Applying Data Science to Maximize On-Shelf Availability and Increase Sales

Alert System   Set of Rules   Forecast Sales

Customer

A leading food-retailer with supermarkets throughout Europe and CIS

Industry

Retail

Challenge

A solution that could instantly notify staff when a product becomes absent from a shelf, maximizing the on-shelf availability (OSA) of

Identified
Problem

Our Client faced increasing number of
customer complaints and dissatisfaction
with available products on-shelf
and decreasing average check amount

Business Challenge

▶ A solution that could instantly notify staff when a product becomes absent from a shelf, allowing OSA issues to be quickly resolved

▶ Improve customer satisfaction and average check amount by maximizing the on-shelf availability (OSA) of products

Solution

Use innovative technological methods
to decrease or eliminate time of product
unavailability on the shelves

Main task was to define a set of rules
which would act as part of an alert system
to notify staff at a store when product
inventory on-shelf is low or when a shelf becomes empty.
Alerts based on purchase information from cash desks
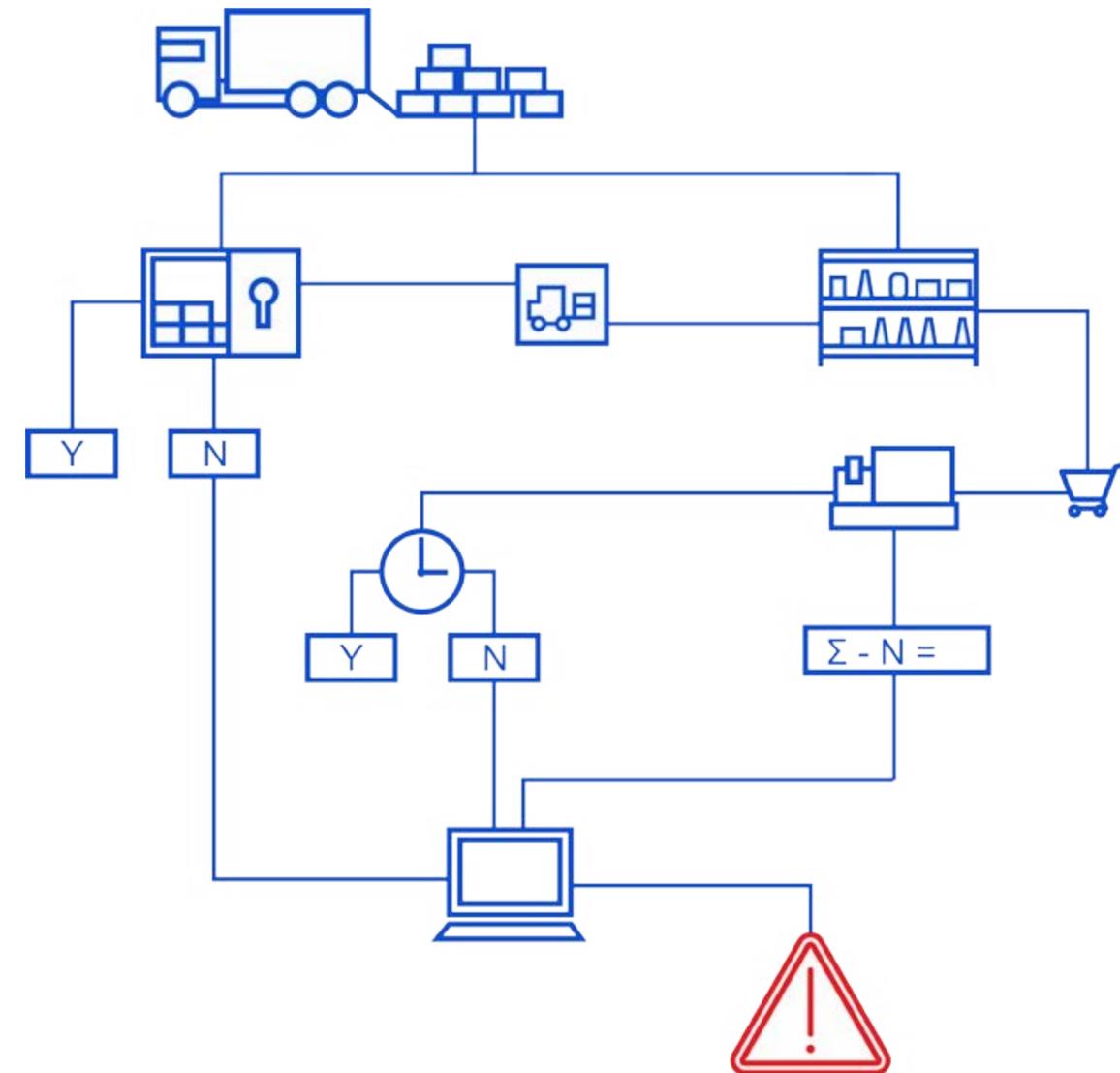
How We did it
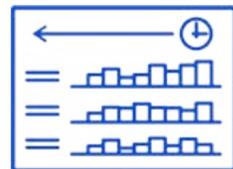
Historical
data analysis

Define the rules
for alert system
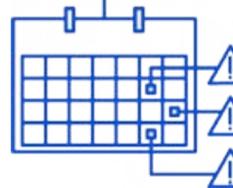
Forecast
sales + Out-Of-Shelf situations

Ensure every product
a customer wants to buy
is available every time
a consumer wants to purchase it

Alert-system Rules Concept

Product clusterization regarding their level of demand
in different dimensions, such as latency, volatility, and
share of presence in the overall amount of store checkouts

Data Mining technique: Rules Mining

Data source: information regarding checkouts
and customer baskets from the previous year

Data set: 2 billion records

Database for data storing: Cassandra

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For example,
if a product was purchased frequently
and continuously,
and its purchase does not depend
on a season and isn't absent
in a checkout for 15 minutes,
it is likely to be out of shelf
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System Testing

79% of all alerts were true leading to a positive resolution of the OOS problem

every
6–9
months system should be re-trained according to test result conclusion

A set of tests applied to the systems:

System Integrity
ratio of false to true alerts

System Latency
time required to decide on a ruleand signal an alert

System Lifecycle

Business Benefits

up to
6%
Increase in revenue
for specific product groups

up to
11%
Significantly improved
on-shelf goods availability

Choose the most profitable
and beneficial vendors

Expand product selection
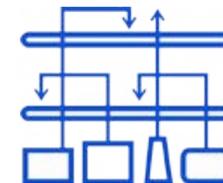
Reformulate supermarket
merchandising system
and product placement

Success Factors

- Applying innovative approach to classical challenge

- Rules Mining as a Data Mining Technique

- Comprehensive testing approach

- Regular model re-training with new data

About

Named a Top 100 Global Outsourcing Company, ELEKS is a global organization providing software engineering, technology consulting and quality assurance services.

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Contact us

ELEKS Headquarters

Eleks, Ltd.
7 Naukova St., Building G
Lviv 79060, Ukraine
phone: +380 32 297-1251
fax: +380 32 244-7002

UK Office

ELEKS Software UK, Ltd.
5 Harbour Exchange
South Quay
London, E14 9GE
phone: +44 203 318-1274

Find us at **eleks.com**
Have a question? Write to **eleksinfo@eleks.com**