers, suppliers, and logistics organizations that work together to produce and distribute goods and services across national boundaries. It encompasses the movement of information, intermediary items, final products, and raw materials.

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Supply Chain Resilience:

A supply chain's ability to foresee, react to, and bounce back from disturbances. A robust supply chain can reduce the operational and financial effects of interruptions and preserve business continuity in the face of outside shocks.

Disruption:

Any occurrence that stops a supply chain's regular flow of products and services. Natural catastrophes, pandemics, and geopolitical crises are examples of disruptions.

Risk management:

The process of recognizing, evaluating, and reducing risks to lessen the adverse consequences of supply chain interruptions. This covers risk mitigation techniques and backup plans

Diversification:

To lessen reliance on a single source and lower the risk of supply chain interruptions, this technique entails purchasing goods, services, or materials from several vendors or geographical areas.

Business Continuity:

The capacity of an organization to carry on in the face of disruptive occurrences; this is frequently accomplished through flexible operations, alternative suppliers, and disaster recovery plans.

1.3 Background

Demand Forecasting, Inventory Management & MRP must function well to minimize backlogs in open orders, maximize product affair, delivery performance, and achieve optimal dispatch with less in-house stock—all of which are cost-effective. Considering these objectives, inventory management, demand forecasting, material planning, and forecast accuracy have come to be recognized as complete and cutting-edge corporate practices. Their objective is to maximize the whole commerce and dispatch's manageability and efficiency, based on the concepts of direct participation and continual development. Every integrating system has an expense.

a reduced force position that is effective, material vacuity, client commitment, smooth buy planning to the supplier, control over undesirable demand, and adherence to dispatch and overtime. Even if demand forecasting has been shown to be beneficial, there are still issues because purchase orders are delayed. Resistance in blessing of material importunity for suppliers, a great gap in demand forecast and reality order conditions, Problem of new corridor or any bespoke corridor from client, Raw material operation in supplier point even supply chain break through 9/11- Terror Attack, 2020-2022 COVID . These are all extremely significant for the budget and expansion of the business, as well as for ensuring client happiness through delivery. Given these factors, determining the effect of Planning chops and its analysis on named becomes incredibly important for the association's future development. The relationship

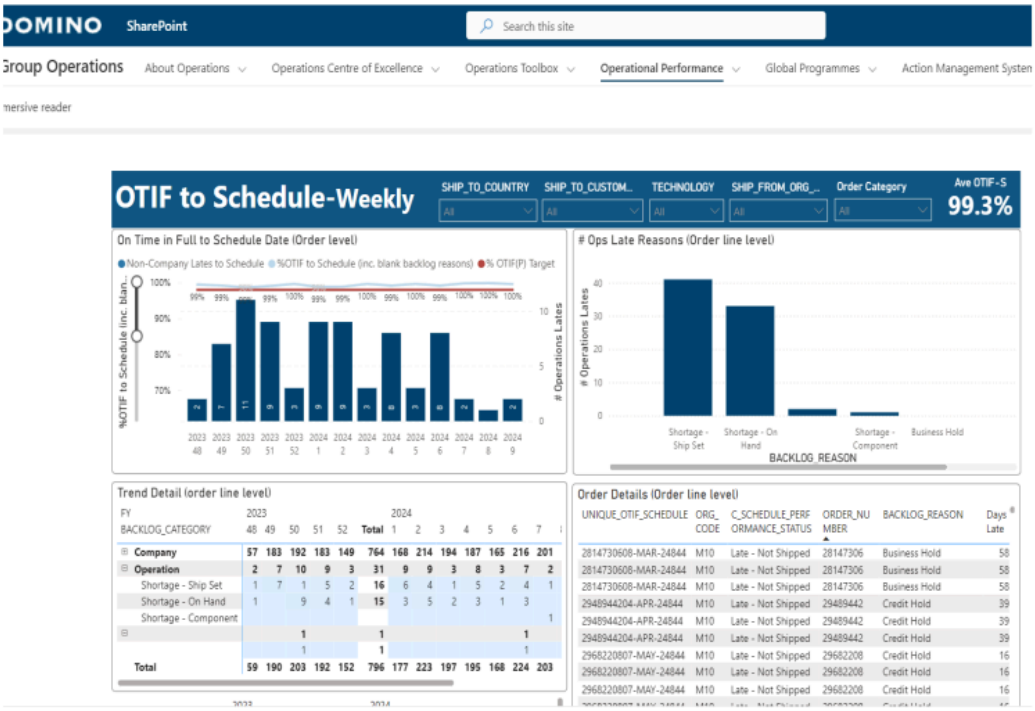
between Material operation and Planning chops is applicable in the ideal. The purpose of this assessment is to provide associations with practical insight, support them in adapting training programs, cultivate a culture of seamless operations, and handle materially related obstacles to optimize the guest experience for clients. Similarly, we are unable to compute the supplier's material operation policy since guests will eventually be impacted by a shortage of materials. In this case, rolling purchase costs at the supplier's end and supplier performance about delivery help to manage the situation.

1.4 Evolutions of Supply chain resilience & OTIF in Domino Science for Customer Satisfaction:

Demand, In-house stock verification & initially, it was very hard to satisfy customer requests while maintaining minimal internal inventory. Occasionally, a drop in sales orders resulted in an increase in internal inventory. To stay competitive, we deployed Enterprise Resource Planning (ERP) in 2017. Order booking and purchase order release were hard to track, and the purchase order wasn't appropriate for regular material condition releases. It was very upsetting for accurate situational awareness and future forecasting. sophisticated Excel. The material conditions (PO) are generated by integrating calculations for booked orders, inventories, open purchase orders, and safety stock. volume based on supplier lead time, profitable order volume (EOQ), and minimum order volume. We've introduced Power BI and the ASCP tool to improve material control visualization in the interim.

