ISSUE 74
MARCH 2025

NEWSLETTER

CHRIST
(DEEMED TO BE UNIVERSITY)
BANGALORE · INDIA

SIGMA

SCHOOL OF BUSINESS AND MANAGEMENT
LEAN OPERATIONS AND SYSTEMS

Editor's Note

Greetings Readers,

We are delighted to present to you the third edition of our newsletter, an engaging compilation of thought leadership, practical insights, and student-driven initiatives that reflect the essence of Lean Operations and Systems (LOS) specialization at the School of Business and Management, Christ University.

In this edition, we spotlight the vibrant learning journeys of our students, highlighting their academic accomplishments, industry achievements, and participation in national-level management fests, where they showcased their problem-solving prowess and operational excellence.

We also bring to you insightful articles that explore contemporary trends in operations and systems, offering a deeper understanding of how data analytics, process improvement methodologies, and strategic frameworks are reshaping business dynamics.

We, Team OASYS, thank each contributor who made this edition meaningful and enriching. As we continue to bridge classroom concepts with real-world relevance, we look forward to sharing many more milestones ahead.

Regards,
Team OASYS
Lean Operations and Systems Specialization
School of Business and Management

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INTERVIEW EXPERIENCE AT SCHNEIDER ELECTRIC

SINDHU G V

My experience with the Schneider Electric interview process was intense and highly insightful, comprising multiple rounds that assessed various aspects of my skills and personality.

The first round involved resume shortlisting, and I was fortunate to be selected for the next phase. I then received a link to an online behavioral aptitude test, which included around 30-45 questions to be completed within one hour. The questions had no specific time allocation, allowing me to think deeply about each. They often presented contradictory statements, challenging me to consider my values and choose the intensity with which I agreed. The questions were designed to evaluate what kind of person I am, whether I am more of a team player or a leader, and to test my integrity by maintaining consistency across similarly themed questions. There were also situational questions that tested my likely behavior in specific scenarios. I answered honestly, expressing my true thoughts, which was the key to successfully navigating this round.

The second round was an online technical interview with two-panel members from Schneider Electric. Interestingly, neither of the panelists turned on their cameras, which added an element of uncertainty. It took a lot of work to gauge their reactions, leaving me unsure whether to elaborate on my answers or keep them brief. Despite the initial unease, I remained confident and responded at a moderate length.

The questions covered various topics, such as the role of a buyer, supply chain, benchmarking standards, inventory, and sustainability, as well as my work experience at Accenture. The interview lasted around 20 minutes. Toward the end, I highlighted a case study I had done on Schneider Electric, which led to additional questions about the company, and I could answer them effectively.

The third round was a business interview with the general manager of Schneider Electric. The interviewer ensured I felt comfortable before beginning, which helped set a positive tone for the discussion. This technical interview covered Six Sigma, lean operations, supply chain industry standards, procurement lifecycle, the SAP HANA module, and questions related to my engineering subjects like material management. We also discussed how my skills aligned with the role, and I shared my interest in pursuing these topics. I was glad that the research and case study I did on Schneider Electric impressed the interviewer, and the discussion lasted for about 30-35 minutes.

The final round was an HR interview, focusing more on my background. I was asked about my childhood, life outside of academics, struggles, ambitions, family, college, my experience at Accenture, and my aspirations in operations. The HR representative also asked about my knowledge of Six Sigma, operations, and situational questions, such as Schneider Electric's sustainability initiatives and market share. Though some questions were in-depth, I took my time to think through them and answered confidently.

Overall, the entire interview process at Schneider Electric was a wonderful and enriching experience. The questions were challenging, but each round allowed me to learn and demonstrate my abilities. I am thrilled to have received an offer from the company for the buyer role, and I am looking forward to starting this new chapter of my career.

INTERVIEW EXPERIENCE WITH LAM RESEARCH

MARIYAN S RAJ

The selection process at LAM Research began with an aptitude test of moderate difficulty. After clearing this round, I was shortlisted for the Buyer 2 role and the Program Manager, Sr. role.

On the first day, I had my interviews for the Program Manager role, consisting of two in-person personal interview (PI) rounds.
The first round was a 30-minute discussion with two LAM employees. It was conversational, covering my background, work experience, and summer internship project (SIP). The discussion also explored my interest in the role, how it aligns with my profile, and why I chose to pursue an MBA in operations. Additionally, I was asked about my future aspirations and what I find most fascinating about Lam Research.

The second round was with a senior manager from the Program Management Business Unit (BU). This round focused on project execution risks, mitigation strategies, and proactive risk management before execution. We also discussed stakeholder management, setting up efficient communication channels, and Lean Six Sigma (LSS) principles and their benefits. Another key topic was the distinction between a project manager and a program manager, with the interviewer asking how I perceive the "jack of all trades" aspect of program management in the long run.

Furthermore, we discussed my leadership experiences as the Head POC of EFC and a PlaceCom member and how I managed these responsibilities alongside academics. Toward the end, I asked about program management at LAM, given that most of its manufacturing units are outside India. The interviewer provided insights into the PM BU's operations, corporate objectives, and global systems.

The next day, I had my interview for the Buyer 2 role with two employees from the Buyer BU. This interview was equally engaging and conversational. We deep-dived into one of my live projects and the suggestions I had provided to the organization. The discussion also covered my SIP, procurement processes, and vendor management. The interview primarily revolved around procurement strategies and supply chain activities.

Finally, the results were announced, and I was selected for the Program Manager, Sr. role.

The selection process was insightful and engaging, from the pre-placement talk to the final interview. Each round provided a valuable learning experience, making it a memorable journey.

ADDITIVE MANUFACTURING AND ITS OPERATIONAL IMPACT ON THE HEALTHCARE INDUSTRY

SNEHA R G

Additive Manufacturing (AM), more commonly known as 3D Printing, is revolutionizing operations across various industries — and its impact in healthcare is especially noteworthy. With the ability to produce complex, customized components directly from digital designs, 3D Printing transforms how healthcare providers manage production, supply chains, and patient care. Unlike traditional manufacturing, which depends on standardized mass production, AM enables highly personalized solutions tailored to individual patient needs. This flexibility is critical in healthcare, where customized treatment can significantly enhance outcomes.

In the healthcare sector, 3D Printing is applied in multiple areas, such as prosthetics, orthotics, surgical instruments, patient-specific implants, anatomical models for surgical planning, and bio-printed tissues and organs (currently under research and development). These applications redefine operational processes by introducing speed, accuracy, and cost efficiency. For instance, hospitals can design and print implants based on a patient's CT or MRI scans, allowing for improved fit, comfort, and faster surgical preparation.

One of the most significant operational advantages of AM is its production flexibility. Traditional manufacturing typically involves long lead times, costly tooling, and extensive setup.

In contrast, AM allows rapid prototyping and direct production without requiring specialized equipment. Healthcare providers can easily switch between product designs, enabling a more agile and responsive production system. This capability is instrumental in orthopedic and dental applications, where implants must be custom-fitted to the patient's anatomy.

Lead time reduction is another key benefit. With 3D Printing, medical tools and devices can be produced on-site or near the point of care, reducing reliance on external suppliers and lengthy delivery schedules. Some hospitals have established in-house 3D printing labs, allowing them to produce custom tools or anatomical models within hours. This is especially helpful in emergency or complex surgeries, where time is critical. Quicker turnaround enhances operational efficiency and improves overall patient experience.

Additive manufacturing also transforms inventory management. Traditionally, healthcare providers stock large quantities of implants and surgical instruments, much of which may go unused or become obsolete. With on-demand 3D Printing, organizations can significantly reduce inventory levels, lower storage costs, and eliminate the risk of excess or expired stock. This just-in-time approach contributes to a leaner, more efficient supply chain — especially vital for hospitals operating on tight budgets.

Despite the initial cost of investing in AM technologies, long-term cost savings are substantial. Unlike subtractive manufacturing methods, 3D Printing minimizes material waste, as it uses only the necessary amount of material for each part. It also reduces dependency on intermediaries, such as warehouses and transport services. For example, 3D-printed prosthetics can cost up to 60% less than traditional alternatives, making them more affordable, especially in resource-constrained settings.

Quality and precision are also enhanced through AM. Since the process is driven by digital design, it ensures consistency and high accuracy — crucial for medical devices where even minor deviations can be critical. Advanced printing techniques such as Selective Laser Sintering (SLS) and Electron Beam Melting (EBM) produce biocompatible parts with excellent structural integrity.

