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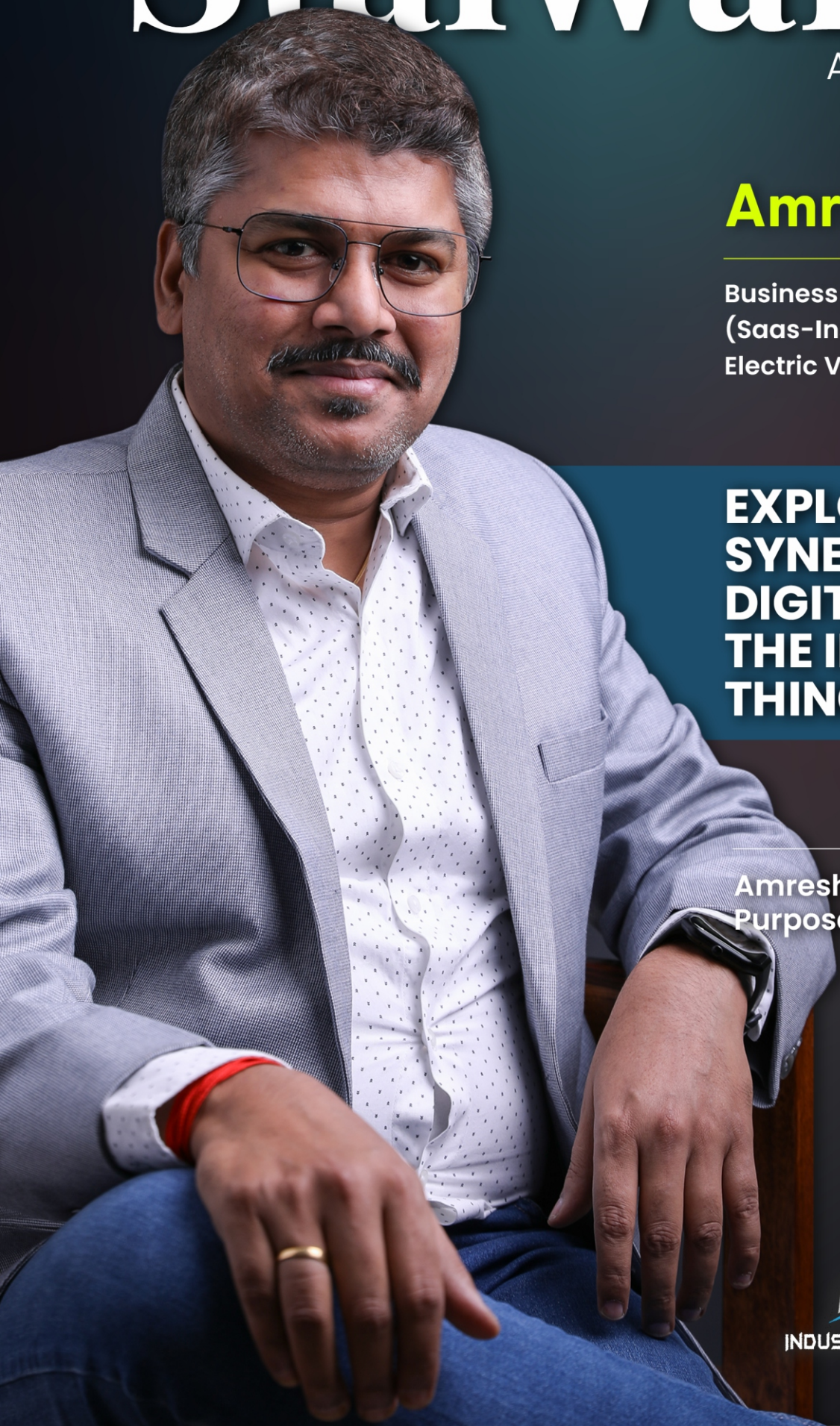

Amresh Kumar

Business Consultant
(Saas-Insurance Solutions,
Electric Vehicles, FMCG)

EXPLORING THE SYNERGY OF DIGITAL TWIN AND THE INTERNET OF THINGS

Amresh's Journey of Purpose and Impact

INDUSTRY MAGNATES

World Deuelopment Corporation
Taking The World To Its Best

Amresh Kumar is a highly skilled business consultant and sales strategy leader with nearly two decades of experience, bringing a powerful blend of skills in sales, data analytics and solution architecture. Known for driving growth, optimising operations and maintaining high governance standards, Amresh is well-suited for an Independent Director role, with a focus on maximising value and ensuring compliance with best governance practices.