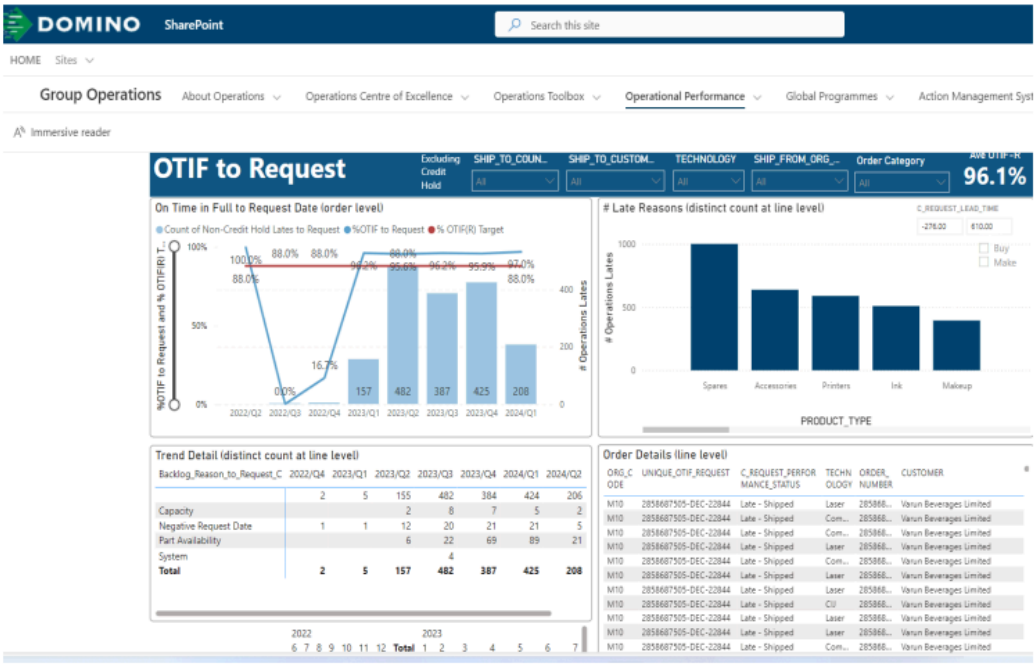
The OTIF has finally arrived to provide more system visualization, set goals, attain those goals, and ultimately satisfy customers.

Diagram-04:



(The above diagram collected from Domino Share point)

Diagram-05:



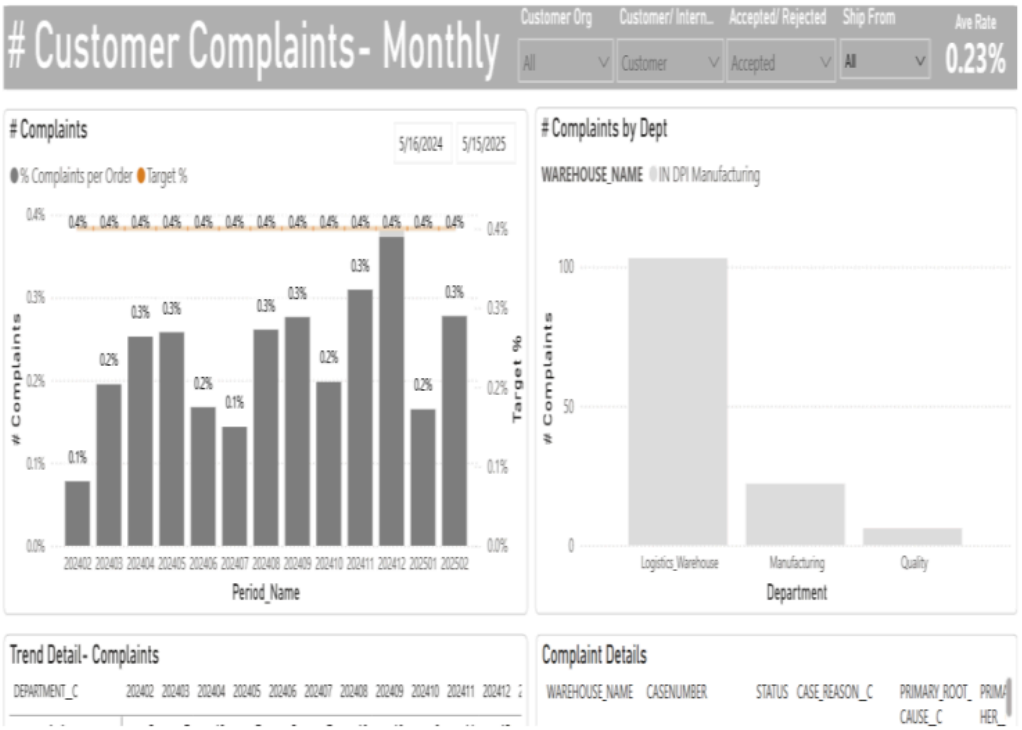
(The above diagram is collected from Domino Share point)

Diagram- 06:



(The above diagram is collected from Domino Share point)

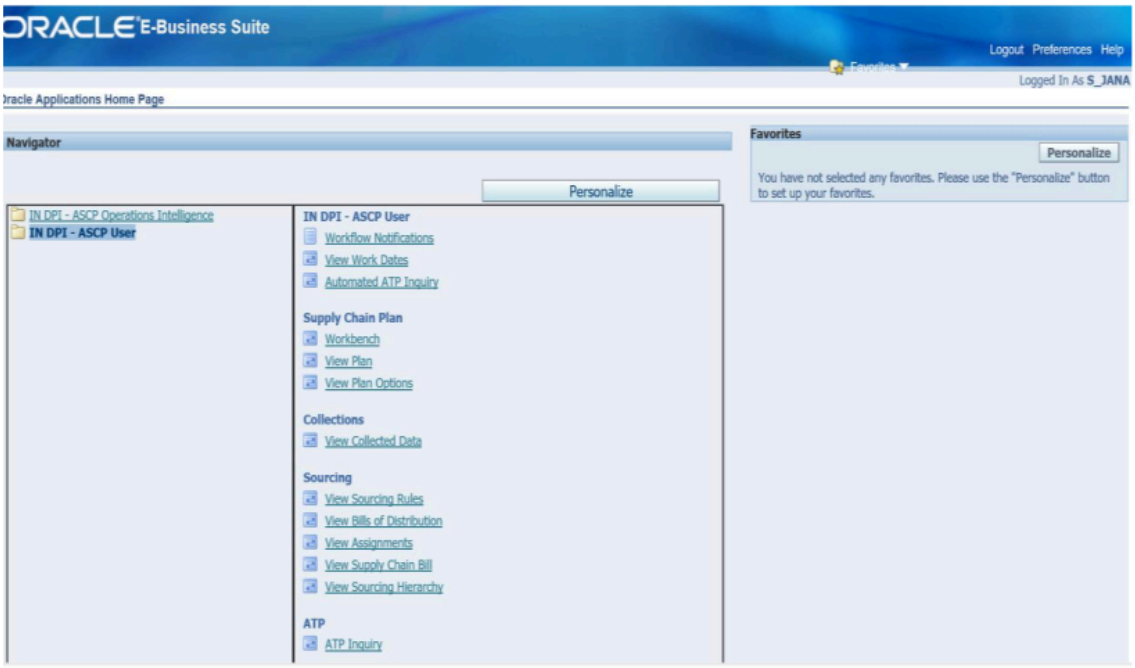
Diagram- 07:



