Purchasing & Sales
3. Year of the Ph.D.

# Artificial intelligence in procurement
# From a case study of total cost of ownership, to a literature review and a digital twin model

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## Motivation

Artificial intelligence (AI) and machine learning (ML) techniques are **recently starting to emerge** in **procurement theory and practice** worldwide.

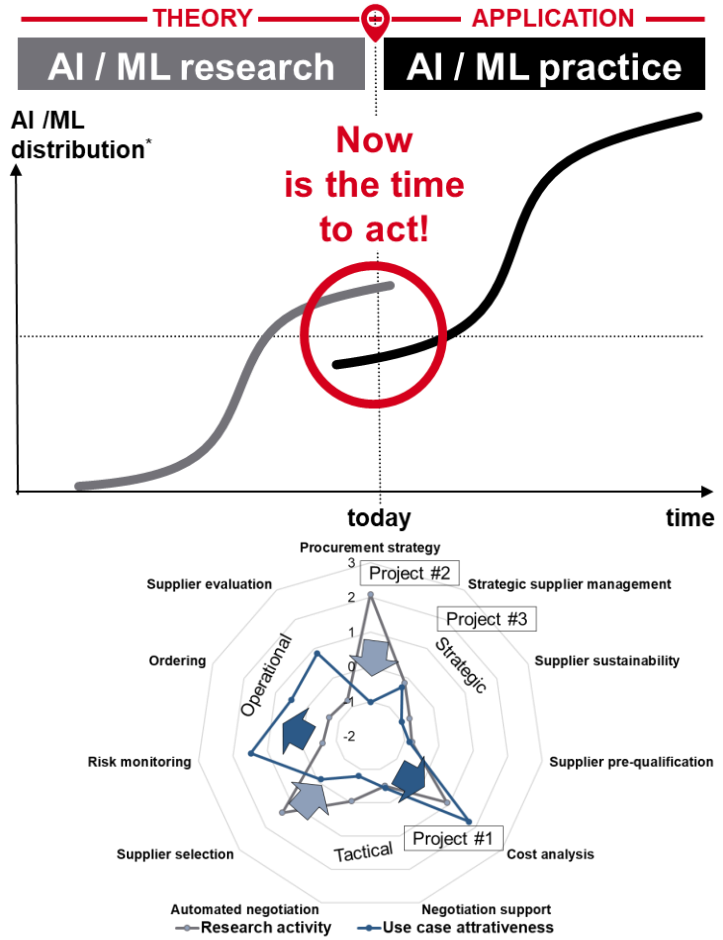
→**Identify and create further potentials** for cost savings utilizing AI and ML techniques

→Provide better foundation for **data-driven decision-making** creating tangible value for VW

## Contribution

In **alignment with the Strategy 2030**, VW Group purchasing can be recognized as **innovation leader**, utilizing the **full potential** of digitization **catching up with our negotiation partners in sales** functions.

**Use cases of AI in procurement** are identified, structured, and **simply tried out** in this Ph.D. project. **What works can be scaled** within the VW Group, if not that can be found out **early without great costs**.




*Normalized in standard deviations*

## Methodology

**Project #1**, a case study was conducted with data from **different life-cycle phases** to **predict total cost** of ownership highlighting the potential of AI in the procurement function at an concrete example.

**Project #2**, a literature review was conducted to **summarize the state-of-the-art enriched with practical ideas**. 210 publications were identified, described and classified based on the strategic, tactical and operational level of procurement and based on the ACM computing classification system.

The resulting 11 clusters were discussed and accessed by 20 experts of the procurement domain and information technology within and outside the VW Group **comparing the research activities with use case attractiveness highlighting cost analysis.**

**Project #3**, a simulation study is set up to **model the procurement organization** and process flow as **digital twin utilizing a bundling generator** as module to propose bundling options across the organization.



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