As Lead Consultant at Sapiens (SaaS - Insurance Solutions), Amresh has been instrumental in business development. He successfully secured four high-value insurers globally that generated over USD 3 million in revenue annually, with overall book revenue of USD 11 million. By expertly managing the entire pre-sales cycle—including negotiations, pricing and proposals—he has maintained a 95% success rate. His role has expanded Sapiens' client base in the global insurance market, reflecting his keen insight into strategic growth and governance.

Previously, at Uniphore (SaaS - Conversational Analytics), Amresh brought a data-driven focus to sales support and software products insights and testing, significantly enhancing sales efficiency.

Prior to joining Uniphore, Amresh held a position of Manager–Data Analytics and Sales Strategy at Lithium Urban Technologies, instrumental in guiding sustainable growth and operational efficiency, aligning closely with the company's Vision and Mission goals. Amresh was instrumental in securing five major clients and generating INR 50 crore in bookings, which facilitated the expansion of the electric vehicle fleet to over 300 vehicles. His leadership in data analytics optimised over 100,000 trips and 5,000 ICE fleet size, achieving 50% operational cost efficiency through the transition to an electric vehicles (EVs) fleet. He guided corporate clients across India in achieving carbon neutrality goals, enabling the induction of EVs and reducing Carbon emissions. He also provided operability guidance to the customers on a regular basis, showing strong alignment with sustainable growth. Amresh significantly advanced the multiple organisations' Environmental, Social and Governance (ESG) goals in aligning with India's Green initiatives.

Amresh's time at Wells Fargo underscored his analytical expertise. He implemented advanced time-series models to optimise global workspace utilisation. His proactive analysis revealed significant under-utilisation in various Wells Fargo offices worldwide, identifying dormant investments that could potentially drain resources. This proactive approach aligned real estate use with actual needs, reducing costs and enhancing efficiency—a testament to his data-driven decision-making, reflecting the governance and accountability critical for a business consultant.

Amresh began his career at firms like Genpact and Symphony Services, where he honed his expertise in Six Sigma methodologies to optimise operations and reduce costs. His initiatives at Genpact in particular reduced manual labour by 35%, promoting transparency and efficiency. As a Business Analyst, he tackled critical issues for major US and German FMCG retailers and wholesalers, addressing key challenges in understanding seasonal price and product performance and resolving pricing inconsistencies. These foundational roles sharpened his analytical rigour and commitment to continuous improvement—qualities essential for the oversight and ethical responsibilities to grow into senior roles later in his career.

With a strong educational foundation, Amresh has earned an Executive Post Graduate Programme in Data Analytics from the Indian Institute of Management Rohtak, a Post Graduate Diploma in Management specialised in Financial Management from Alliance Business School and a Bachelor's degree in Business Management from Gandhi Institute of Technology and Management. Notable achievements include leading significant digital transformations, expanding electric vehicle fleets and optimising operational efficiencies, demonstrating his exceptional skills in driving organisational growth and delivering impactful results.

Amresh's commitment to continuous learning and professional growth is demonstrated through his participation in various industry events and conferences. In 2018, he represented his company at the Future Workplace Series during the iNFHRA Event in Bengaluru, where he showcased the company's Electric Vehicle (EV) offerings as a sustainable alternative to Internal Combustion Engine (ICE) vehicles. In 2018, he engaged in collaborative discussions at the Unlock Bengaluru event organised by the WRI India Ross Centre, addressing urban transportation challenges and exploring solutions to overcome bureaucratic and operational obstacles related to Electric Vehicles (EVs). Additionally, at the WHEELS 1.0 event, Amresh was invited as a panellist to discuss the role of data analytics in optimising EV operations, enhancing battery and charger efficiency and exploring related correlations.

Awarded the Presales WOW recognition in 2022, Amresh is known for his strategic insights and data-driven approach, making him a valuable prospect for board roles. Amresh Kumar's extensive expertise in several sectors, along with his profound knowledge of data analytics, solution architecture and business development, has established him as a key contributor to attaining company success.