(The above diagram is collected from Domino Share point)

As of right now (ASCP in Power-BI, COGNOS-IBM, Oracle)

Diagram- 08



(The above diagram is collected from Domino Oracle-ERP)

1.5 Challenges in Demand forecasting, Global Supply Chain Resilience for enhanced OTIF & Customer Satisfaction:

Over time, ingrained morality and hardwired habits may make it difficult to carry out OTIF procedures successfully in addition to reactionary behaviours. It is sometimes necessary for employees to switch from an antiquated method of functioning to a new one. Sometimes it's imperative to automate MRP because of things like fragile inventory, orders being placed, and the time-consuming processing of GRNs (goods receiving notes). Furthermore, new corridor laws are regularly drafted. Since the client needs the accessories before the scheduled lead time, their urgency and bond support may also hinder the planning process. Planning must be successful if the operation's site is committed to. Planning cannot succeed without strong leadership support since decision-making is necessary at every level. Workers with timid training and chops may exhibit hesitancy when using any new, logical instrument, such as Power-BI. Investing in extensive training programs that complement the new planning tools (ASCP, Power-BI) is one way to address this difficulty. Another chain of events is the measurement and demonstration of tangible results, which can be achieved through supplier

performances, inventory stock position, item below safety stock position, and delivery performances (OTIF). It can be difficult to quantify the financial advantages of planning analysis, especially when the effects are perceived across a variety of colourful client attributes. Otherwise, the following can be traced for analysis: force value, tab value, and COGS (cost of goods sold). Demand prediction is difficult.

To increase customer satisfaction and achieve high On-Time In-Full (OTIF) delivery rates, supply chain resilience and demand forecasting must be integrated. Nevertheless, several obstacles may prevent its integration. An examination of these difficulties, backed by current knowledge, is provided below:

Issues with Demand Forecasting Data Availability and Inaccuracy:

Accurate historical data is essential for forecasting to be reliable. Overstocking or stockouts may come from inaccurate projections caused by inaccurate or insufficient data. This problem can be lessened by putting strong data governance procedures and frequent audits into place.

Bullwhip Effect:

Minor shifts in consumer demand can result in more significant variations further upstream in the supply chain, which can lead to inefficiencies. The bullwhip effect is a phenomenon that highlights the necessity of better information sharing and collaboration throughout the supply chain.

Rapid Market Changes:

Pandemics and geopolitical unrest are two examples of global occurrences that can quickly change consumer behaviour and reduce the accuracy of typical forecasting models. Using flexible forecasting techniques and real-time data can aid in adapting to these changes.

Limited Visibility into Downstream Demand:

Accurate forecasting may be hampered by a lack of transparency in client demand patterns. Demand visibility can be increased by using point-of-sale data and strengthening partnerships with retailers.

Supplier Reliability:

There is a risk of delays or disruptions when relying on suppliers, particularly those located in different areas. Creating contingency planning and a diverse supplier base can improve resilience.

Transportation Disruptions:

Timely deliveries may be hampered by elements such as port closures, heavy traffic, and unfavourable weather. These hazards can be reduced by putting flexible logistics plans

Inventory Management Challenges:

It can be difficult to maintain ideal inventory levels, particularly when juggling the requirement for buffer stock with financial restraints. This equilibrium can be attained with the help of sophisticated inventory optimization techniques.

Technological Integration:

Because different supply chain partners have different systems and capabilities, it can be difficult to integrate new technology across them. Integration can go more smoothly if you invest in interoperable platforms and cultivate cooperative connections.

OTIF performance is directly impacted by supply chain resilience and demand forecasting issues-

Delayed Deliveries:

OTIF metrics may suffer from delayed shipments caused by inaccurate projections and supply interruptions.

Partial Order Fulfilment:

Partial order fulfilment may be the result of inventory limitations brought on by inadequate forecasting or supplier problems during supply of required material even on emergency time.

Client Dissatisfaction:

Repeatedly falling short of delivery deadlines damages client confidence and satisfaction and may result in lost business.

Improved Data Analytics:

By examining intricate data patterns, artificial intelligence (AI) and machine learning can increase predicting accuracy.

Collaboration in the supply chain:

Building trusting bonds with logistics partners and suppliers helps improve responsiveness and visibility.

1.6 The Significance of Demand Forecasting & Inventory Management in OTIF & Customer Satisfaction:

Building a culture focused on improved functional performance and customer outcomes is crucial in the dynamic supply chain environment of today. Inventory control and demand forecasting are essential to this effort, providing a complete and forward-thinking approach. It is possible to assess their significance in reaching OTIF objectives and improving customer satisfaction using several important criteria.

Important

Precise Demand Production:

allows for accurate scheduling of production, transportation, and inventory levels, guaranteeing that product availability corresponds with consumer demand.

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lowers the frequency of overstocking and stockouts, which lowers costs and raises customer satisfaction.

Effective Inventory Control:

maintains proper stock levels, which maximizes inventory turnover and reduces holding costs. Contributes to steady OTIF performance by guaranteeing prompt replacement and lowering the possibility of obsolete inventory.

Improved OTIF Efficiency:

High OTIF ratings demonstrate the company's capacity to fulfil orders in full and on schedule, which has a direct impact on client loyalty and satisfaction.

By keeping an eye on OTIF measurements, supply chain inefficiencies can be found and specifically improved.

Client Contentment and Retention:

Long-term profitability depends on consistent delivery performance since it builds trust and promotes repeat business.

Brand reputation is strengthened by continuously meeting consumer expectations through efficient demand forecasting and inventory management.

1.7 Objective of the study of Demand Forecasting, Material Requirement Planning, Inventory Management in OTIF (On Time in Full) & Customer Satisfaction:

To identify the specific goals and aims behind these areas:

1. What will be the future demand or estimating the products and quantities that consumers will purchase.
2. Making sure the proper supplies are available when they're needed and in the right amounts to satisfy demand.
3. OTIF delivery is the process of making sure that customers receive their purchased products in the quantities and on time as said.
4. Make sure to meet customer demands in terms of product availability, delivery time, and order in customer satisfaction area.

To examine the particular purpose of objectives, so we will get the area of observations to improve:

1. Understanding the accuracy and dependability of projections in estimating customers demand is aligning with demand forecast.
2. Evaluating how well planning procedures guarantee timely material availability for manufacturing (MRP involves here).
3. Assessing how well inventory control techniques maximize profits and optimize stock levels.
4. Assessing how well the company satisfies customers' needs & ultimately satisfy customers aspect.

