

## AI for Data Analysis on Profitability & Margin

AI tools can be used to analyse historical data from both the organisation and external sources to provide insight into the performance, commercial and customer trends of the organisation and build models to optimise key organisation and production metrics. By analysing historical data, real-time sensor data, and other relevant variables, AI and machine learning (ML) algorithms can identify patterns, detect anomalies, and make data-driven predictions. This enables manufacturers to optimise their operations, minimise downtime, and maximize overall equipment effectiveness to drive optimal margin and profitability.

| Pros  | Cons   |
|---|--|
| <ul style="list-style-type: none"> <li>• Simple models can be low effort and cost to implement</li> <li>• Predictive modelling improves decision effectiveness by providing evidence-based insight for key decisions</li> </ul> | <ul style="list-style-type: none"> <li>• Relies on access to quality data to generate meaningful insight</li> <li>• Complex models require specialist skillsets to develop and maintain</li> <li>• Requires a data-driven organisation culture to ensure trust and adoption</li> </ul> |

**Technology Cost range:** \$0 - \$100,000 depending on the complexity of the use case, integration requirements and complexity of the AI/ML algorithm.

**DMC Technology Cost:** \$0

**DMC Cost Assumptions:**

- Limited to free/low-cost AI tools such as ChatGPT
- Limited to use with existing data sources (i.e. no tech adoption required)
- Implementation is completed in-house without the need for external (paid) support

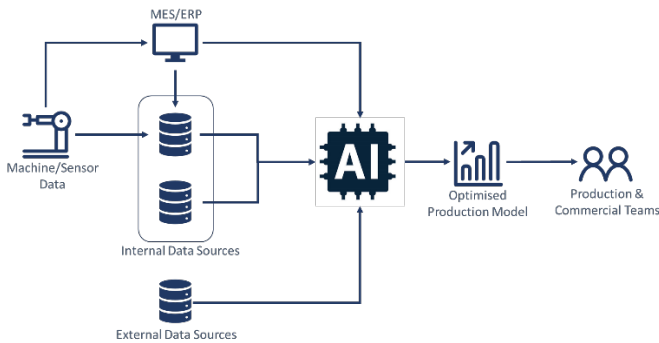
**What situation would this technology usually be adopted in?** Optimising production efficiency through scenario modelling of key production levers such as production planning and scheduling, inventory and finished goods stock holdings, workforce planning and demand forecasting to forecast total cost of production and optimise margin.

**RoI Considerations:** The opportunity cost of employees' time spent on implementation. The quality of the insight generated (based on the quality of the source data). Business process changes, model development and maintenance and training costs.

**What skills are required to implement & run this tech?** AI prompt design, data analysis and presentation, IT/data systems engineering

**Pre-requisites for successful adoption:** Problem definition, operational and commercial technical proficiency, data analysis

**Typical Tech Stack**



|   |   |
|---|---|
| <b>Inputs</b><br>Organisation & External Data             | Data is collected from the organisation's internal systems, including production data, commercial data, inventory data and customer data. Data is also collected from external sources where required, including customer demand data, economic data and demographic data |
| <b>Action</b><br>AI/ML Data analysis algorithm            | Prompts are designed to guide the AI tools analysis of the input data for historical trends and to develop an algorithm for production plan optimisation  |
| <b>Integration</b><br>Organisation systems & data sources | The AI tools require information from multiple data sources either as a live/batch feed of a 'one-off' extract. For live/batch data, integration to data sources (e.g. MES) may be required   |
| <b>Output</b><br>Production optimisation model            | The AI algorithm develops an optimal production plan based on analysis of input data  |

**Who can help with this technology?**

- AI algorithm design specialists
- Data and technology integrators
- Digital manufacturing specialists

**What to google when researching this technology?**

- 'Apply AI for manufacturing optimisation'
- 'AI/ML in manufacturing'
- 'Generative AI in manufacturing'