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Electric Vehicle and the Transition to Sustainable Energy: Challenges and Opportunities

As I delve into the electric vehicle (EV) industry, I can't help but feel a sense of excitement about the ongoing shift towards sustainable energy. This transformation is profoundly influenced by remarkable advancements in battery technology, supportive government initiatives (FAME and PM E-DRIVE) and an increasing awareness among consumers about environmental issues. I've witnessed established automakers expanding their EV offerings, while innovative startups introduce fresh designs, cutting-edge technologies, battery recycle, battery swapping technologies that challenge the status quo.

A key advantage of EVs is their ability to significantly reduce carbon emissions. Unlike traditional internal combustion engine (ICE) vehicles, EVs produce zero tailpipe emissions, delivering immediate benefits in reducing air pollution and enhancing air quality.

Environmental Impact of Evs

Reflecting on the impact of transportation on our planet, it's clear that the sector has historically been a major contributor to environmental degradation, primarily due to our reliance on internal combustion engine (ICE) vehicles powered by fossil fuels. However, the emergence of electric vehicles marks a pivotal shift towards cleaner, more sustainable mobility. I appreciate how EVs align with **Environmental, Social and Governance (ESG)** principles, as they not only help reduce carbon emissions but also promote energy security and social equity.

Just one electric car can save approximately 1.5 million grams of CO2 annually, which is equivalent to removing the emissions from driving an average ICE vehicle for about 6,000 kilometres! The thought of contributing to such a positive change motivates me to consider EVs not just as vehicles, but as key players in our fight against climate change.

EV Adoption

I've come to understand that EV adoption is not merely a trend; it's one of the crucial ways for our journey toward achieving a **carbon neutrality** state, where greenhouse gas emissions are balanced by carbon removal from the atmosphere.

How does this work?

a) Zero Tailpipe Emissions: EVs produce no tailpipe emissions, which means they significantly lower the carbon footprint of road transportation. This is a game-changer for urban areas plagued by air pollution.

b) Improved Air Quality: By transitioning to electric

vehicles, we can enhance air quality and public health. This is particularly important for vulnerable populations in cities who are disproportionately affected by poor air quality.

c) Sustainable Manufacturing: I'm optimistic about advancements in battery recycling and sustainable manufacturing, which are expected to reduce lifecycle emissions significantly in the future. This means that the entire lifecycle of an EV can be more sustainable, from production to disposal.

For me, EV adoption plays a vital role in decarbonising personal mobility, public transport and commercial fleets, such as rideshare services like OLA and UBER.

One of my proudest accomplishments has been leading the transition from internal combustion engine (ICE) vehicles to electric vehicles (Evs), replacing over 500 ICE cars and reducing CO2 emissions daily by an estimated 25-28 metric tonnes. Between 2017 and 2019, I had the privilege of partnering with major organisations like Mercedes-Benz, Wipro, Accenture, Microsoft, Adobe, SAP and Citrix to integrate EVs into their employee transport services. Each of these transitions was more than just providing a new type of vehicle—it was about delivering reliable, cost-effective solutions that empowered their transportation teams to operate more efficiently and sustainably.

Convincing businesses to adopt EVs is no easy task. It goes **beyond checking a box for ESG compliance**—it's about ensuring that EVs are practical, safe and capable of seamlessly supporting daily operations without disruption. I worked hard to prove that EVs weren't just a green choice but a smart, sustainable solution that could enhance their trips productivity using analytics, route optimisation problems, telematics data, charging cycles and efficient driving behaviour will safeguard employee's safety during their commute. It's this **balance between innovation and reliability** that has made these transitions truly rewarding for me.

Social Impact: Public Health and Employment

The social implications of EV adoption resonate deeply with me, especially in urban areas where air pollution from vehicles is a pressing concern. The World Health Organisation (WHO) estimates that around 7 million premature deaths annually are linked to air pollution, much of it from vehicle emissions. By eliminating harmful tailpipe pollutants, EVs can significantly improve public health outcomes, particularly for vulnerable populations in cities.

Moreover, I see the transition to electric mobility as an opportunity for job creation across various sectors. From manufacturing and battery technology to renewable energy integration, the potential for employment growth is substantial. The International Renewable Energy Agency (IRENA) predicts that by 2030, the EV industry could create around 10 million jobs globally. This aligns perfectly with the "Social" aspect of ESG, emphasising equitable job creation and community well-being. I find it heartening to think that my choice to support EVs can contribute to job opportunities for others.

