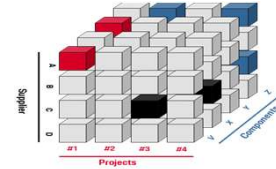


Concept artificial intelligence enabled bundling generator



Research question: How to design a module to effectively and efficiently bundle tenders?

A recommender system is drafted that takes as input the sourcing planning in different formats across the organization and generates recommendations to bundle similar requisitions, continuously learning through feedback through supervised learning.

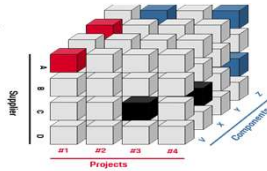
The bundling generator can visibly increase the plannability and transparency of bundling options making the cost reduction potential visible to the stakeholders. Not only could further cost reductions be achieved but also the sourcing planning process be improved as better input data leads to better suggestions through continuous improvement. For instance, the Finnish analytics provider Sievo uses natural language processing to categorize spend in order to identify further savings opportunities.

Reverse marketing 😊

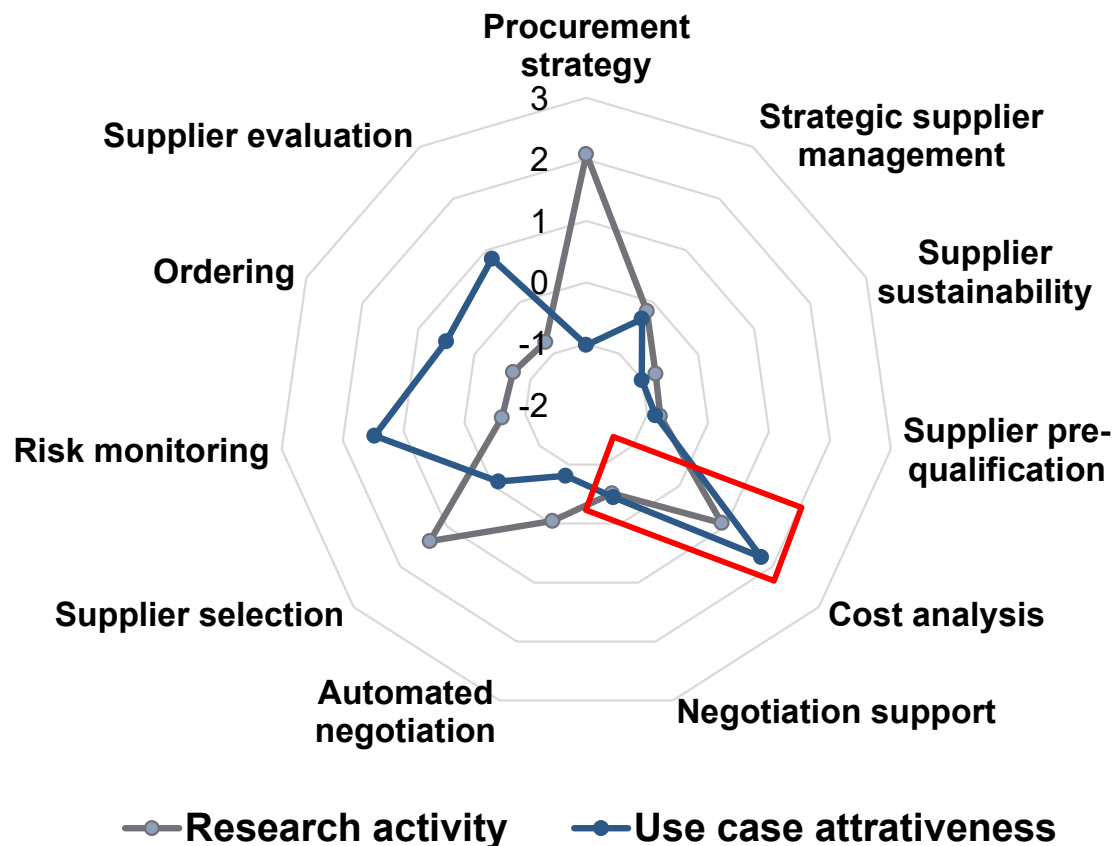


Sources: Nougues and Rousselle, 2018, Sammalkorpi and Teppala, 2019, Enthoven, 2020.

