

## Addressing Omni-Channel Challenges in Retail Logistics with SAP-Introduction to SAP CAR (Customer Activity Repository)

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### ABSTRACT

In the dynamic landscape of retail, the advent of omni-channel commerce has revolutionized the way consumers interact with brands and make purchases. With the proliferation of online shopping, mobile commerce, and traditional brick-and-mortar stores, retailers are facing unprecedented challenges in managing their logistics operations efficiently across multiple channels. This paper explores how SAP (Systems, Applications, and Products) solutions can address the complex logistics challenges inherent in omni-channel retail environments.

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### Introduction

The rise of omni-channel retailing has blurred the lines between physical and digital commerce, presenting both opportunities and challenges for retailers worldwide. One of the key challenges lies in managing the intricate logistics involved in fulfilling orders seamlessly across various channels while maintaining high levels of customer satisfaction. This paper aims to delve into the specific challenges faced by retailers in the realm of omni-channel logistics and elucidate how SAP solutions can offer comprehensive support in overcoming these hurdles.

### Literature

Omnichannel logistics refers to a strategy for delivering products bought through various sales channels to consumers. This approach ensures a smooth and unified shopping experience across all available platforms, such as online, mobile, in-store, and others. The objective of omnichannel delivery is to establish a uniform and personalized experience for customers, regardless of the channel they opt to utilize for their shopping needs [1].

Omnichannel logistics coordinates inventory, logistics, and distribution across various sales channels to fulfill consumer demand effectively. This comprehensive approach involves every aspect of the supply chain, including the retailer, manufacturer, distributor, and wholesaler. Through omnichannel logistics, sales and shipments are optimized for efficiency. For instance, consider this scenario: A customer places an order for a product on your website. Although your distribution center is located hundreds of miles away, you have a retail store in the customer's hometown that carries the same product. Instead of shipping the item from the distant distribution center, it's packaged and dispatched from the nearby store. This process ensures that your inventory remains

synchronized across all channels, while the customer receives their order promptly.

### Omni Channel and Supply Chain Management Challenges

While omnichannel logistics enables companies to synchronize inventory flow across sales channels, supply chain management presents several challenges:

**Lack of Inventory Visibility:** During peak periods like holidays, tracking inventory spread across multiple distribution centers and retail locations becomes challenging. Efficient order fulfillment systems and accurate inventory visibility are essential to meet promises like next-day delivery. Employing the right metrics to track efficiency and cost effectiveness throughout the distribution network is crucial.

**Lack of Inventory Transit Visibility:** Often, shippers can't track shipments from distribution centers to customers until they reach the post office or doorstep. Enhancing data and communication exchange and utilizing machine learning to improve predictive capabilities are vital for accurate delivery time predictions.

**Disconnected Supply Chain Processes:** When warehouses and distribution centers operate on different systems, communication breakdowns weaken the supply chain's overall strength. Ensuring that every link in the supply chain is connected is imperative for seamless operations.

**Inefficient Order Processing:** Reliable and efficient order fulfillment processes are essential, particularly when promising next-day delivery.

**Wrong Shipping Solutions:** Different shipping options exist, and choosing the appropriate one for each customer is crucial for customer satisfaction.

**Inefficient Return Logistics:** Offering hassle-free returns is crucial for retaining customers. In an omnichannel landscape, customers should be able to return online purchases to brick-and-mortar stores seamlessly.

**Manual Inventory Management Processes:** Manual paper-based processes are prone to errors. Implementing automated inventory management solutions such as RFID tags and barcode scanning systems is necessary to minimize errors.

**Wrong Choice of Third-Party Logistics (3PL) Provider:** Partnering with the right 3PL is vital for inventory optimization and omnichannel fulfillment. Choosing an incompetent 3PL can lead to detrimental results. A competent 3PL understands the appropriate metrics for driving continuous improvement and plays a crucial role in ensuring a successful and efficient supply chain.