Governance: Policy Support and Industry Growth

Governments globally recognise EVs' vital role in reducing greenhouse gas emissions and are enacting policies to boost adoption. In India, the National Electric Mobility Mission Plan (NEMMP) and the Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme have established a solid EV ecosystem.

On September 11, 2024, the PM E-DRIVE scheme was introduced, allocating ₹109 billion to speed up EV adoption, focusing on two-wheelers, three-wheelers and public transport vehicles. This new scheme **was launched to address some of the issues seen in the earlier FAME phases**, like companies inappropriately claiming subsidies for imported EVs. Moving forward, compliance will be closely monitored through biannual conformity of production tests, ensuring greater transparency.

Globally, policy measures such as stricter emissions standards, EV subsidies and infrastructure investments in charging networks are helping to drive EV adoption. These policy actions not only promote environmental sustainability but also enhance Corporate Governance by requiring transparency and accountability in how businesses manage their **Environmental, Social and Governance (ESG) impacts.**

Challenges and Future Outlook

As exciting as the future of EVs is, I've also encountered several challenges firsthand. While I truly believe in their potential, I've come to understand that their environmental impact is tied closely to the energy grid they rely on.

In regions where coal is the primary source of electricity, EVs may not be as green as we hope. On top of that, the extraction of key materials like lithium, cobalt and nickel for EV batteries has raised concerns for me about ethical sourcing and the environmental toll. I'm personally committed to addressing these

issues by supporting responsible mining practices and promoting advancements in battery recycling.

From my experience, here are the key challenges that need to be tackled for EVs to become truly mainstream:

1. **Inadequate Charging Network:** I've seen how the lack of charging infrastructure can be a huge barrier, especially for large-scale operations. Building this infrastructure isn't just expensive; it takes time.
2. **Charging Speed:** One thing I've heard often from clients is how long charging times can disrupt fleet operations. It's a real challenge when productivity is the top priority.
3. **Range Anxiety:** It's something that holds a lot of people back from fully embracing EVs.
4. **Battery Degradation:** Over time, battery degradation results in a loss of range and performance, which is a tough sell when clients are expecting long-term reliability.
5. **High Initial Costs:** I've often had to reassure clients that while EVs have a higher upfront cost, the long-term savings are worth it.
6. **Charging Costs and Pricing Models:** Power costs vary by location, charger type and time of day, posing challenges for commercial operations, especially where low EV density makes profitable business models difficult.
7. **Battery Disposal and Recycling:** The question of what happens to used EV batteries is something that weighs on me, but I'm encouraged by the efforts of companies like RecycleKaro, Attero Recycling, ACE Green Recycling and similar others, who are working on solutions here in India.
8. **Regulatory and Policy Barriers:** Regulatory and Policy Barriers: Navigating changing government policies, from subsidies to emission standards, can be tricky and it sometimes leaves my clients feeling uncertain about their investment in Evs.

Final Thoughts

Reaching **carbon neutrality** is no longer just a goal; it's a necessity and decarbonising key sectors like transportation is at the heart of that mission.

EVs not only cut emissions but also integrate with renewable energy and boost energy efficiency, driving a low-carbon future. Advances in battery technology, circular economy practices and strong government policies make widespread EV adoption a key step toward **carbon neutrality** goals.

From an ESG perspective, EVs foster responsible corporate behaviour by reducing carbon footprints and supporting social equity. In India, with the **EV market set to grow at 49% CAGR** and EVs expected to make up **30% of new sales** by 2030, the future of transportation is electric, driving a more sustainable and resilient economy.

Exploring the Synergy of Digital Twin and the Internet of Things

As someone who has spent years working in the rapidly evolving world of software and technology, I have seen first-hand how innovation reshapes industries. One of the most transformative advancements I've encountered in recent years is the convergence of Digital Twins and the Internet of Things (IoT). These two technologies, when combined, have not only disrupted traditional operational models but also created new avenues for efficiency, predictive maintenance and real-time decision-making.

