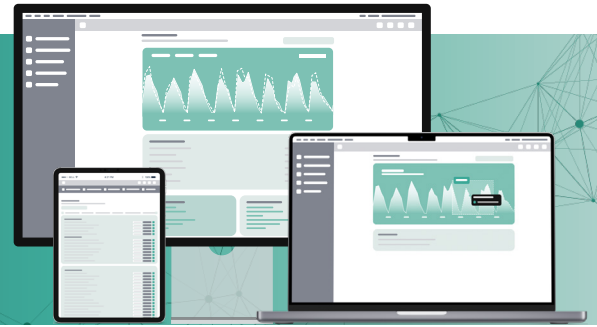


Optimising the supply chain and resource utilisation of a retail company



Executive Summary

In 2019 the retail sector generated 121 million tonnes of global food waste.¹ Wasting food not only has a negative impact on the environment, it also comes with substantial financial downsides. Inaccurately planned resources, supplies and supply chains are diminishing operating margins. Slow-moving products significantly reduce the turnover per sales area („return on space“). Excess stocks and product bottlenecks often lead to financial impacts. Circly has created a solution to enable retail companies to be environmentally friendly and sustainable while improving profit margins. Utilising Circly's predictive AI (artificial intelligence) solution, the high level of accuracy of sales predictions enable precise planning of resources, resulting in increased shelf availability, reducing excess inventories, stock-outs and food waste.

Key Points

-  Supply Chain optimisation for retail companies
-  Standardisation of data structure and transmission
-  Sales forecasting through AI
-  Waste reduction and financial upsides

Challenge

Circly's challenge was to optimise and enhance the retail company's existing supply chain planning process. Prior methods consisted of manual efforts, analysing sales figures through Excel files and statistical planning of future demands and required resources. Due to this manual approach, human resources and product planning was not optimally predicted resulting in inefficiencies, causing negative impacts to financials.

Implementation

An essential part of optimising is understanding and connect existing processes. Operational planning is dependent on demands and a large variety of factors, ranging from product portfolio to order quantities, sales data, price variations, discount etc.

After analysing the existing system and its processes, suitable machine learning concepts were selected, implemented and trained with existing data. The data is composed of internal and external regressors that influence demand and forecasting. Internal factors include sales data and product groups, while external factors include weather data or public holidays. The challenge was to also address COVID-19 impacts and extract useful information from it. During the implementation of the system Circly encountered several efficiency gaps, which were addressed and corrected.

¹ U. N. Environment, 'UNEP Food Waste Index Report 2021', UNEP - UN Environment Programme, Mar. 04, 2021. <http://www.unep.org/resources/report/unep-food-waste-index-report-2021> (accessed Sep. 16, 2021).

Circly's first aim was to implement consistent data structures and transfer enabling the models to simplify and optimise sales forecasting. In doing so many manual processes were partially automated, while considering employee concerns. The implementation of a fully automated AI system is a gradual process, as the trust in this technology needs to be gained and the new process logic has to be understood. However, the ultimate goal is to implement a fully automated interface to the existing system. This will optimise resource planning, minimise food waste and workload distribution of personnel through standardized processes.

Results



- Reduction of food waste
- Resource reduction through accurate planning
- Sustainable supply chain management



- Standardized system allowing optimised workload distribution
- Increased efficiency
- Reduction of redundant work processes



- Reduced stock vacancy or overstocking
- Space optimisation for higher turnover per sales area
- Operating cost reduction through elimination of shortages and surpluses
- Improved reliability of the supply chain



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