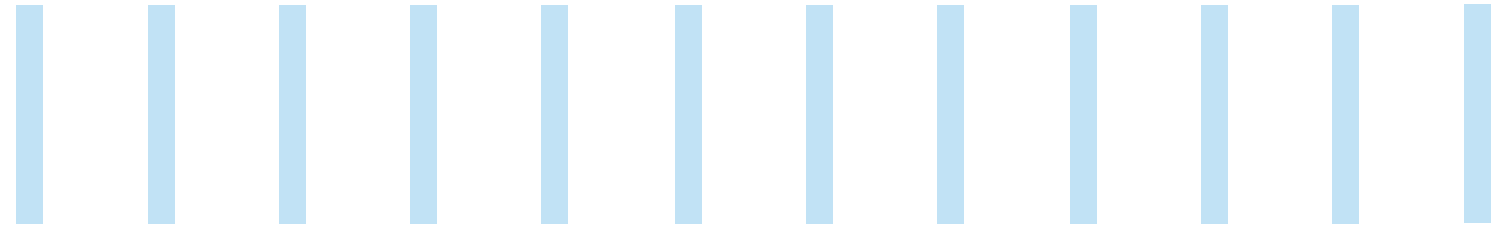# ENHANCING BUSINESS EFFICIENCY WITH AI AND ENGINEERING DATA ANALYTICS

Over the last decade or so, it's been hard to miss the massive explosion of **intelligent machines** around us. Be it the once innocent toothbrush or television sets or your vehicle; everything is becoming intelligent, primarily by capturing more data for improved efficiencies. Now the stage is set to make them a lot smarter by using Artificial Intelligence (AI).

This wave is further intensified by organizations pursuing the vision of **Industry 4.0** to allow for the capture of **real-time data** by amalgamating data from various sources like machines, devices, and sensors. However, just because there is an increasing pool of data available for organizations to tap into, doesn't necessarily imply that they are able to fully utilize it to bring in additional efficiencies or improve customer experience.

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A recent study by Greyhound Research, a leading global analyst firm, reflects the same. While 93% of respondent organizations currently capture machine data, only 62% are able to use this data to achieve improvement in engineering asset productivity in terms of operational, maintenance, and energy efficiency. Alarmingly, a majority - 82% - struggle to translate machine data into improved customer experiences. This holds true especially for verticals like aerospace, automotive, heavy engineering, manufacturing, and energy which demand high accuracy for decision-making.

FINDING THE SECRET OF SUCCESS (OR FAILURE)

Engineering data analytics, combined with AI, can potentially provide a solution by helping overcome complex engineering challenges.

An **automotive component supplier,** an Infosys client, was running various programs with their OEMs. Several factors affected the success or failure of the programs, such as quality, safety, delivery or finance issues. Identifying the reasons for failure, and parameters that indicated the issues before they happened, was important so that corrective measures could be taken in advance.

Infosys helps clients solve such complex problems through **engineering analytics services,** which bring together the best of the engineering domain and data science expertise to infer knowledge from engineering data, thereby **improving asset efficiencies.** From an Industry 4.0 perspective, with Infosys' engineering data analytics and AI, a client can achieve **20-25% higher operational efficiency**, a 20-40% extension in equipment lifetime, with 5-10% lower business expenditure.

3-PHASE SOLUTION

We did a **Proof of Concept** for the automobile component supplier. As a first step, we zeroed in on the data collected from previous sample launches, which took place before the actual production for the OEMs, as our key data set. The client categorized their programs with different OEMs into 4 categories based on the program complexity and whether the design was already done or not.

We followed a 3-phased solution approach. In the first phase, we inspected the data and found that the simplest and most complex programs did well, contrary to the belief that easier programs always go well compared to the complex ones. Next, using a **word cloud,** we analyzed the reasons for programs doing well or not, and identified common occurrences, helping us reach conclusions on the different causes.

In the second phase, the Infosys team **analyzed the financial data** from previous program launches - budget allocations, budget splits, actual expenses, and budget exceed instances, while in the third, we examined all **Engineering Change Request (ECR) and service history data** for employees from different functions, to check the influence of engineering changes and experience levels of different functions, on program success. From both, we identified indicative issues.

Based on the criteria we studied and inferences made, we developed an analytics dashboard with 30-40 reports, to enable a deep dive to analyze data based on different criteria. For phase one and two, Infosys used R Shiny, an open source tool, to develop an analytics dashboard. For phase three, to align with the client's overall digital strategy, we did the analytics and developed the dashboard on Microsoft Power BI. The dashboard and our recommendations enabled the client to derive valuable insights to implement changes to program structure and financial prudence required to improve overall program success, and ensure quality of the product and on-time delivery.

ENHANCING BUSINESS EFFICIENCY WITH AI AND ENGINEERING DATA ANALYTICS: THE FIVE TAKEAWAYS

1 **Strategize** to capture new forms of data and use existing data

2 **Identify** patterns from historical data to gain insights

3 **Define** metrics that have a direct business impact

4 **Find** the root cause of the problem with analytics through AI/Machine Learning

5 **Implement** prescriptive analytics to guide customer on what they should do to reduce the issue or failures

BIG LEARNING:

Engineering Data Analytics is going beyond the traditional realms of simplistic **operational efficiency.** Advancements in AI are allowing organizations to use algorithms attuned to their needs to infer data in real time. The need of the hour is for organizations to overcome existing challenges and mindsets to find newer ways to collect and utilize data, allowing them to **understand the impact in real time** and work towards delivering **enhanced customer experiences.**

WE DID THIS FOR THEM.
WE CAN DO IT FOR YOU.

To learn how engineering data analytics and AI can help your organization, reach out to us at askus@infosys.com

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