The shift toward decentralized manufacturing is also reshaping healthcare supply chains. AM enables hospitals to produce equipment and parts on-site, reducing reliance on centralized manufacturing hubs and global logistics networks. This model proved highly effective during the COVID-19 pandemic, when hospitals worldwide used 3D Printing to produce face shields, ventilator parts, and nasal swabs locally, bypassing disrupted global supply chains. Such decentralized models increase healthcare system resilience and adaptability during emergencies.

In addition to operational benefits, 3D Printing also contributes to sustainability. The reduced material waste and lower transportation requirements help minimize the carbon footprint of healthcare operations. Some 3D printing materials are even recyclable, aligning with hospitals' environmental and sustainability goals.

However, adoption challenges remain. Regulatory compliance is a significant hurdle, as medical devices must meet rigorous standards from authorities such as the FDA or CE. High initial equipment costs and the need for trained personnel can also deter smaller institutions. Furthermore, not all medical-grade materials are compatible with 3D Printing, and some printed products require additional post-processing, such as sterilization or surface finishing.

A notable case study is LimaCorporate's collaboration with the Hospital for Special Surgery (HSS) in New York. Together, they established an on-site 3D printing facility that allows custom orthopedic implants to be produced within 48 hours — a dramatic improvement from traditional six-week lead times. This model demonstrates the potential of AM to improve efficiency, collaboration, and patient outcomes.

In conclusion, additive manufacturing is a powerful tool for reshaping healthcare operations. It enables faster, more precise, cost-effective production, enhances inventory management, and strengthens supply chain resilience. As the technology matures and adoption widens, 3D Printing is poised to become a core element of modern healthcare systems — advancing operational efficiency and clinical excellence.

BLOCKCHAIN: THE DIGITAL BACKBONE OF TRANSPARENT MANUFACTURING

RAM SURYA NARAYANAN

Transparency across the supply chain and production processes is crucial in the fast-paced manufacturing world. From sourcing raw materials to delivering finished products, manufacturing firms face challenges such as counterfeit parts, production inefficiencies, and lack of real-time visibility. Blockchain technology has emerged as a game-changer in addressing these concerns by offering an immutable, decentralized ledger that enhances transparency, security, and efficiency.

One of the critical challenges in manufacturing is tracking the origin and movement of raw materials. Traditional systems rely on fragmented record-keeping methods prone to errors and fraud. Blockchain technology enables manufacturers to create a tamper-proof record of transactions at every stage of the supply chain. By leveraging smart contracts, firms can automate supplier verification and ensure compliance with regulatory standards, reducing the risks associated with counterfeit or substandard materials.

BMW uses blockchain to track cobalt ethically sourced for its electric vehicle batteries. The technology ensures that the cobalt is mined under ethical labor conditions and not from conflict zones.

Manufacturing firms often deal with discrepancies in production data due to manual logging or outdated systems. Blockchain integrates with IoT (Internet of Things) devices and sensors to provide real-time data on production metrics such as machine uptime, energy consumption, and quality control parameters. This data, stored on an immutable ledger, ensures stakeholders access to accurate and trustworthy information, leading to faster decision-making and enhanced operational efficiency.

Compliance with industry regulations is a significant concern for manufacturing firms. Traditional auditing processes are time-consuming and often involve multiple intermediaries. Blockchain facilitates automated compliance reporting, reducing human intervention and ensuring that firms adhere to industry standards effortlessly. With a decentralized record-keeping system, auditors can access a transparent and verifiable trail of production and quality assurance reports, minimizing the risk of fraud.

Counterfeit components can lead to severe financial losses and safety hazards. Blockchain enables manufacturers to implement product authentication mechanisms where every item is assigned a unique digital identity recorded on a blockchain ledger. Consumers and businesses can verify the authenticity of products using blockchain-based QR codes, ensuring that only genuine parts enter the market.

De Beers, the diamond industry giant, uses blockchain to track diamonds from mines to retailers, ensuring conflict-free and ethically sourced gems.

Blockchain technology is revolutionizing transparency in the manufacturing sector by enhancing supply chain traceability, improving production efficiency, ensuring regulatory compliance, and mitigating counterfeit risks. By adopting blockchain, manufacturing firms can streamline operations, build stakeholder trust, and achieve sustainable growth in an increasingly complex global market. Investing in blockchain is not just an option—it is necessary for firms striving to maintain a competitive edge in the digital era.

DIGITAL TWIN TECHNOLOGY: REVOLUTIONIZING INDUSTRIES WITH VIRTUAL PRECISION

GULATI KRITI RAJESH

In an era where digital transformation is reshaping industries, one technology stands out for its ability to bridge the gap between the physical and digital worlds—Digital Twin.

A Digital Twin is a virtual replica of a physical object, process, or system that uses real-time data, simulation, and machine learning to optimize performance, predict outcomes, and enhance decision-making. Organizations can monitor, analyze, and improve their physical assets and processes by creating these dynamic digital counterparts without disrupting operations. This technology is revolutionizing various industries, offering unprecedented operational efficiency and innovation.

Digital Twins are instrumental in predictive maintenance, process optimization, and quality control in the manufacturing sector. By creating a real-time digital replica of machinery and production lines, manufacturers can simulate operations, detect potential failures before they occur, and improve efficiency. For example, Siemens uses Digital Twin technology to enhance the production of industrial equipment, reducing downtime by up to 30% and cutting operational costs by 20%, according to their recent case studies.

The healthcare industry leverages Digital Twins to create personalized treatment plans, simulate surgeries, and improve patient monitoring. Digital replicas of human organs help doctors predict how patients will respond to different treatments, enhancing precision in medical procedures. Philips has pioneered Digital Twin technology to create patient-specific simulations for better diagnosis and treatment, reporting a 15% improvement in treatment outcomes for complex cardiac cases where the technology was applied.

Before manufacturing, automotive companies use Digital Twins to design and test vehicle performance in virtual environments. Tesla, for instance, employs this technology to analyze vehicle behavior and enhance autonomous driving capabilities, running millions of simulations to improve safety algorithms. Similarly, aerospace giants like Boeing use Digital Twins to improve aircraft design, maintenance, and safety through continuous simulation and monitoring, reducing development time by up to 40%.

Urban planners and civil engineers utilize Digital Twins to develop smart cities by simulating traffic flow, energy consumption, and infrastructure resilience. Cities like Singapore have adopted Digital Twin models to optimize urban planning and disaster management, ensuring sustainable development. Their Virtual Singapore project has helped reduce traffic congestion by 12% and improve emergency response times by 20%.

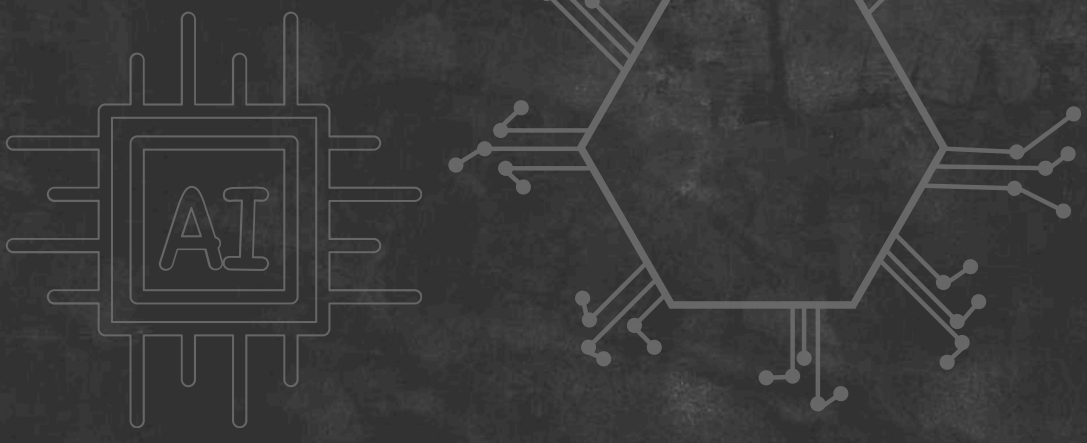
Energy companies use Digital Twins to monitor and optimize power grids, wind farms, and oil rigs. This technology helps predict equipment failures, reduce maintenance costs, and enhance energy efficiency. General Electric (GE) has implemented Digital Twin solutions to optimize turbine performance and minimize unplanned downtime in power plants, achieving up to 25% improved asset performance and reliability.

While the benefits are substantial, organizations considering Digital Twin adoption should be aware of several challenges. These include data security and privacy concerns when handling sensitive operational information, initial implementation costs and technical expertise requirements, integration with existing systems and ensuring interoperability, and establishing reliable data collection mechanisms through IoT sensors.