Understanding Digital Twins: Beyond the Buzzword

When I first encountered the term Digital Twin, I, like many others, saw it as just another flashy tech buzzword. But after seeing its real-world applications, I began to understand the true potential of DT. At its core, a **Digital Twin is a virtual replica of a physical object, system or process.** By leveraging real-time data, these digital replicas can simulate, predict and optimise performance in ways that were previously unimaginable.

In the Software industry, a company I've worked with recently integrated Digital Twins with their R&D and sales phase. They created virtual models of their software features, enabling them to monitor performance and predict failures before they occurred. In just six months, they reduced unplanned downtime by 20%, saving millions in operational costs and chances of dissatisfied customers. This isn't an abstract concept—it is a real-world success story driven by the fusion of IoT and Digital Twins.

The Marriage of IoT and Digital Twins: A Game Changer

The Internet of Things plays a critical role in bringing Digital Twins to life. IoT devices—sensors, smart metres and other connected tools—collect millions of real-time data from the physical world. Without this data, Digital Twins would be static models, limited in scope and capability.

In another project I oversaw, a transportation company used IoT sensors in their fleet of EVs to gather information on everything from driver behaviour, vehicle driving performance, battery discharge to EV charging cycles. By feeding this data into a Digital Twin model, they could predict maintenance needs and optimise delivery routes in real-time. This resulted in a 45% increase in EVs productivity and a significant reduction in vehicle slack hours.

Real-World Impact and Business Value

For board directors and business leaders, the integration of Digital Twins and IoT isn't just a technical conversation—it's a strategic imperative. According to Gartner, by 2025, 75% of organisations implementing IoT will also employ Digital Twins. Companies that have already adopted this approach report significant benefits, including:

a) Reduced maintenance costs: As seen with the manufacturing example, predictive maintenance reduces the frequency and cost of unexpected equipment failure.

b) Improved operational efficiency: Digital Twins enable organisations to optimise everything from production processes to supply chain logistics, increasing efficiency across the board.

c) Enhanced innovation: By simulating various scenarios in a risk-free digital environment, companies can test new products and strategies before implementing them in the real world.

From my perspective, organisations should look beyond short-term gains and understand the broader implications of technological advancements like Digital Twins and IoT. It's not enough to understand the technical aspects; we need to see the strategic value these innovations bring to the table.

For instance, Digital Twins can help with long-term sustainability goals. By simulating the environmental impact of different operational decisions, companies can make more informed choices about resource consumption and carbon emissions. I've seen organisations reduce their environmental footprint by 10-15% just by adopting this technology. Some could reduce their customer attrition by adopting Digital Twin technology.

The Future of Digital Twins and IoT

As I continue to witness and contribute to the growing adoption of these technologies, it's clear to me that the future holds even more promise. The **combination of Artificial Intelligence** (AI) with digital twins will likely further enhance predictive capabilities. Imagine a future where digital twins not only reflect real-world conditions but also **learn from data patterns** to make autonomous decisions, further minimising human intervention.

Moreover, the adoption of **5G technology** will bring faster data transfer and lower latency, allowing digital twins to react to IoT data almost instantaneously. This could lead to advancements in **autonomous vehicles, smart grids** and even **space exploration,** where digital twins of spacecraft could help predict issues and optimise performance in real time.

Moving Forward

As we continue to navigate a world of rapid digital transformation, I firmly believe that the synergy between IoT and Digital Twins will become even more imperative. From reducing unplanned downtime, predictive maintenance to personalised healthcare, the applications are limitless. For those of us in leadership positions, understanding and advocating for the adoption of these technologies is essential—not just for staying competitive but for driving innovation that delivers real-world value.

In conclusion, my experience in working with various industries has shown that Digital Twins, powered by IoT, are not just the future—they are the present. The businesses that successfully integrate these technologies will not only streamline operations but also unlock new levels of performance, efficiency and sustainability.

Data-Driven Governance: Elevating Our Department through Analytics and Engagement

In my professional experience, I've come to realize that the role of data in shaping our department's success is more critical than ever. Governance, which once focused solely on compliance, is now a strategic imperative and data is at its core. To stay competitive and transparent, we must harness data to make informed decisions, improve internal processes and engage employees in meaningful ways.

The Importance of Data in Governance

Data is central to governance, allowing us to make informed, real-time decisions. As of 2023, 85% of companies report that they have embarked on some form of digital transformation, with data analytics being a key pillar of these initiatives that now goes beyond compliance; it's about driving efficiency, managing risk and improving overall performance.