To study the objectives, is to explore the specific goals associated with these areas:

1. Demand forecasting is the study of techniques to predict consumer demand for goods and services over a given time frame.
2. Material requirement planning (MRP) is the process of efficiently organizing and supervising the acquisition and application of resources required for manufacturing.
3. Researching strategies to guarantee that goods are supplied to customers site on time with appropriate amounts.
4. Analysing variables including product availability, order accuracy, and prompt delivery that affect customer satisfaction.

To find the objectives of parameters on OTIF and Customer satisfaction, is to uncover the specific purpose and goals:

1. figuring out the best ways to estimate consumer demand and make sure the products are supplied when needed- In demand forecasting.
2. figuring out effective strategies for scheduling and acquiring supplies to fulfil production needs while cutting expenses and waste- In Material requirement planning (MRP).
3. how to best balance the need to minimize surplus stock while maintaining product availability- In Inventory Management.
4. How to reliably fulfil customer orders precisely and on schedule while also meeting delivery deadlines- In OTIF.
5. Recognizing the elements—such as product quality, delivery time, and overall service experience—that affect customer satisfaction.

CHAPTER 2
Literature Review

Domino Printech

Since its establishment in 1978, Domino has established a solid reputation for continuously creating and manufacturing comprehensive coding and printing technologies that meet the needs of manufacturers and elevate the standard for dependability and quality in the sector. Domino India is the leading supplier of coding solutions in the country. Our primary and secondary coding systems are used by numerous major industry segments, including Food, Pharma & Healthcare, Dairy, Beverages, Paints & Chemicals, Cosmetics & Personal Care, Engineering, Breweries & Distilleries, and many more.

Link→Domino Printech India LLP | Domino Printech (domino-printing.com)

2.1 Global Objective:

We "Do more" for our consumers at Domino's. We are preoccupied with making sure our goods and services function for our consumers, and reliability is a basic, no-compromise cornerstone of our development. Our industry-leading solutions, knowledgeable staff, and first-rate services—all of which work together to support some of the biggest businesses in the world—serve as the evidence.

2.2 Products:

Continuous Ink Jet Printers: Among consumer printers, inkjet models are the most widely used type. Using inkjet technology, thousands of tiny ink droplets are sprayed onto a sheet of paper or industrial products by the print head of the printer as it moves back and forth while the paper is fed through it. The droplets are "ionized," which allows magnetic plates in the path of the ink to steer it.

Diagram-09



(The above diagram collected from Domino Share point)

Thermal Inkjet Printer:

With Thermal Inkjet, or TIJ, ink may be applied to almost any non-contact surface. Unlike CIJ Printers, TIJ Printers do not require bottles because they employ ink cartridges rather than ink or solvent bottles. For this reason, TIJ printers are often a cost-effective and hygienic printing solution.

Diagram-10



(The above diagram collected from Domino Share point)

2.3 Stages of Implications of Demand Forecasting, Material Requirement Planning, Inventory Management in OTIF & Customer Satisfaction:

Inventory planning:

• Maintaining of aggregated safety stock for Printers.

•Tracking of optimum inventory level periodically.

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Streamlining the flow of materials from suppliers to manufacture and delivery.

•lowering costs and increasing efficiency throughout the supply chain are all examples of supply chain optimization.

Accurate demand forecasting:

• Future product demand forecasting methods.

• Increasing accuracy to avoid overproduction or stock shortages.

Production Scheduling:

• Production procedures are effectively scheduled.

•Production capacity is adjusted in response to variations in demand.

Quantity of Economic Orders (EOQ) and Just-In-Time (JIT):

• The goal of JIT is to lower inventory by only purchasing items when necessary.

• EOQ determines the optimal order amounts to lower holding and ordering costs.

Technology and Data Analytics Integration (Power BI, ASCP, Advance Excel):

• Gaining real-time information using technology and analytics tools.

• Making informed decisions by using data to reduce costs, expedite processes, and make informed choices.

Demand Prediction and Client Contentment:

Maintaining ideal inventory levels, minimizing stockouts, and guaranteeing on-time delivery—all of which have a direct impact on customer satisfaction—require precise demand forecasting. It has been demonstrated that advanced forecasting techniques, such as artificial intelligence (AI) and machine learning, improve forecast accuracy by spotting trends and making real-time adjustments to projections. Consumer loyalty and trust are increased because of these enhancements, which also improve resource allocation and service quality.

Performance and Resilience of the Supply Chain:

The ability of a supply chain to foresee, plan for, and react to disturbances is known as supply chain resilience (SCR). Research has indicated that SCR has a favourable effect on both financial success and customer happiness. Internal, supplier, and customer resilience are important aspects of SCR that all contribute to the supply chain's overall robustness.

Combining Resilience and Demand Forecasting:

By combining supply chain resilience tactics with demand forecasting, businesses may better predict shifts in the market and handle disruptions. By ensuring that supply chains are flexible and efficient, this integration raises customer satisfaction and On-Time In-Full (OTIF) delivery rates. Businesses that use AI-powered demand forecasting models, for example, have seen notable decreases in stockouts and increases in order fulfilment time.

Digital Technologies' Function:

Increasing supply chain resilience and forecasting accuracy has been made possible using digital technologies like blockchain, AI, and IoT. Proactive decision-making and risk reduction are made possible by these technologies, which also enable real-time data analysis, predictive modelling, and enhanced supply chain visibility.

Customer satisfaction and supply chain integration:

Achieving high levels of customer satisfaction requires effective supply chain integration, which includes internal procedures, supplier cooperation, and customer interaction. More responsive and nimble, integrated supply chains can minimize interruptions and adapt to changes in demand. According to research, this kind of integration improves operational performance and customer happiness when paired with resilience tactics.

Important Takeaways-

Improved Forecasting: By using AI and sophisticated analytics, demand forecasting accuracy is increased, which benefits inventory control and customer service.

Building Resilience: Stability and responsiveness in the face of disruptions are guaranteed by building resilience at every level of the supply chain.

Digital Transformation: Real-time monitoring, predictive analytics, and effective supply chain operations all depend on embracing digital technologies.

Integrated Approach: Better OTIF performance and customer satisfaction are achieved by combining supply chain integration, resilience tactics, and demand forecasting.

CHAPTER 3

Methodology of Demand Forecasting, Material requirement Planning Inventory Management in OTIF & Customer Satisfaction at Domino Science

The process of assessing and optimizing an organization's acquisition, storage, and use of materials involves analysing Demand Forecasting, Inventory Management, MRP in OTIF, and Customer Satisfaction at Domino Science. This is a streamlined version of "Domino Printech Science."

