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Case Study ||

In-Database Analytics with EXASOL: Unlocking Big Data Potential in E-Commerce

Management Summary

Keywords

✓ Online shopping ✓ Market basket analysis ✓ Data analysis using R ✓ Talend
✓ E-commerce ✓ Customer migration ✓ EXASOL ✓ Tableau ✓ Sales analysis

Objectives

- ✓ Automatic analysis of data from online shops
- ✓ Optimization of supply and the customer journey
- ✓ Detailed analysis of customer behavior in online shops

Approach

- ✓ Statistical data analysis using R
- ✓ Managing automated processes using Talend
- ✓ Storage and analysis of information using an EXASOL in-memory database
- ✓ Creating meaningful dashboards using Tableau

Results

- ✓ Statistical analyses are available automatically on the key date
- ✓ Manual data aggregation is no longer necessary
- ✓ Analyses can be created and modified at any time
- ✓ Intelligent analyses are also possible with big data
- ✓ Overview of results at the touch of a button

Statistics replace chitchat

Many webshops are trying to turn online shopping into a leisure experience. Apart from an attractive product range, easy navigation through the online shop is key. But how can navigation be optimized? In contrast to going shopping in real life, online shops lack one-on-one conversations with shop assistants. Instead, agencies and online shop operators track the movements of customers in the shop and analyze them systematically to identify malfunctions and optimize the future shopping experience. As a result, many questions remain unanswered for online shop operators:

- ⌐ Why do customers place items in their shopping cart and end up not purchasing them after all?
- ⌐ Was it due to the process or did they simply like another product more?
- ⌐ What impact does a customer's sudden departure from a detail page have – in other words, what revenue did the company miss out on?
- ⌐ What differences are there in customer behavior for different product groups, customer types, and product ranges?
- ⌐ How do the numbers compare with the previous year?
- ⌐ Did any technical errors occur? Were all the pages accessible all the time?

Webshop employees often spend several days every month just evaluating data. That's why, an innovative e-commerce company searched for a timesaving and flexible solution. Data scientists and big data architects from mayato were called in to develop a tailored concept and implemented a fully automated solution that combines powerful software tools and optimally exploits the strengths of each component.

Automated replaces manual

The company's main goal was to completely automate the data preparation processes. Up until this point, data preparation involved several manual activities, starting with the monthly extraction of the relevant data from the EXASOL database, where all essential webshop operations are stored. The extraction was performed using an SQL script, which transferred the data into csv format. These files were then imported into the statistical analysis software R, where the data was processed with several scripts. Next, the results were transferred back into the EXASOL database, where they were subsequently visualized with Tableau. Each step was carried out manually. What's more, the company couldn't take advantage of the huge performance potential of the EXASOL in-memory-database, because processing took place outside it and data had to be transferred between the different tools several times.
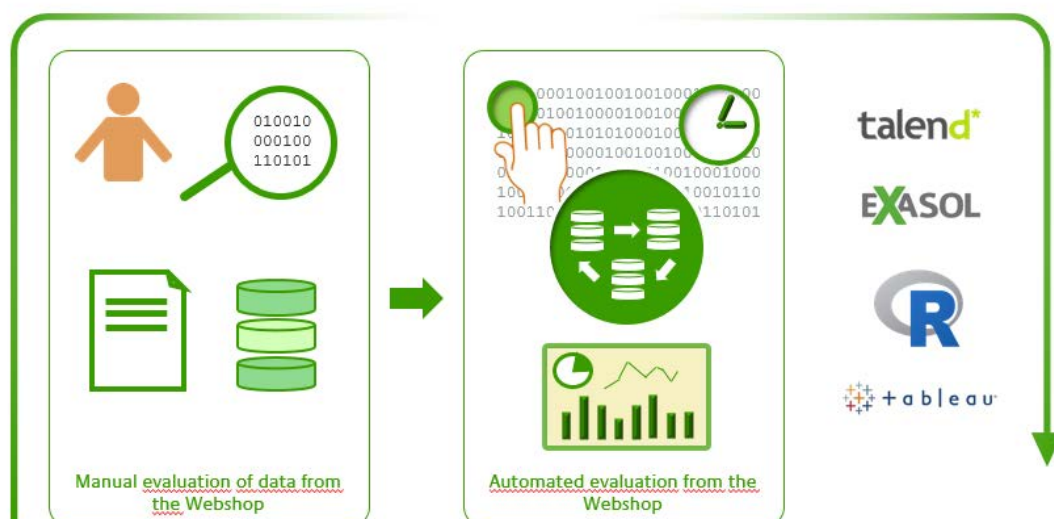
However, with EXASOL, you can run R code internally in the database, and therefore benefit not only from the main memory's processing speed, but also from parallelization in the database. These were precisely the functionalities the mayato experts used. For the existing processing logic to be adopted, it had to be adjusted slightly for use within the database. Essentially, this involved transferring interim steps based on file formats to database tables. In addition, existing algorithms had to be adapted in some places to ensure parallelization capability.

"The integration of the different software tools works very smoothly and provides enormous added value for the customer."

Annkathrin Wagner
Team Lead
mayato GmbH

The logic, now completely mapped in R code in database scripts, can be controlled with scheduling tools from the outside. In the project in question, the company was already using Talend for controlling and monitoring loads. It therefore made sense to schedule the integrated R logic using Talend processes, too. Jobs are now fully automated – time-controlled or synchronized with the arrival of new data – so that analysts regularly receive updated data on their Tableau dashboards with no human intervention. If an error occurs at any time in the webshop or if customers display unusual behavior, evaluations can be created automatically at the push of a button.

Because the solution only uses standard technologies and skills that already exist within the company, it can be easily updated at any time – a great advantage, since webshops change often and need revising fast. Furthermore, the power of the EXASOL technology can be exploited to the full, ensuring high-speed processing and scalability, even with huge volumes of data. In-database analytics increases performance many times over. Where it used to be several days before

users could perform all the statistical analyses in Tableau, they can now – since the implementation of the mayato solution – produce them just two hours after new data is received.

"By integrating analytical R processes into EXASOL and automating them using Talend, business and IT departments save a considerable amount of time and effort, become much faster, and are provided with more ways to respond. This is a fine example of how modern technology creates competitive advantage."

Dr. Marcus Dill
Geschäftsführer
mayato GmbH

About mayato

mayato GmbH empowers companies to capitalize on their information. Together with our customers, we develop and implement solutions in the areas of customer analytics, industry analytics, IT operations analytics and financial analytics.

A team of experienced process and technology consultants operates out of our offices in Berlin, Bielefeld, Mannheim, and Vienna. They analyze and optimize your business processes and work with you to determine the requirements for technical implementation. They assist you in selecting the right tools, develop successful strategies, and conceptualize tried-and-true modern architectures. And of course, mayato consultants also help with the practical side of implementing your chosen solutions. Technical standards and governance enable economical, effective projects and efficient operations in the long term.

Analysts and data scientists from mayato use these solutions on your behalf to establish connections between data from many different sources and to forecast trends and events. They devise convincing business cases and produce tangible monetary benefit from your processes and applications. Your employees learn how to use state-of-the-art data analysis methods, how to tackle data quality issues, and how to interpret and visualize results. Working with mayato future-proofs your company for the age of big data.

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