As Digital Twin technology evolves, its integration with Artificial Intelligence (AI), the Internet of Things (IoT), and 5G will further enhance its capabilities. Experts predict that the global Digital Twin market will grow from $6.9 billion in 2023 to over $73.5 billion by 2030, demonstrating the increasing recognition of its value across industries. In the coming years, we expect more accessible Digital Twin solutions for small and medium-sized businesses, enhanced cross-industry collaboration platforms, and more sophisticated predictive capabilities as AI technologies advance.

Digital Twin technology represents a powerful tool for predictive analysis, process optimization, and innovation that can transform your operations. Whether you're in manufacturing, healthcare, energy, or another sector, the ability to simulate and optimize before implementation can provide significant competitive advantages.

As you consider your digital transformation roadmap, exploring how Digital Twin technology might apply to your needs could unlock new efficiencies and innovations. The question is no longer whether industries will adopt Digital Twin technology but how soon you can harness its full potential to stay ahead in an increasingly data-driven business landscape.



GREEN OPERATIONS: SUSTAINABLE PRACTICES IN BUSINESS OPERATIONS

KEVIN JAMES

One of the main challenges operations management faces in the twenty-first century is sustainability. Over the past ten years, operations strategy has given much attention to sustainability, a significant problem. Nowadays, sustainability is frequently referred to as "green." To comprehend the impacts on the environment, society, and economy, the terms "green" or "sustainable" are used. Organizations are realizing the necessity of incorporating green practices into their operations as sustainability gains importance in the business sector.

Green operations are eco-friendly procedures that companies use to reduce their environmental impact and increase resource efficiency. These methods, which lessen the environmental impact while increasing operational performance, include reducing energy use, recycling garbage, and utilizing eco-friendly materials in industrial operations. Businesses that embrace green operations improve their long-term profitability and reputation while also helping to preserve the environment. Green operations will integrate environmental considerations into various business operations, like production, supply chain management, waste management, energy consumption, and transportation.

Organizations can benefit from implementing green operations in several ways, including:

- **Environmental Sustainability**: Green operations contribute to a more sustainable future by lowering pollution, consuming fewer resources, and lessening the effects of climate change.
- **Cost Savings**: Organizations can save much money over time by optimizing resource utilization, lowering energy and water use, waste production, and disposal expenses.
- **Competitive Advantage**: Adopting green practices can help a business stand out, draw in eco-aware clients, and improve its reputation.
- **Regulatory Compliance**: Organizations in many countries must abide by environmental norms and laws. Putting green operations into practice avoids fines or legal problems and guarantees compliance.

Implementing Green Operations

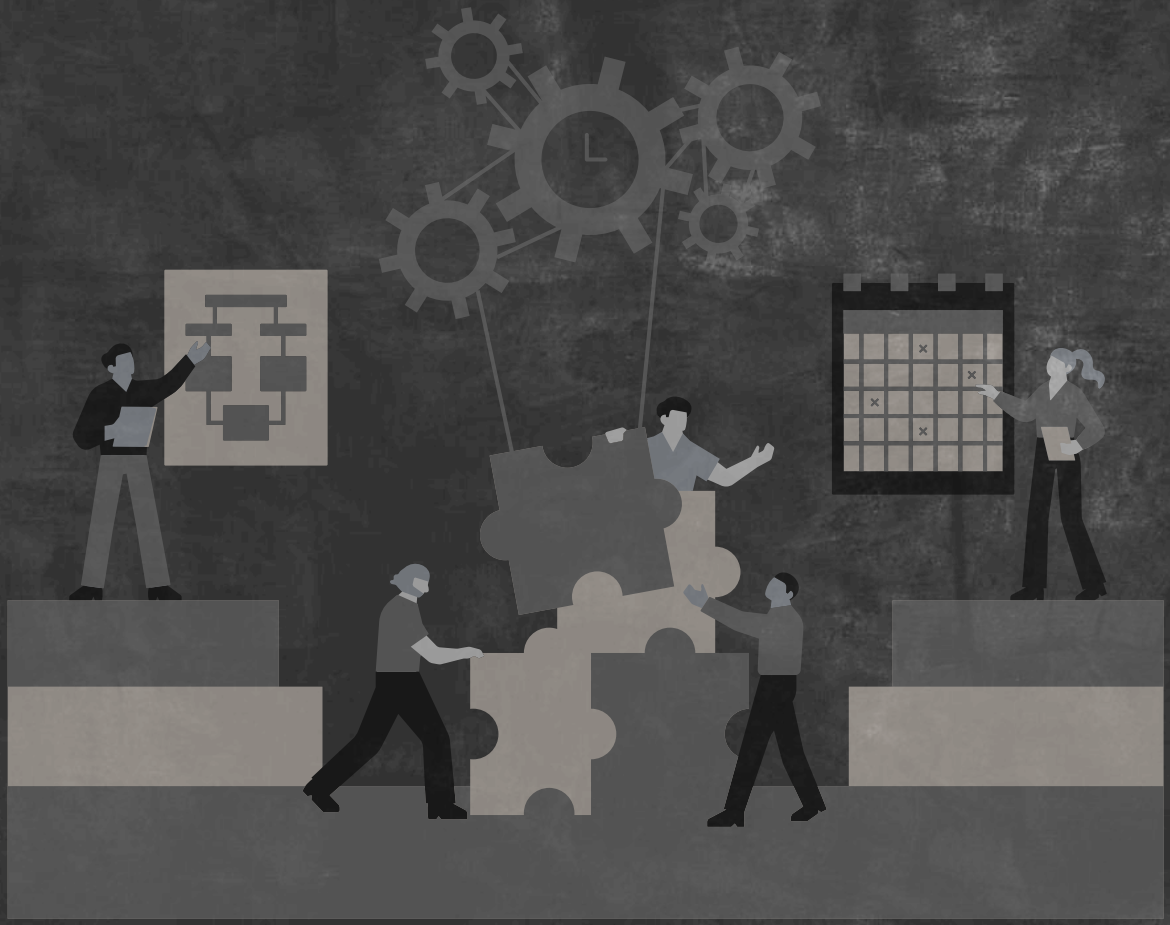
Organizations can adopt the following strategies to integrate green operations effectively:

- **Energy Efficiency** – Reduce energy consumption by utilizing energy-efficient equipment, optimizing HVAC systems, and fostering a culture of energy conservation among employees.
- **Waste Reduction & Recycling** – Minimize waste through sustainable packaging, material reuse, and robust recycling programs. Partnering with recycling firms can ensure proper waste disposal.
- **Sustainable Supply Chain** – Collaborate with eco-conscious suppliers who prioritize sustainable materials, lower emissions, and ethical labor practices. Green procurement policies can further promote sustainability across the supply chain.
- **Transportation Optimization** – Reduce fuel consumption and emissions by optimizing transportation routes, incorporating electric vehicles, and encouraging carpooling initiatives.
- **Water Conservation** – Implement water-efficient fixtures, monitor consumption, and promote water-saving practices to minimize waste.

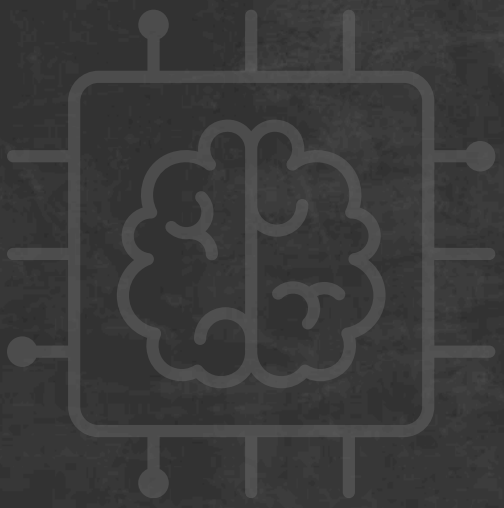
- **Employee Engagement** – Foster a sustainability-focused workplace through training, awareness programs, and incentives encouraging eco-friendly behaviors.
- **Continuous Improvement** – Regularly assess and refine green strategies, further identifying innovative solutions to reduce environmental impact.