Compilation and Review of Data:

Learn more about the performance of your suppliers by analysing their lead times, demand trends from the previous six months' consumption patterns, order histories from the previous two years, and current inventory levels. All of these data are recorded in Oracle and gathered through sourcing.
team by hand. Analyse historical data to identify trends and patterns that may have an impact on future material requirements.

Forecasting demand Analysis: You can utilize statistical approaches (FORECAST.ETS) to project future demand. built-in EXCEL feature) + Market research, advance Excel, and input from the marketing and sales teams.

Consider upcoming product releases, seasonality, market trends, and changes to your manufacturing schedule.

Analysis of Suppliers' performance: Evaluate the performance of the current suppliers, considering factors such as price, lead times that are agreed upon, and quality. Create many suppliers for the same part with the vendor development team's assistance.

Inventory Evaluation:

Analyse the current inventory levels, turnover rates, and carrying costs. Ascertain which items require management's attention first by classifying them into priority categories using the ABC analysis.

Methodology for Demand Forecasting:

Domino's uses demand forecasting driven by AI to precisely predict client wants. The business uses Microsoft Dynamics 365 to forecast changes in demand by using previous sales data, local events, and weather trends. With a 72% increase in forecasting accuracy.

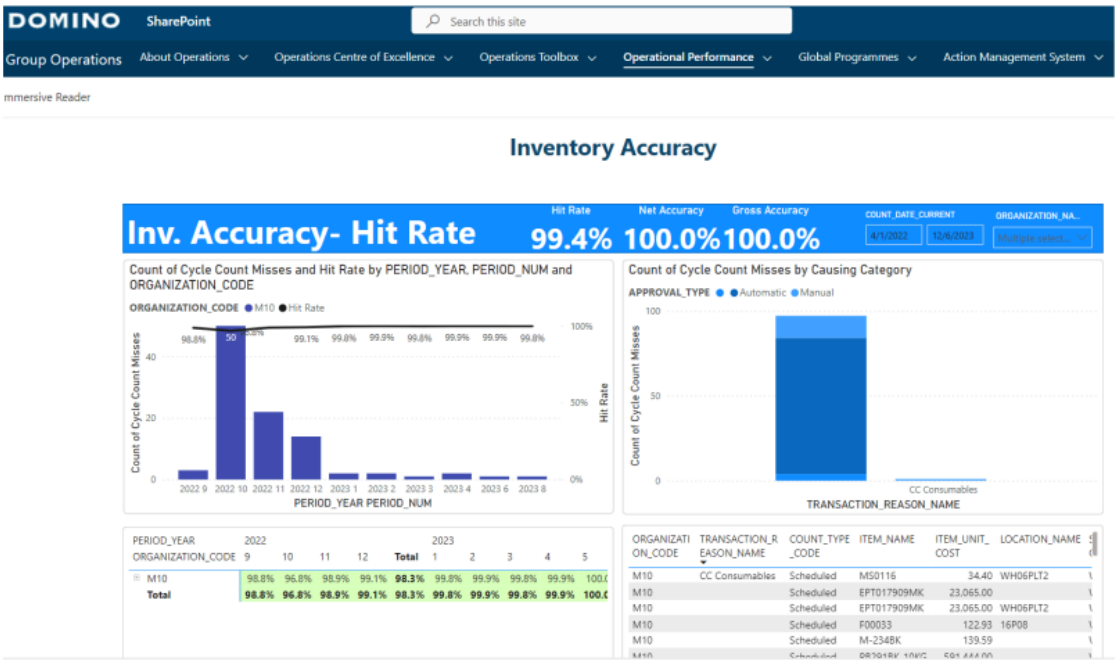
Planners can perform "what-if" scenarios using the forecasting system, accounting for factors like significant athletic events or seasonal shifts. Because of its adaptability, Domino can maintain high service standards and customer happiness while swiftly responding to shifting

Practices of Inventory Management:

Sustaining OTIF performance requires efficient inventory management. Domino's minimizes shortages and excess supply by using predictive analytics to match inventory levels with anticipated demand. Through real-time data analysis, the company makes sure that every store has enough ingredients on hand, lowering the possibility of stockouts and guaranteeing prompt Order fulfilment.

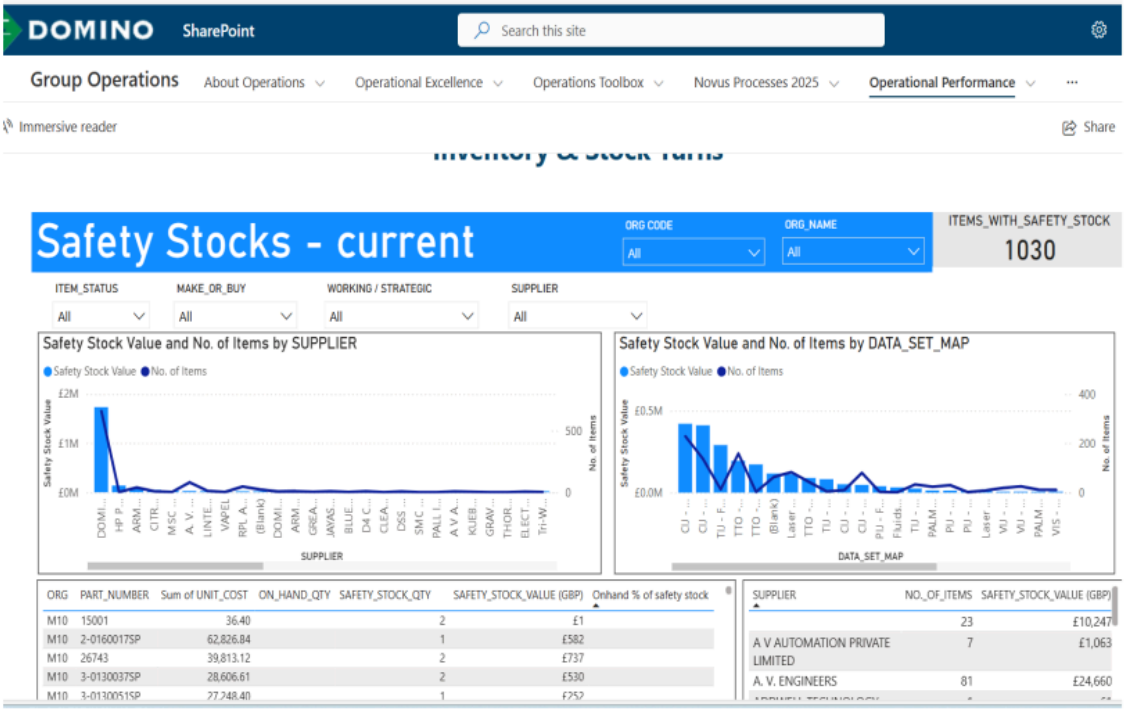
By guaranteeing product availability and on-time delivery, this proactive approach to inventory management not only improves operational efficiency but also raises customer satisfaction.