Literature artificial intelligence and the bundling case study



Normalized in standard deviations



In a literature review of AI and ML in procurement presented at IPSERA 2021, research activity and use case attractiveness have been matched (left).

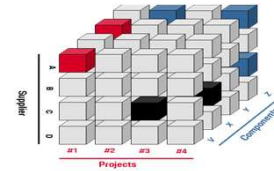
Based on this analysis, in connection with practical needs within the Volkswagen Group this concept has been set up.

The bundling problem itself is not new, it has been described as the starting point of procurement organization. Nevertheless, even minor improvements in cost analysis and negotiation support may save millions to the financial bottom line.

Source: Pal et al., 2017, Spreitzenbarth et al., 2021a.

Overview of the case study approach

Objective: Design and evaluate a working bundling generator prototype



1. Generating options, e.g. through Word2Vec similarity analysis

Dimension	Logic
Project	In the #1 project, there is a joint supplier A for components V and Y
Supplier	For supplier C, awards are pending in the #3 project with component V and the #4 project with part X
Component	For component Z, awards are pending for projects #2 and #4. There is additional potential as there is a common supplier A for two tenders

2. Assessing bundling options, e.g. through factor machines

Project: 85 % likelihood with a potential of 800.000 €

Supplier: 20 % likelihood with a potential of 600.000 €

Component: 98 % likelihood with a potential of 550.000 €

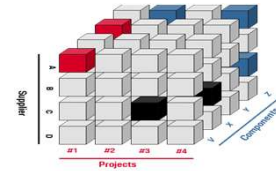


3. Continuously learning, e.g. through logistic regression

Feedback of options and results

Source: Spreitzenbarth et al., 2021b.

Available data and intended next steps of the study

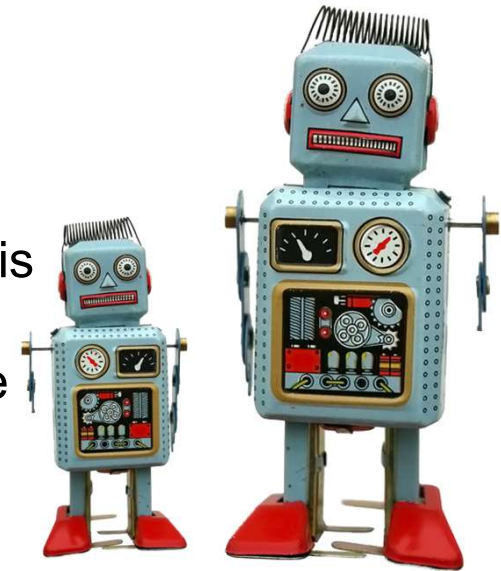


About two to three thousand requisitions per quarter in a structured table of an entity within the Volkswagen Group with some missing data points since the start of 2021:

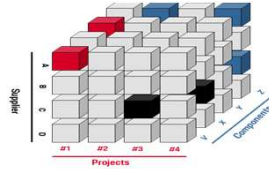
- Mainly textual information with free-time descriptions
- Figures with financial and temporal factors
- Categories such as purchasing units, approvals, budget container

Next steps for this research project

- Design a prototype based on the concept with support of a master thesis
- Apply in real-business context to validate the business case
- Continuous improvement of data collection according to the need of the model and the overall organization



Questions for discussion and potential contribution



Questions for discussion

- What interested you most? Where do you see the highest potential?
- Where do you see connections with your own research?
- Which related works, theories and concepts do you know and would recommend to investigate further?

Potential contribution

- Expanded method for solving the challenge of bundling requisitions
- Practical way to generate more savings and expand on existing solutions to prioritize and level procurement spend

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