In my earlier organisation, we implemented a centralised data management system, which could track project performance metrics, employee hours and resource allocation. By analysing this data, we discovered inefficiencies in resource utilisation. Within six months of introducing the system, we **reduced project delays by 15%.**

Further, we identified the right Key Performance Metrics (KPMs) to measure the success, improve processes and ensure compliance. A recent Deloitte study indicates, 94% of organisations have seen a significant improvement in performance when they implemented KPM tracking systems. The most relevant are–Compliance Rates, Audit Findings, Process Efficiency.

By consistently monitoring compliance rates across various functions, we identified a gap in our vendor management system, where compliance dropped to 72%. After introducing a new data-driven tracking tool and training, compliance improved to 90% within five months.

The Role of Reporting and Analytics

I can't stress enough how reporting and analytics have changed the way we operate. Utilising descriptive statistics allows us to move beyond gut instincts and rely on hard data to make informed decisions. From tracking project milestones to forecasting future risks, **analytics give us the power to be proactive rather than reactive.**

Using time-series models, I identified a significant under-utilisation of workplace offices across our global locations for a leading US bank. By bringing this insight

to the attention of our leadership team, I was able to **highlight the issue of dormant investments, ultimately preventing unnecessary financial loss.** This proactive approach allowed us to avoid renewing costly leases for underused spaces, aligning our real estate strategy with actual usage patterns and enhancing overall operational efficiency.

In another organisation, by employing straightforward **statistical techniques and logical reasoning**, I identified **key correlations** among various factors affecting battery drainage, charging patterns and vehicle driving modes. This analysis enabled me to derive a coefficient for transmission loss and real-time power usage. As a result, I was able to create a compelling sales proposition that accurately aligned theoretical expectations with on-ground performance, significantly enhancing our company's credibility and effectiveness.

Internal Process Auditing

Internal audits have become one of the most effective tools for ensuring our department runs smoothly. By regularly auditing our processes, we can identify inefficiencies, fix compliance issues and continuously improve our governance practices.

In one of my earlier processes, we relied on manual ways for internal audits, which resulted in a 12% error rate in our reporting and caused delays in identifying key issues. After automating the auditing process using timely data capture, Excel automation and integrated software, we reduced the error rate to just 2%. Moreover, the time required to complete our internal audits decreased by **35%,** allowing us to address compliance issues much faster and prevent them from escalating.

Process Improvements through Automation

Automation can significantly enhance governance processes by improving accuracy, reducing manual effort and accelerating reporting.

An e-commerce platform faced challenges with order processing times, impacting customer satisfaction. It automated their order management system and later improved order fulfilment speed by 50% and reduced errors by 40%. This automation led to a notable increase in customer satisfaction scores, reflecting the positive impact of data-driven process improvements.

My Personal Experience with Process Improvement:

One notable project involved utilising **Six Sigma methodology** to streamline our data release process. By applying **DMAIC methodology**, I successfully reduced our data release time by 24 hours. This change translated into cutting down 6,200 man-hours annually, resulting in a **cost reduction of ₹1.9 million per year.** This improvement not only enhanced our department's operational efficiency but also underscored the value of data-driven methodologies in achieving tangible results.

People Engagement and Culture

While data and automation have been key to improving our governance, I've learned that the real success comes from people. According to Gallup, organisations with **highly engaged employees see a 21% increase in profitability** and governance is no exception to this rule. Engaging employees in governance initiatives fosters a culture of accountability and enhances data literacy across the organisation.

A consulting firm initiated an internal campaign to promote data literacy among its employees. By providing training sessions and resources on data governance, they enhanced employees' understanding of data's role in decision-making. As a result, employees reported a 30% increase in confidence when utilising data for their projects, leading to improved project outcomes and governance.

Call to Action:

From my experience, it's clear that data, reporting, internal process auditing and governance are no longer just compliance requirements—they are essential drivers of success. By leveraging data-driven strategies, automating processes and fostering a culture of employee engagement, we've achieved tangible improvements in efficiency, compliance and performance.

I urge my peers to embrace data and analytics, automation and employee engagement as foundational pillars for governance. By doing so, we can achieve not only regulatory compliance but also operational excellence, driving our organisations forward in an increasingly competitive environment.