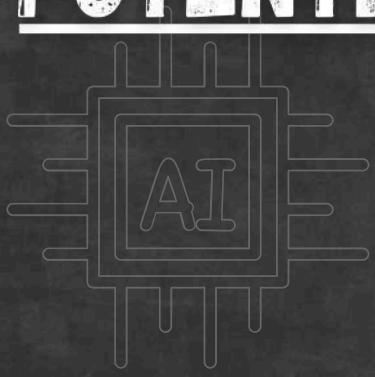
By implementing these strategies, organizations can contribute to a more sustainable future while reaping the benefits of cost savings, competitive advantage, and regulatory compliance.

As operations managers, we have a unique chance to promote sustainability and green operations in our companies. Understanding the value of environmental stewardship will help us succeed as a business in the long run and make the world healthier. We can lower expenses, improve brand reputation, and successfully include stakeholders by implementing sustainable practices. Let's rise to the challenge and use sustainability opportunities for the good of our company, society, and the earth at large.



HBM3 MEMORY'S PIVOTAL PART IN UNLEASHING AI'S CREATIVE POTENTIAL





KANIKA MEHTA

In the current technological world, users usually get captivated by the show's star, which grabs all the eyeballs and the limelight. In contrast, the lesser-known protagonist working in the shadows often goes unnoticed.

Think of this shadowy figure as the background team at a rock concert, important yet practically invisible to the screaming audience. But that doesn't mean it does not hold any value; it's the main driving force behind the success!
With AI being the talk of the town, it is the show's star as it fills the news cycle and piques our collective imaginations.
However, have you considered what technology is behind the power of AI? It is none other than HBM3. Now, you must be wondering what precisely this is; let's check it out!

Understanding HBM3
HBM3 (High Bandwidth Memory 3) is the driving force behind the unmatched efficiency of AI. HBM3 enables AI to perform at its best. The newest version of lightning-fast memory technology was designed primarily to work with extremely high amounts of data. Now delving into the procedure of making HBM3, it is made by vertically stacking multiple chips of memory into one compact unit, which is also interconnected with the use of TSVs (Through Silicon Vias)-tiny holes.

Think of HBM3 as building a skyscraper instead of a vast building; more memory fits into less space, and everything communicates super quickly between the layers. The stacked structure makes it more energy efficient compared to the traditional ones.

The Advantages of HBM3 for AI

High-bandwidth memory 3, or HBM3, is designed to meet the needs of today's high-performance applications. It offers several significant advantages, making it a crucial component for AI applications.

Now, let us see what benefits HBM3 entails for AI:

- **Speed:** HBM3 can transfer data faster than conventional storage, enabling AI systems to perform large, complex tasks faster. This is especially important for AI creations such as art creation or music creation, which require processing large amounts of data simultaneously.
- **Ample Storage:** It has a large capacity, which means it can store and manage large amounts of data. This allows AI to process high-quality images, videos, or extensive data, making it more creative and delivering better results.
- **Energy Efficiency:** Despite its high efficiency, HBM3 consumes less energy, which is essential for the long-term operation of AI systems. This makes the system sustainable and profitable.
- **Fast Response:** HBM3 enables AI to access information quickly to provide real-time feedback, such as instant digital artwork or quick decision-making in games and animations.

While AI may be the shiny face of technology, behind-the-scenes things like HBM3 boost its power.

The speed, power, efficiency, and responsiveness of HBM3 are vital factors that enable AI to complete complex tasks, process large amounts of data, and produce impressive results, which is why it is popular!

HBM3 is the silent powerhouse behind AI's creative potential, and as AI continues to develop, HBM3 can play a significant role in shaping future technologies.

INDUSTRY 4.0 AND LEAN SYSTEMS

MEGHA SOOD

The manufacturing and service operations form the core of any country. The recent developments in technologies, such as artificial intelligence (AI), the Internet of Things (IoT), and big data, have transformed the industrial landscape. For any industry, operational excellence relies on waste reduction and process efficiency, which Lean Systems nurture. If Industry 4.0 and Lean Systems integrate, businesses can enhance productivity, minimize waste, and deliver high customer value.

The Synergy Between Industry 4.0 and Lean Systems

Kaizen (continuous improvement), Value Stream Mapping, and Just-In-Time (JIT) focus on eliminating non-value-added activities. How does Industry 4.0 come into the picture? It amplifies Lean by introducing intelligent automation, real-time data analytics, and cyber-physical systems to enhance decision-making and efficiency.

For example, Siemens has integrated Industry 4.0 into its production line using Digital Twins (virtual representation of physical systems to stimulate and optimize manufacturing processes). This integration saves costs and aligns with Lean's objective of reducing trial and error in production.

Smart Manufacturing and Lean

Smart Manufacturing is where IoT sensors track machine performance, detect anomalies, and predict failures. This concept supports Total Productive Maintenance (TPM)- a vital Lean practice- by reducing unplanned downtime and ensuring smooth operations.

For example, Toyota has incorporated IoT-driven predictive maintenance in its plants, significantly reducing machine breakdowns and improving overall equipment effectiveness (OEE). Toyota's operations are more resilient and agile due to the incorporation of the above.

Data-Driven Decision Making for Lean Optimization

How do we optimize the inventory level, minimize overproduction, and reduce lead times? Well, the answer to these questions is Big Data and AI.

For example, Amazon uses predictive analytics and AI-powered robots in its warehouses to streamline order fulfillment, embodying the Just-In-Time principle. Ensuring products are stocked based on the actual demand rather than the forecasts reduces excessive inventory and waste.

Challenges and Considerations

There are specific challenges associated with the integration of Industry 4.0 and Lean Systems:

- **Implementation cost is high**: You need significant investment to deploy AI, IoT, and automation.
- **Workforce Upskilling:** Employees must adapt to digital tools and data-driven workflows.
- **Cybersecurity Risks and Challenges:** Since the focus is on connectivity, the more connectivity there is, the more cyber threats there are.

The companies must invest in training programs and robust cybersecurity frameworks to overcome the above challenges.

The fusion of Industry 4.0 and Lean Systems is the future of efficient and intelligent operations. The question is no longer whether businesses should integrate Industry 4.0 into their Lean Strategies - it is how fast they can adapt to stay ahead in the digital revolution.

LEVERAGING LLMS FOR SMARTER, FASTER, AND MORE EFFICIENT OPERATIONS

SYLVESTER

The business landscape is evolving at an unprecedented pace, driven by the rapid adoption of artificial intelligence (AI) and machine learning (ML). At the forefront of this transformation are Large Language Models (LLMs), sophisticated AI systems capable of understanding, generating, and analyzing human language at an advanced level. From optimizing supply chain management to streamlining customer service, LLMs have the potential to redefine operational efficiency across industries. This article explores how businesses can strategically leverage LLMs to enhance operations, the challenges they may face, and the future of AI-driven operational intelligence.

How LLMs Are Transforming Operations

The ability of LLMs to process and synthesize vast amounts of structured and unstructured data makes them an invaluable asset for operational functions. Here's how they are making an impact:

1. Enhancing Supply Chain and Logistics Management

In a world where supply chain disruptions can significantly impact business continuity, LLMs provide predictive insights and intelligent automation to mitigate risks and optimize efficiency:

- **Demand Forecasting:** LLMs analyze historical data, market trends, weather patterns, and economic indicators to enhance demand forecasting accuracy, reducing the risk of overstocking or shortages.

- **Supplier Management:** AI-powered tools can streamline vendor communication, automate contract analysis, and assess supplier reliability based on past performance and external reviews.
- **Inventory Optimization:** By predicting usage patterns, LLMs help businesses maintain optimal inventory levels, reducing holding costs while ensuring product availability.

2. Process Automation and Workflow Optimization

Many operational processes involve time-consuming manual tasks that LLMs can automate, improving efficiency and freeing up employees for more strategic roles:

- **Document Processing:** LLMs can extract and interpret data from invoices, contracts, and compliance documents, reducing paperwork and human error.
- **Knowledge Management:** AI-driven systems can serve as internal knowledge bases, providing instant responses to employee queries on operational procedures, company policies, and troubleshooting steps.
- **Automated Report Generation:** LLMs can summarize complex data into actionable reports, providing key insights in an easily digestible format.