Diagram-12



(The above diagram collected from Domino Share point)

Diagram-13:

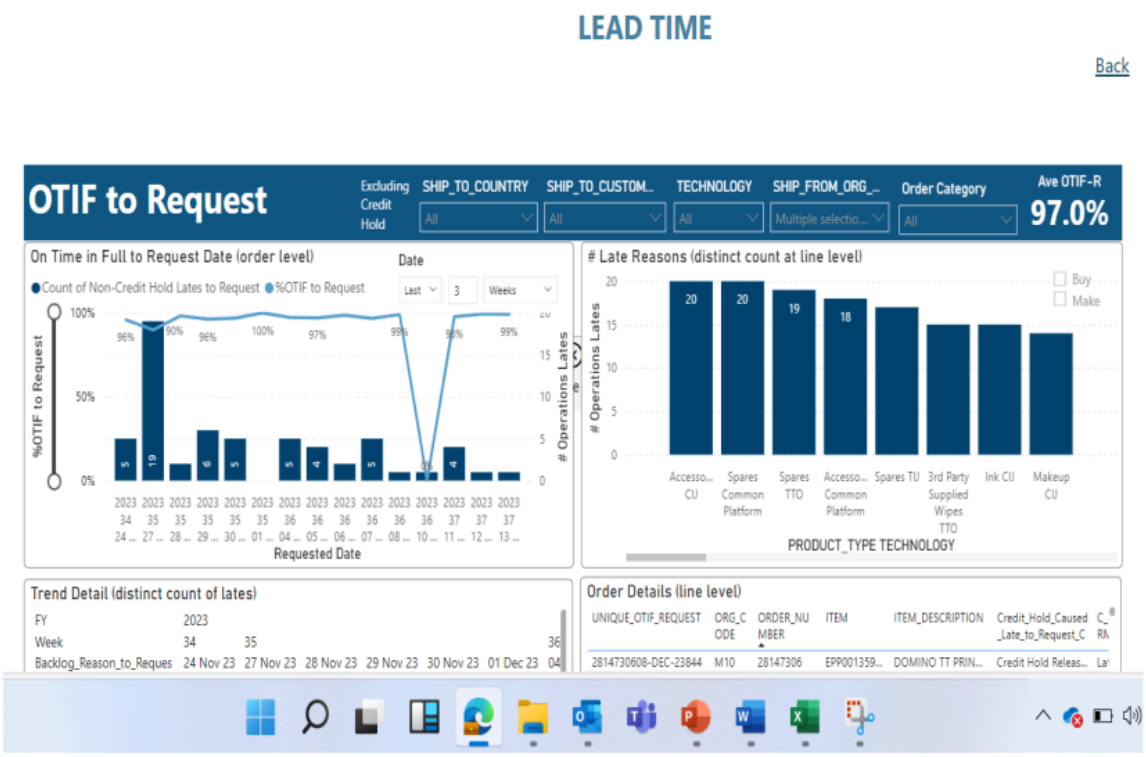


(The above diagram collected from Domino Share point)

Lead Time comparison:

• Determine the lead times for each material by considering the time required for order processing, shipping & also for manufacturing, also update the lead time as per availability. •Seek to reduce lead times without compromising quality& delivery on time. • Will receive the delivery performance broken down by part and client.

Diagram-14:



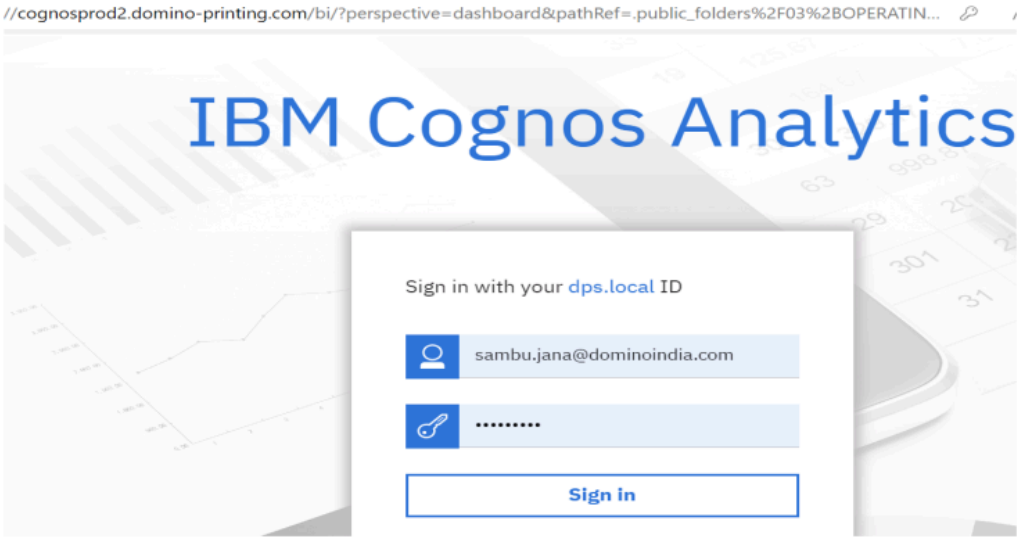
(The above diagram collected from Domino Share point)

Integration of Technology:

• Examine whether technology-based solutions, such Oracle's ERP systems, are suitable for improving material planning coordination and visibility. •Install technology (Power-BI, COGNOS) that makes data sharing and analysis easier in real time.