3. Revolutionizing Customer Service and Support Operations

Customer experience is a key differentiator in today's competitive business environment, and LLMs are playing a critical role in enhancing service delivery:

- **AI-Powered Chatbots and Virtual Assistants:** By handling routine queries and troubleshooting issues, LLMs allow human agents to focus on complex customer concerns, improving response times and satisfaction rates.
- **Sentiment Analysis and Customer Feedback Processing:** LLMs can analyze social media, online reviews, and support tickets to identify customer pain points, enabling businesses to take proactive action.
- Personalized Recommendations and Service Customization: Based on past interactions, purchase history, and behavioral patterns, AI-driven systems can suggest relevant products and services to customers

4. Risk Management, Compliance, and Security

With businesses facing increasing regulatory scrutiny and cyber threats, LLMs can help organizations stay compliant and protect sensitive data:

- **Fraud Detection and Anomaly Identification:** AI can analyze transactional data in real-time, identifying suspicious patterns and flagging potential fraud attempts.
- **Regulatory Compliance Monitoring:** LLMs can continuously track and interpret changing regulations, ensuring businesses remain compliant with industry standards.
- **Incident and Crisis Management:** AI-driven tools can assist in root cause analysis and suggest corrective actions when operational disruptions occur.

5. Decision Support and Strategic Planning

Data-driven decision-making is essential for business growth, and LLMs provide valuable support by offering predictive analytics and real-time insights:

- **Scenario Analysis and Risk Assessment:** Organizations can model different operational strategies, assessing potential risks and outcomes before implementation.
- **Competitive and Market Intelligence:** LLMs extract insights from market reports, news articles, and competitor activities, helping businesses refine their strategies.
- **Performance Tracking and KPI Analysis:** AI-driven dashboards monitor key performance indicators, offering actionable recommendations for operational improvements.

Challenges and Considerations in Implementing LLMs for Operations

While the advantages of LLMs are clear, businesses must navigate several challenges to ensure successful implementation:

- **Data Privacy and Security:** Handling vast amounts of sensitive operational data requires robust cybersecurity measures to prevent breaches and unauthorized access.

- **Bias and Ethical Concerns:** AI models trained on biased data can lead to unfair or inaccurate decisions, necessitating continuous monitoring and refinement.
- **Integration with Legacy Systems:** Many businesses still rely on outdated systems that may not seamlessly integrate with AI-driven solutions, requiring additional investments in infrastructure.
- **High Implementation Costs:** Developing and deploying LLMs can be expensive, requiring a well-defined cost-benefit analysis to ensure long-term value.

The Future of LLMs in Operational Excellence

As AI technology continues to evolve, the role of LLMs in operations will expand, unlocking new possibilities for efficiency and innovation. Future advancements include:

- **Real-Time Operational Insights:** AI systems will provide instant recommendations and alerts, enabling businesses to make data-driven decisions on the fly.
- **Multimodal AI Capabilities:** Combining text, voice, images, and video analysis, LLMs will enhance operational functions across multiple domains.
- **Self-Learning and Adaptive Systems:** Continuous learning capabilities will allow LLMs to improve their predictions and recommendations over time.
- **Greater Customization and Personalization:** Businesses will be able to fine-tune LLMs to align with industry-specific requirements, enhancing their effectiveness.

Large Language Models are no longer futuristic concepts but essential tools that drive operational efficiency, streamline processes, and support data-driven decision-making. From supply chain management to risk assessment and customer service, LLMs offer numerous benefits that can transform how businesses operate. However, careful planning and ethical considerations are crucial to overcoming challenges associated with AI adoption. As companies continue to harness the power of LLMs, those that effectively integrate AI into their operations will gain a competitive edge, improving agility, resilience, and overall business performance.

HOW DEEP TO SEEK FOR AI?

AISHWARYA BALAGOPALAN

For the past 19 months, the world has witnessed OpenAI, Llama, Perplexity and Anthropic taking the lead in AI, setting the pace for innovation across the globe. But in early 2025, a surprise contender from China shook the very roots of the AI race. DeepSeek, a little-known Chinese AI firm, has unveiled DeepSeek-R1, an AI system comparable to GPT-4 but allegedly developed with a tiny fraction of computational resources. This is not simply another AI model—this is a geopolitical chess move, a statement of direction, and the possible start of a new age of AI when the rules of the game are redefined. It is revolutionary because, until now, creating frontier AI models has cost tens of thousands of top-notch GPUs, billions of dollars, and infrastructure available only to tech giants.

OpenAI's GPT-4, for instance, was trained on vast clusters of Nvidia A100s and H100s. DeepSeek-R1, however, reportedly achieved similar performance using just 2,048 Nvidia GPUs. People are questioning the number, but if true, it raises a massive question – What if AI development no longer needs enormous resources? Suppose DeepSeek's methodology is scalable and the data is legitimate. In that case, it has the potential to democratize AI development, providing an entry point for smaller competitors into a domain that a few Silicon Valley-based companies earlier controlled. The race to AI might transform from a contest of computing resources to algorithmic brilliance. Apart from the economics, DeepSeek's breakthrough has immense geopolitical implications. The United States has traditionally been at the forefront of AI research and development.

DeepSeek's success heralds China's potential to compete with or exceed US capability in this strategic arena. The stakes are beyond the business world—this is a strategy challenge. As a gesture, the US has severely curtailed exports of advanced AI chips to China, hoping to dampen its AI aspirations. But what if China no longer requires those chips? If China can create powerful AI models with less, what does this say about the future of AI research? Will the US government intervene to regulate or counteract this trend? These are essential questions, the answers of which remain to be discovered. This is no longer merely competition. It's about who controls the future of artificial intelligence in the world.

The emergence of DeepSeek also introduces ethical and security issues. Analysis has shown that DeepSeek-R1 displays censorship consistent with the Chinese government's policies, especially on sensitive topics, such as the Tiananmen Square event and talks about Taiwan. This questions the objectivity and credibility of AI-produced information, mainly when used worldwide.

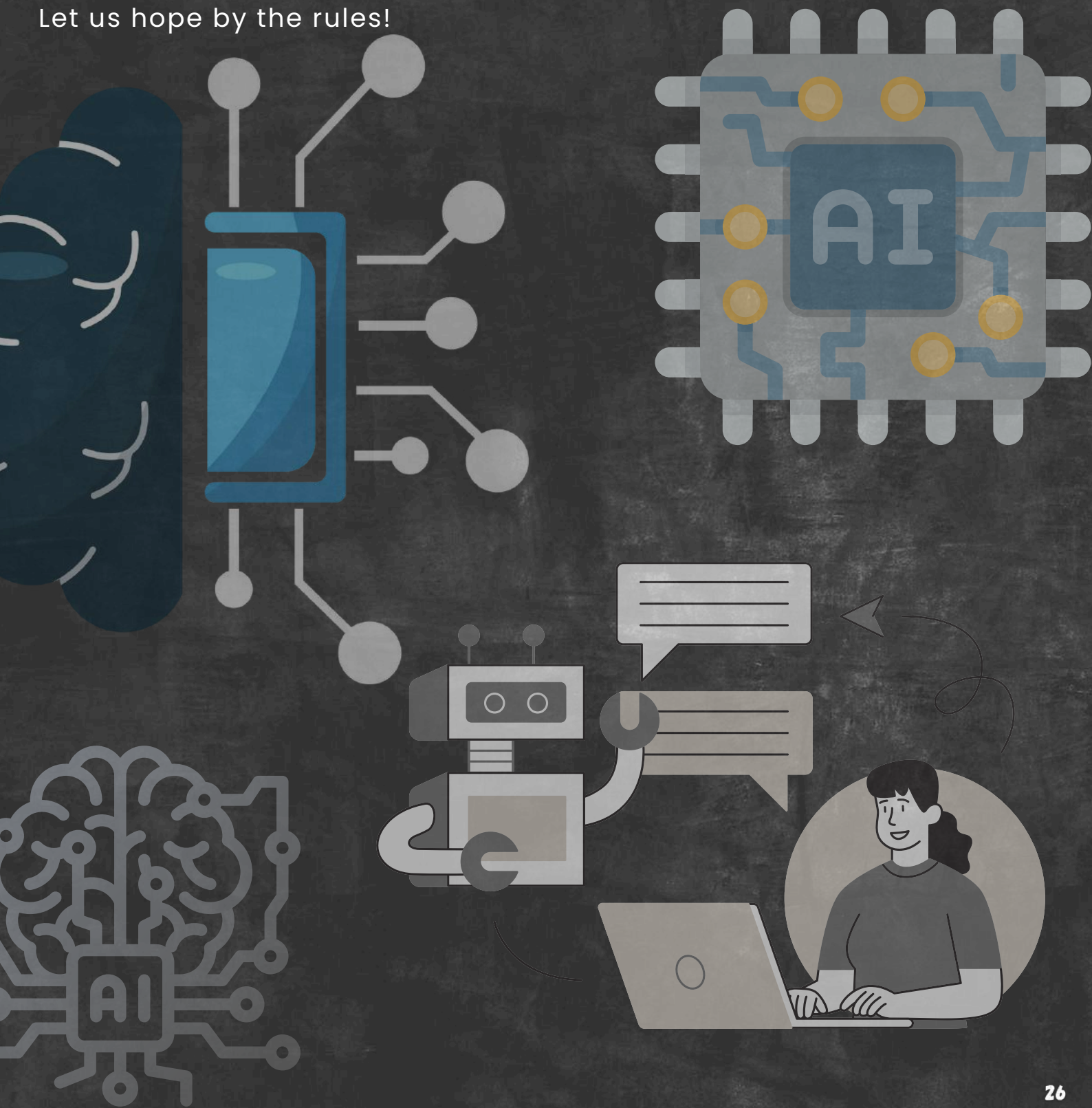
Additionally, DeepSeek's data practices have raised some eyebrows. The business practice of storing user data on servers in China has given rise to data privacy concerns and government access to sensitive data. This is similar to past controversies over other Chinese technology businesses and has given rise to discussions on the necessity for strict data protection laws. OpenAI and Google have traditionally been criticized for left-leaning biases in their models. DeepSeek's model, aligned with the Chinese government's stance, represents the opposite extreme.

What happens when AI models disagree on objective facts? Imagine a future where two competing AI models—one trained in the US, the other in China—offer entirely different versions of reality. This could further fragment global discourse, making it more challenging than ever to agree on what's true. DeepSeek's emergence is an alarm call. It has made Alibaba enter the AI race through its Qwen 2.5 Max model, which also beats all current models on diverse benchmarks.

These advances oblige AI scientists, policymakers, and investors to reconsider what's achievable.

If powerful AI training no longer demands unlimited resources, we might witness a paradigm shift from compute-bound AI to algorithm-bound AI.

Are we about to witness an AI arms race whereby who's more efficient wins the day? DeepSeek has indeed turned the table, as we like to call it. The world now must determine how they wish to play. Let us hope by the rules!



THE FUTURE OF QUANTUM COMPUTING IN SUPPLY CHAIN OPTIMIZATION

ABHIMANYU ANAND

The Future of Quantum Computing in Supply Chain Optimization As supply chains become more complex and interconnected, businesses are looking for smarter ways to stay ahead. One of the most exciting advancements in this space is quantum computing. This technology can potentially revolutionize supply chain optimization by solving problems that traditional computers struggle with. Unlike classical computers, which process data in binary (0s and 1s), quantum computers use qubits, which can exist in multiple states simultaneously. This allows them to process vast amounts of information simultaneously, making them perfect for tackling supply chain challenges like optimizing delivery routes, predicting demand more accurately, and managing inventory more efficiently. For example, logistics and routing could see a major transformation with quantum computing.

Imagine instantly calculating the fastest and most cost-effective shipping routes, even when dealing with unpredictable disruptions like weather changes or traffic congestion. Companies that rely on complex distribution networks, such as e-commerce giants and global manufacturers, could benefit immensely by reducing delivery times and cutting fuel costs.

Demand forecasting is another area where quantum computing could be a game-changer. Traditional forecasting models struggle with the massive and fluctuating data sets generated by global supply chains. Quantum algorithms, on the other hand, can analyse these large datasets more efficiently, leading to more accurate predictions. This means fewer stock shortages, less overproduction, and better anticipation of customer needs, ultimately saving businesses money while reducing waste. Risk management and supplier optimization will also improve significantly.

Today, businesses assess supply chain risks—such as geopolitical instability, natural disasters, and supplier reliability—using traditional methods that may not capture the full picture. Quantum computing can process multiple risk factors simultaneously, helping businesses make informed decisions faster. This will be crucial in industries like healthcare, where disruptions in medical equipment or pharmaceuticals supply can have serious consequences.

Security is another major advantage of quantum computing. Many companies are already integrating blockchain to enhance transparency and traceability in supply chains. However, as cyber threats evolve, traditional encryption methods may become vulnerable. Quantum-powered encryption will provide an extra security layer, ensuring supply chain data remains protected against hacking and fraud. Of course, we're still in the early stages of quantum computing. The technology is expensive, not widely available, and requires specialized expertise. However, companies like IBM, Google, and emerging startups are rapidly advancing. As quantum computing becomes more accessible and cost-effective, businesses will integrate it into their supply chain strategies. Companies exploring quantum computing today will gain a competitive edge in the coming years. As this technology develops, supply chains will become more resilient, efficient, and adaptable.

The quantum era is coming—are we ready to embrace it? The future of supply chains is not just about automation and AI; it's about leveraging next-generation technologies like quantum computing to stay ahead of disruptions and create more sustainable, responsive, and intelligent networks. The businesses that start experimenting with quantum solutions now will be the ones leading the industry tomorrow.

WORKSHOP

LEAN SIX SIGMA GREEN BELT WORKSHOP (15–17 MARCH 2025)

The three-day Lean Six Sigma Green Belt Workshop, conducted by KPMG trainers Mr. Praveen Pavithran and Mr. Om Sarmalkar, provided students with a comprehensive understanding of Lean Six Sigma principles and the DMAIC methodology (Define, Measure, Analyze, Improve, Control). Through a combination of theory and hands-on learning, participants explored process mapping techniques like SIPOC and VSM, statistical analysis using Minitab software, and practical problem-solving tools such as Fishbone Diagrams, 5 Whys, Pareto Charts, and Control Charts.

Each day was focused on specific DMAIC phases—Day 1 covered Define and introductory analytics, Day 2 delved into data measurement and analysis, and Day 3 focused on root cause analysis, process improvement, and control mechanisms. The session strengthened students' analytical thinking, data-driven decision-making, and process improvement capabilities. The workshop concluded with group activities and real-world case studies, fostering collaborative learning and preparing students for applying Lean Six Sigma tools in professional settings.

CAMPUS CORPORATE CONFLUENCE

SAP INTERACTION (07-03-2025)

The Campus Corporate Confluence, featuring an interactive session with the SAP Team, provided students from the MBA LOS batch with valuable insights into the evolving integration of sustainability and artificial intelligence in modern ERP systems. Through expert talks on topics such as Sustainability Footprint Management, Business AI, and SAP University Alliances, students gained a comprehensive understanding of SAP's role in driving digital transformation and operational efficiency in organizations. The session bridged theoretical concepts with cutting-edge industry practices, encouraging students to explore real-world applications of ERP, AI, and sustainable strategies. The confluence also served as a platform to foster corporate awareness and engagement, preparing students for tech-driven business environments.

CLUB ACTIVTIES

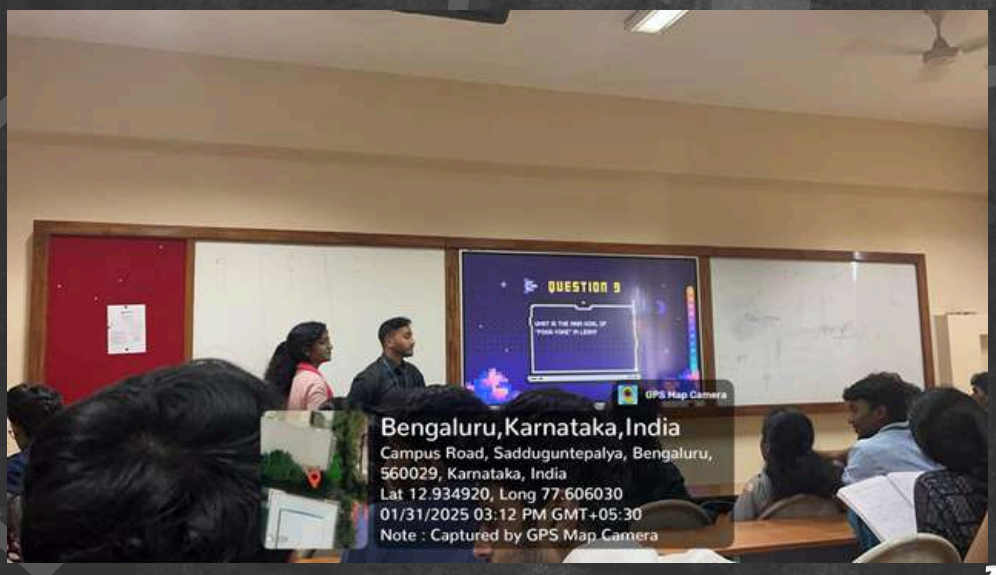
PLACEMENT GUIDANCE SESSION (24-01-2025)

The Placement Guidance Session, organized for the MBA LOS 2024–26 batch, served as an essential preparatory platform to equip students with practical insights into the campus recruitment process. The interactive session focused on familiarizing students with essential placement protocols, including Group Discussions and Personal Interview etiquette, dress codes, effective communication, and ethical conduct. With guidance on industry research and employer expectations, students gained a clearer perspective on how to present themselves professionally. The session also emphasized the importance of being informed about current events and industry trends, further strengthening their placement readiness. This activity not only bridged theoretical preparation with real-world application but also boosted confidence, ensuring students are better equipped to face recruitment challenges.