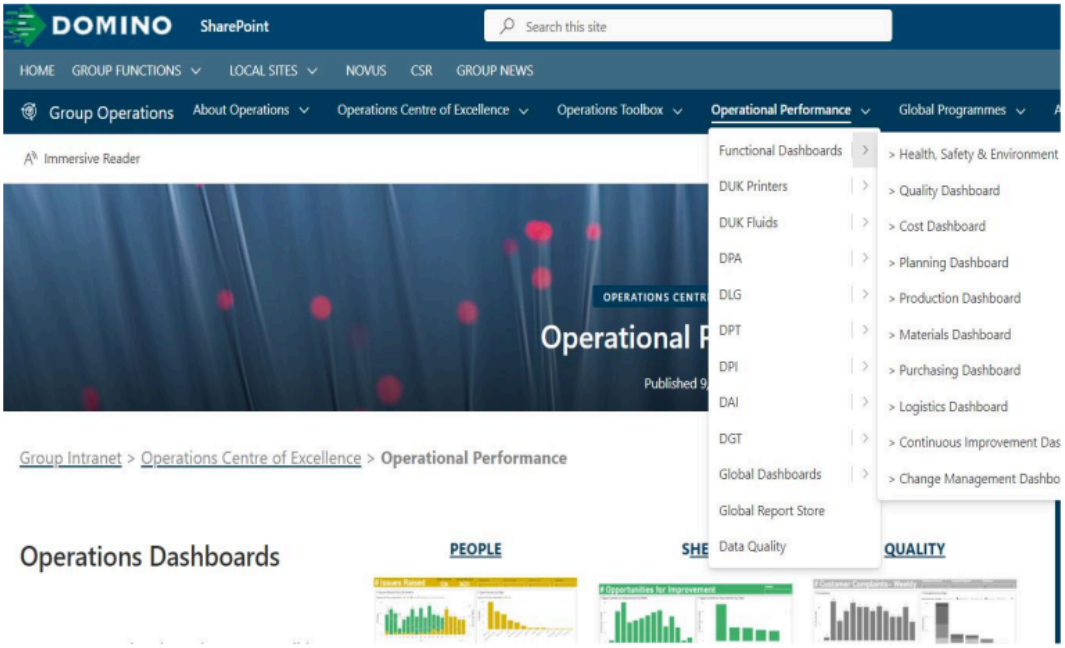
COGNOS→ For Analytics

Diagram-15:



(The above diagram collected from Domino IBM Software)

Diagram-16:



(The above diagram collected from Domino Share point)

Interdepartmental Collaboration

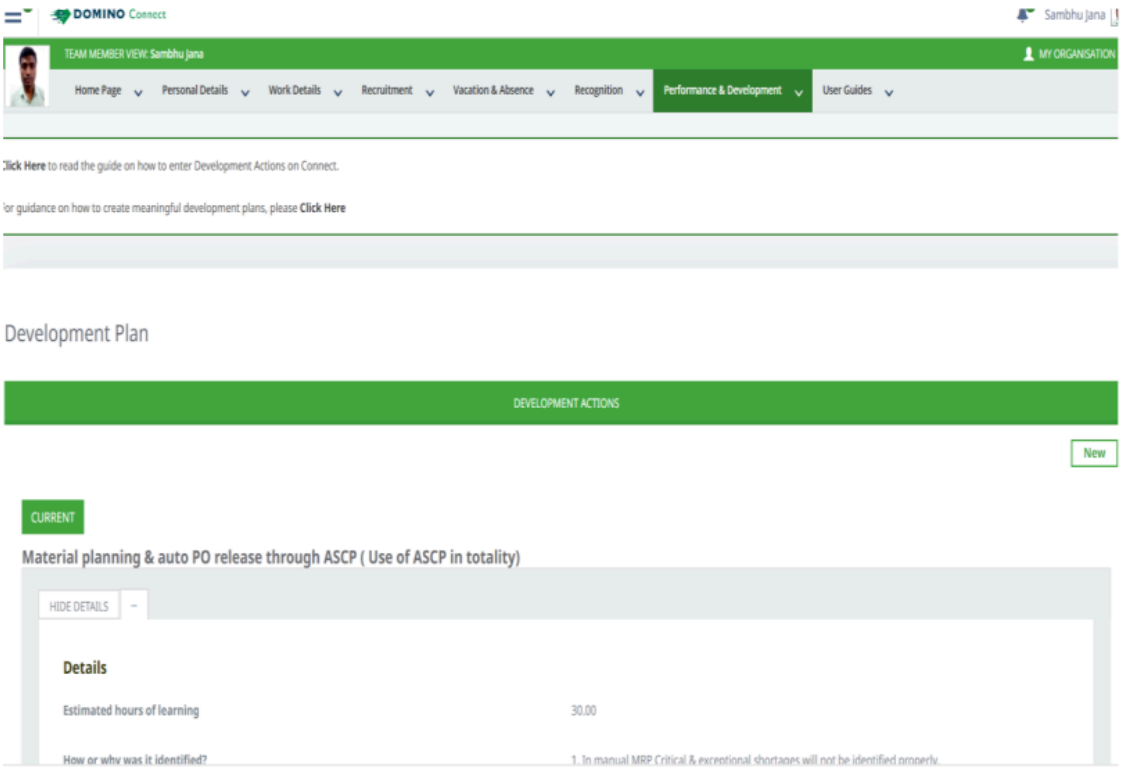
• Encourage collaboration and communication across the several departments involved in material planning, including procurement, logistics, and production.

• For example, the business will use bin cards after they have finished their safety supply.

Important Performance Measures (KPIs):

• Use KPIs to evaluate the success of material planning projects.
• The metrics include things like rates of on-time delivery, inventory turnover ratios.
• An example of this would be the KPI for Auto PO release for suppliers, which can prevent errors during processing by saving time on approval processes in addition to manual release.

Diagram-17:



Ongoing Enhancement:

• Encourage a flexible and adaptable culture in response to shifting market conditions and company priorities.
• Establish a feedback loop for continuous development based on regular performance reports.

Training and Development of Skills:

• Verify that the people involved in material planning possess the necessary training, experience, and analytical prowess.

CHAPTER- 4

Analysis, Discussion and Recommendation

4.1 Interpretation:

Implications of Demand forecasting, MRP, Inventory management in OTIF and hence achieve the customer satisfactions, to be followed in different sector:

In Academics:

Research Opportunities:
To enhance OTIF performance and customer happiness, academics can investigate and contribute to the creation of sophisticated forecasting models, MRP algorithms, and inventory management strategies.

Programs for Education:
To prepare future professionals with the necessary skills and knowledge, universities can provide specific courses and training programs to students about the importance of inventory management, MRP, and demand forecasting in supply chain operations.

Collaborative Research:
By fostering the sharing of information, ideas, and experience between academic institutions and business sectors, collaborative research projects can produce.

In Industries:

Effectiveness of Operations: Industries can improve OTIF performance and customer satisfaction by optimizing production schedules, minimizing lead times, and enhancing resource efficiency through the implementation of robust demand forecasting, MRP, and inventory management systems.

Cost Reduction: By lowering carrying costs, minimizing stockouts, and avoiding excess inventory, good inventory management techniques assist businesses in cutting expenses and increasing profitability

Gaining a competitive edge in the market, industries that excel at meeting OTIF targets and meeting customer requests also attract new business prospects and build customer loyalty.

In Society:

Supply Chain Resilience:

By guaranteeing the availability of necessities during disruptions or crises, dependable supply chains that are bolstered by precise demand forecasting, effective MRP, and optimal inventory management add to societal resilience.

Environmental Sustainability:

Reducing waste and environmental effect through the use of sustainable inventory management techniques, such as just-in-time inventory and lean principles, encourages sustainability and responsible resource management.

Customer Experience:

Improving customer happiness and OTIF delivery performance leads to an overall improvement in the customer experience, which fosters loyalty and increased trust as well as beneficial social effects.

Further Analysis:

The Significance of Accurate Demand Forecasting:

To minimize stockouts and overstock situations, it is essential to accurately estimate demand to match supply with consumer needs. By lowering stockouts, increasing delivery dependability, and matching inventory to client demands, accurate forecasting raises customer satisfaction, per a study published in the International Journal of Supply Chain Management. Businesses may adjust to market dynamics with the use of sophisticated prediction models like artificial intelligence (AI) and machine learning, which builds loyalty and trust.

Increasing Global Supply Chain Resilience:

Natural disasters, pandemics, and geopolitical tensions can all affect global supply networks.

Businesses must develop resilience through digitalization, flexible logistics, and diversified sourcing to reduce these risks. Businesses may quickly adjust to unforeseen obstacles by enhancing real-time responsiveness and predictive skills using automation and artificial intelligence.

On-Time In-Full (OTIF) delivery is a crucial Key Performance Indicator (KPI):

That displays a business's capacity to satisfy client demands. Resilient logistics, inventory control, and coordinated demand forecasting are necessary to achieve high OTIF rates. Inaccurate projections, supply interruptions, or inventory misalignments can lead to low OTIF ratings.

Talk about

OTIF performance and customer satisfaction are directly impacted by the interaction between supply chain resilience and demand forecasting.

Demand Forecasting:

Delivery performance may be impacted by overstocking or stockouts due to inaccurate estimates. Forecasting accuracy can be increased with the use of AI and advanced analytics, allowing for greater alignment with real demand.

Resilient supply chains:

These can adjust to interruptions while preserving service quality. Diversifying suppliers, implementing flexible logistics, and utilizing digital technologies for real-time monitoring are some strategies.

OTIF and Customer happiness:

Reliable deliveries are indicated by high OTIF rates, which raise customer happiness and trust. Low OTIF, on the other hand, may result in unhappy customers and even a decline in revenue.

4.2 Findings:

Assessing how effectively and efficiently results could include information about supplier performance, potential bottlenecks, order fulfilment timelines, and inventory levels, Demand Forecasting, Material Requirement Planning, Inventory Control in OTIF (On Time in Full), and Customer Satisfaction Typical outcomes could be pinpointing opportunities for enhancement, such as expediting the procurement procedure or maximizing stock quantities. The outcomes would guide strategic decisions to raise the overall efficacy in Demand Forecasting, Inventory Management, MRP, OTIF & Customer Satisfaction.

The suggestions

Using supply chain resilience and integrated demand forecasting to improve OTIF performance and customer satisfaction:

Invest in Advanced Forecasting Tools:
To make more precise demand projections, use AI and machine learning to examine past data, industry trends, and outside variables.

Improve Data Quality and Integration:
For real-time visibility and decision-making, make sure data is accurate and integrate systems throughout the supply chain.

Increase Supply Chain Flexibility:
Create adaptable logistics and diversify your suppliers to swiftly adjust to interruptions while preserving steady service standards.

Track and Enhance OTIF Measures:
To increase delivery dependability, monitor OTIF performance on a regular basis, pinpoint the underlying reasons for failures, and put corrective measures in place.

Encourage Collaborative Relationships: To align goals and enhance supply chain performance overall, plan together with partners and suppliers.

4.3 Limitations:

Demand Forecasting, Material Requirement Planning, Inventory Management in OTIF (On Time in Full) & Customer Satisfaction are restricted for a few reasons. These factors include the following:

Inadequate or inaccurate data:

could have resulted in an analysis whose findings do not accurately reflect the state of Demand Forecasting, Inventory Management, MRP, OTIF.

Dynamic Business Environment:

Because of external factors such changes in demand and market volatility, seasonal fluctuations, and other reasons, it is challenging to foresee and properly plan for materials hence achieving of OTIF & Customer Satisfaction.

Supply chain complexity:

The process of material planning involves multiple interconnected supply chain steps. This intricacy may be hard to assess, making errors or oversimplifications possible.

Human Decisions:

Human decisions and actions, such as erroneous forecasting or communication issues, can have an impact on material planning. It could be challenging and arbitrary to evaluate these components.

Technologies Restrictions:

The potential success of material planning tools and technologies may be limited by their capabilities. Technology

Global Supply Chain Risks:

Earthquakes, political unrest, and other global threats can significantly affect material planning and create uncertainty for businesses with international supply networks.

4.4 The future research

Advanced Analytics and AI Integration:

Researchers may investigate integrating advanced analytics, artificial intelligence (AI), and machine learning to improve material planning decision-making, optimize inventory levels, and improve demand forecasting accuracy and finally OTIF, Customer Satisfaction.

Supply Chain Visibility:

Future research may concentrate on improving supply chain visibility using technologies like blockchain and the Internet of Things to create a more responsive and Demand Forecasting, Inventory Management, MRP, OTIF & Customer Satisfaction process.

Collaborative Planning:

It could be interesting to investigate collaborative planning techniques that need closer coordination between suppliers, distributors, and manufacturers. This approach aims to optimize the supply chain as well as individual parts & enhance OTIF also Customer Satisfaction.

Real-Time Data Integration:

Future studies could investigate how to include real-time data from several sources into Demand Forecasting, Inventory Management, MRP, OTIF & Customer Satisfaction processes to help with more adaptive and flexible decision-making.

4.5: Citations

Books: "Introduction to Materials Management" by J.R. Tony Arnold, Lloyd M. Clive, and Stephen N. Chapman. Jay Heizer and Barry Render's book "Operations Management: Sustainability and Supply Chain Management"

Academic journals:

Such as "International Journal of Production Economics" "Journal of Operations Management" "Supply Chain Management: An International Journal" Accessible over the

Internet:

APICS (The Association for Supply Chain Management) offers a range of publications

Case Studies:

Information regarding Demand Forecasting, Material Requirement Planning, Inventory Management in OTIF (On Time in Full) & Customer Satisfaction can be found in case studies from the Harvard Business Review.

Thank you ...

Project Report

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GENERAL COMMENTS

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