CLUB ACTIVTIES

OPERATIONAL EDGE LEAN QUIZ MANIA (31-01-2025)

The Operational Edge Lean Quiz Mania, conducted by the MBA LOS students, was an interactive and engaging session designed to reinforce core operations and lean management concepts. Through a vibrant mix of activities including a themed operations quiz, logo and tagline identification, and a fun-filled dumb charades round, the event promoted learning through entertainment. The session opened with an ice-breaker led by Dr. Siva Kumar Pujari, fostering collaboration and participation. Students enthusiastically showcased their talents, contributing to a lively atmosphere. The event not only deepened understanding of Lean principles but also strengthened team bonding, communication, and creative thinking—bridging academic knowledge with a fun, real-world learning environment.



CLUB ACTIVTIES

ROOT BEER GAME SIMULATION (07-02-2025)

The Root Beer Game simulation, organized by the MBA LOS 2025 batch, was an experiential learning activity aimed at strengthening students' grasp of supply chain management concepts. Through a hands-on simulation that traced the flow of materials across various stages—manufacturer, wholesaler, distributor, and retailer—participants gained practical insights into inventory control, backorder management, and cost-efficient operations. The activity emphasized the importance of teamwork, communication, and strategic planning in maintaining an effective supply chain. By replicating real-world dynamics, the session bridged academic theory with applied practice, enabling students to think critically and collaboratively, and better prepare for operational challenges in professional environments.

CLUB ACTIVTIES

RESUME BUILDING AND BRAIN TEASERS (21-02-2025)

The Resume Building and Brain Teasers session, organized by the LOS 2026 batch, was an interactive activity aimed at enhancing students' career readiness and analytical thinking. The session featured two key components: a resume-building workshop and a brain teaser quiz. The resume-building segment focused on crafting ATS-friendly resumes, helping students understand essential sections, formatting, and screening mechanisms. This was followed by brain-teasing quizzes that challenged students to solve application-based problems in areas like quality management systems, lean operations, and business analysis. The session provided a practical learning platform that strengthened both employability and problem-solving skills, blending theoretical concepts with real-world application.

STUDENT ACHIEVEMENTS

FIRST PRICE IN OPERATIONS EVENT HELD IN RAMAIAH INSTITUTE

MBA students **Amogh R Kashyap (L3)** and **Shivaram M Hegde (L4)** secured First Prize in Chola Ops, the operations event conducted as part of Perceptions: Vibhava Fest at Ramaiah Institute, Bangalore. Representing their team Yukti Yuda ("Strategic Warriors"), the duo participated in multiple rounds designed to assess their knowledge and skills in lean operations and logistics.

OPERATIONS GAME AT RAJAGIRI BUSINESS SCHOOL

A team of MBA students from Christ University—**Srish Satya (2427853, L3), Vishnu Priya V (2427661, L3), Sajna Mary Mathews (2427843, L3), and Aravinth V (2427609, L3)**—participated in the Operations Game at Inflore 2024, a prominent management fest organized by Rajagiri Business School, Kochi.

STUDENT ACHIEVEMENTS

FIRST PRICE IN BUSINESS ANALYST COMPETITION AT ST JOSEPH'S INSTITUTE OF MANAGEMENT

MBA students **Shreenithi M J (2427944)** and **Spoorthi V Hullatti (L3 - 2427948)** achieved First Prize in ATLANTIS, the Business Analyst competition held during VERVE 2024 at St. Joseph's Institute of Management, Bangalore. The event challenged participants with advanced problem-solving tasks, testing their analytical acumen, strategic thinking, and adaptability in real-world business analytics scenarios.

Through a series of rigorous rounds, the team demonstrated strong collaborative and analytical skills, applying business intelligence tools and frameworks effectively. The competition not only offered valuable learning opportunities but also enhanced the participants' understanding of complex business analytics concepts. The well-organized event provided excellent industry exposure and reinforced the significance of data-driven decision-making.

STUDENT ACHIEVEMENTS

YUKTHI 2025 – THIAGARAJAR SCHOOL OF MANAGEMENT

Christ University made a remarkable mark at YUKTHI 2025, a National Level Management Fest organized by Thiagarajar School of Management (TSM), Madurai, Tamil Nadu, by securing both First and Third Prizes in OPTIMIZE, the flagship operations event.

The First Prize was won by the team comprising **Jeffrin Sebastian (2428427), Sudharsanan M (2428456), and Nekha Mariam Sajan (2427926)**. Their success was driven by exceptional strategic thinking, operational problem-solving, and effective teamwork across a series of complex challenges that tested their practical knowledge and coordination skills.

The Third Prize was secured by **Aleena S Palappillil (2427808), Haffis Najeeb (2427818), and Paras Khare (2427835)**, who impressed the jury with their performance in multiple rounds including case study analysis using Linear Programming Problem (LPP), forecasting techniques (SMA & WMA), and a business plan presentation on Smart Warehousing and D2C fulfillment strategies.

Both teams competed among 1000+ participants, showcasing commendable operational acumen, analytical expertise, and real-world application of operations and supply chain management principles.

STUDENT ACHIEVEMENTS

FIRST PRIZE IN BEST MANAGER

Srish Satya, an MBA student from Christ University, showcased exceptional leadership and managerial capabilities by securing multiple accolades across premier management fests during the academic year.

- **First Prize – Best Manager at RECSTACY, organized by Rajalakshmi Business School, Chennai** (14 November–14 December 2024)
- **First Prize – Chandrankanti Memorial Young Business Leader at Urjith, organized by GRG Business School, Coimbatore** (28 January 2025)
- Participation and commendable performance in **Best Manager at Euphoria 2025, organized by Mount Carmel College, Bengaluru** (24–25 February 2025)

These prestigious events tested participants on multiple dimensions such as strategic thinking, problem-solving, resilience, and leadership under pressure through challenging rounds like case studies, simulations, marketing pitches, and roleplays. Winning the Best Manager title on multiple occasions reinforced Srish's competitive spirit, decision-making prowess, and adaptability in dynamic business environments.

STUDENT ACHIEVEMENTS

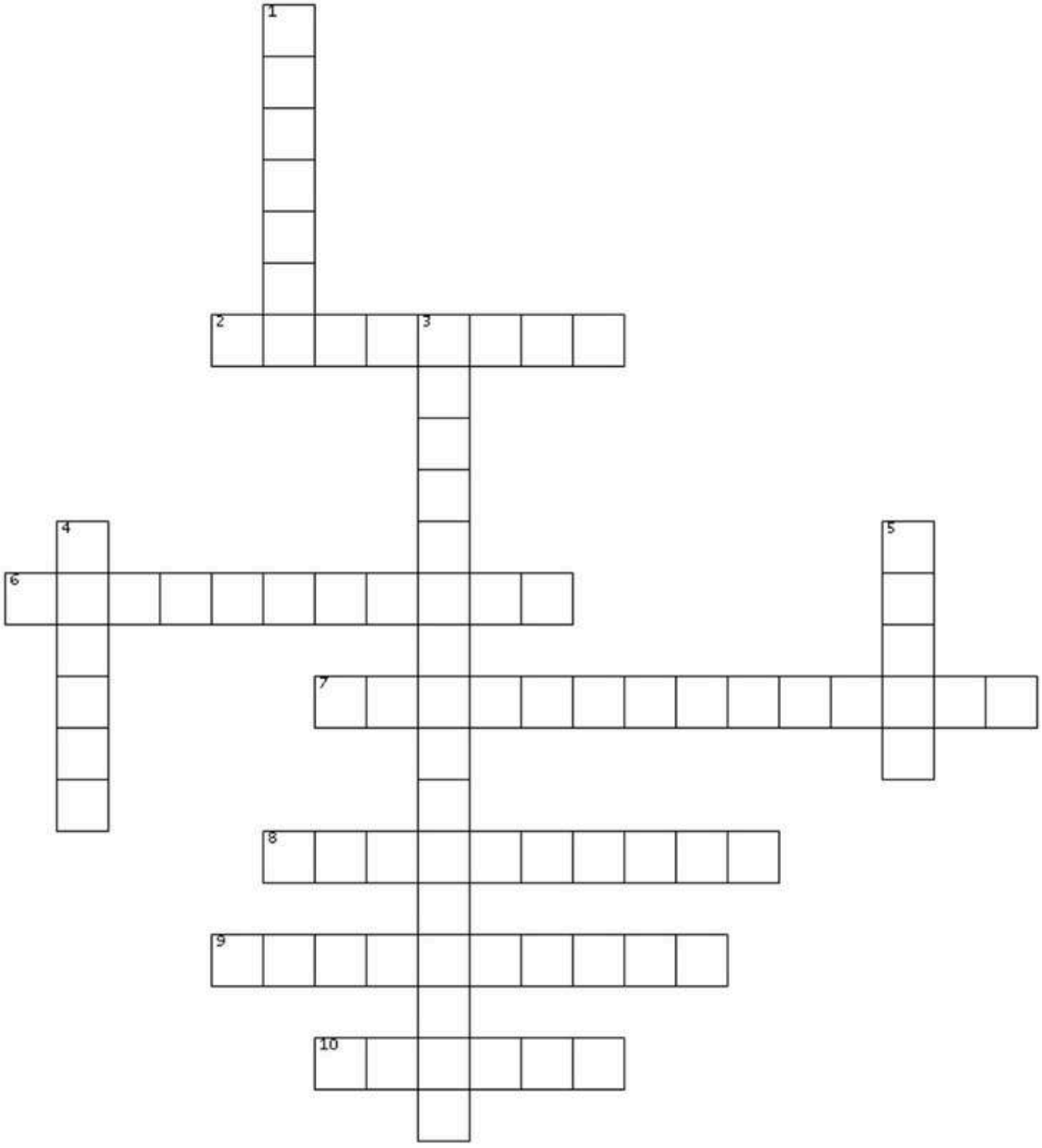
THIRD PRIZE IN BEST MANAGER MOUNT CARMEL COLLEGE

Riya (2428239, L4), a first-year MBA student from Christ University, secured Third Place in the Best Manager event at EUPHORIA 2025, a prestigious national-level management fest organized by Mount Carmel College, Bengaluru.

The multi-round competition tested participants on critical aspects of managerial excellence, including strategic thinking, creativity, resilience, and problem-solving under pressure. Highlights included a unique marketing challenge to promote a spoon with a hole, a case study analysis on Boeing's crash history, and a dynamic press conference roleplay as Vijay Mallya, where Riya showcased exceptional poise and insight.

CROSSWORDS

NOBERT BIJO



ACROSS

2. The time it takes to complete a process from start to finish.
6. The flow of materials and information in a process.
7. A document outlining project goals, scope, and deliverables.
8. A chart showing project tasks against a timeline.
9. A statistical measure of process variation.
10. A system that pulls materials through the production process.

DOWN

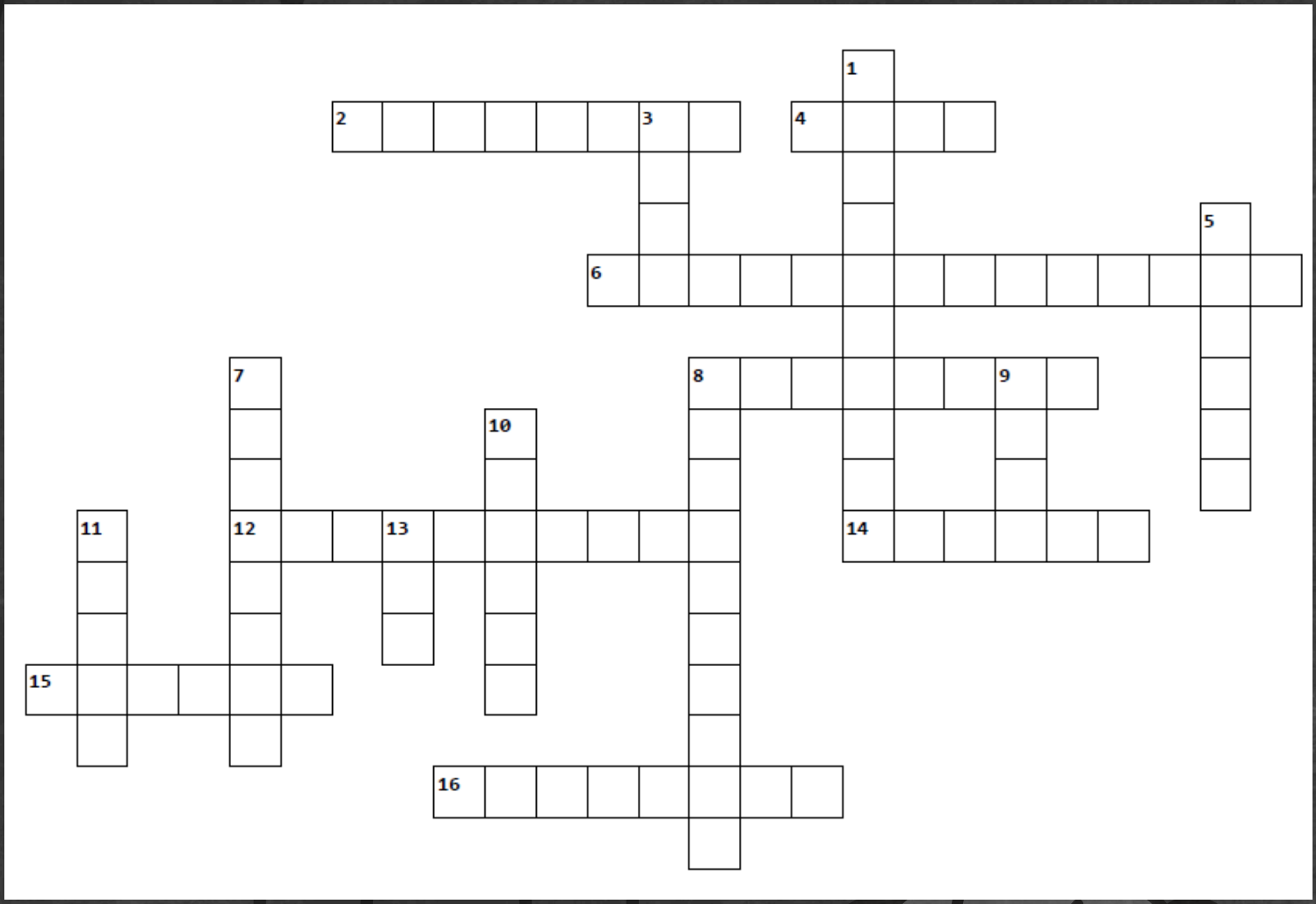
1. The phase of DMAIC that focuses on implementing solutions.
3. A constraint that includes time, cost, and scope.
4. Continuous improvement, also known as
5. Elimination of is a key TPS principle.

ANSWERS

1. **Improve**
2. **Lead Time**
3. **Triple Constraint**
4. **Kaizen**
5. **Waste**
6. **Value Stream**
7. **Project Charter**
8. **Gantt chart**
9. **Sigma Level**
10. **Kanban**

CROSSWORDS

VIKAAS P



ACROSS

2. A key metric that tracks the time from order placement to fulfillment.
4. The Japanese term for waste in Lean methodology.
6. A map that visually represents material and information flow in a process.
8. The Lean approach that focuses on reducing variation and improving quality.
12. A Lean principle that reduces lead time by producing only what's needed.
14. Waste caused by excessive movement of workers or products.
15. The practice of stopping production to fix defects immediately.
16. The step in Lean that focuses on error-proofing a process.

DOWN

1. The act of producing only what the customer demands, reducing excess inventory.
3. One of the seven wastes in Lean, referring to over production.
5. The Japanese term for continuous improvement.
7. The process of leveling production to balance demand and reduce waste.
8. The person responsible for ensuring smooth operations in a Lean system.
9. The overburdening of machines or people, causing inefficiencies.
10. A Lean technique to visually manage workflow and limit work-in-progress.
11. A systematic method for reducing defects and improving processes in Six Sigma.
13. A method used in Lean to maintain machines and prevent failures.

ACROSS
2. Lead Time
4. Muda
6. Value Stream Map
8. Six Sigma
12. Just In Time
14. Motion
15. Jidoka
16. Poka Yoke

DOWN
1. Pull System
3. Mura
5. Kaizen
7. Heijunka
8. Supervisor
9. Muri
10. Kanban
11. DMAIC
13. TPM

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