### Solution to Achieve Omnichannel Logistics

Effective omnichannel supply chain management and logistics aim to deliver consumers a seamless and satisfying shopping experience, especially for companies operating both brick-and-mortar stores and e-commerce distribution centers. Choosing the right technology solutions that prioritize accuracy, speed, and convenience is crucial for achieving positive outcomes and mitigating the challenges outlined earlier. By partnering with appropriate technologies, companies can streamline operations, enhance customer satisfaction, and navigate the complexities of omnichannel retailing successfully.

To tackle these challenges of omnichannel retailing, SAP (Systems, Applications, and Programming) software offers a solution in the form of the Customer Activity Repository (CAR), a robust data platform. CAR enables the gathering, processing, and storage of various types of data, including customer, transactional, product, and inventory data. Whether deployed on-premises or in the cloud, SAP CAR ensures seamless deployment. Powered by SAP HANA in-memory technology, SAP CAR collects data from point-of-sale (POS) systems and other channels, storing it in a centralized data repository. This data can then be leveraged for analytics generation, inventory tracking, demand forecasting, and more [2]. One of the key advantages of SAP CAR is its capability for real-time data collection and analysis, enabling businesses to make timely and informed decisions to address omnichannel challenges effectively.

SAP CAR, or Customer Activity Repository, is a component within the SAP Retail suite designed to gather, analyze, and process customer-related data from diverse sources. It empowers retailers with real-time insights into customer behavior, enabling informed decision-making. Integrated with various SAP modules such as SAP ERP (including IS Retail, FMS, S/4 HANA), CRM (Hybris), and ARIBA, SAP CAR can also interface with third-party ERP solutions. It forms part of the CAR application bundle (CARAB), which includes additional applications like Assortment Planning and PMR. It's worth noting that SAP CAR operates exclusively on the HANA platform, ensuring optimal performance and scalability for retailers seeking to leverage its capabilities [3].

SAP CAR's main objective is to unify data from various retail systems, including point of sale (POS) systems, e-commerce platforms, mobile apps, and social media channels. By consolidating data from these diverse sources, SAP CAR provides retailers with a comprehensive perspective of customer interactions, facilitating omnichannel retailing across multiple channels [4].

SAP Customer Activity Repository (CAR) empowers retail industry SAP customers to enhance the functionality of their solutions and optimize the value of their transactional data. From merchandise planning and allocation management to replenishment planning, advanced pricing, and promotions, SAP CAR covers a wide range of functions, enabling retailers to streamline operations and maximize efficiency across various aspects of their business processes [5].

**SAP Customer Activity Repository (also Referred to as “the Repository”) is Composed of the following Modules**

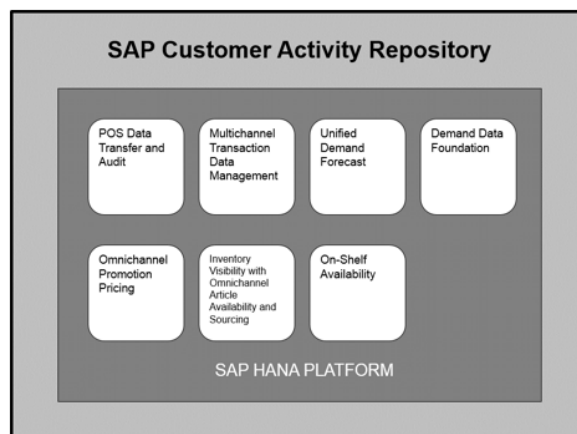


Image Source [6].

### POS Data Transfer and Audit (POSDTA)

POSDTA is a critical module within SAP CAR, responsible for collecting POS transaction data from retail points. Transactional data, received in the form of TLOGs (Transactional Logs), is processed by the POS Inbound Processing Engine (PIPE). PIPE audits sales process, verifies master data, and summarizes transaction data.

### Unified Demand Forecast (UDF)

UDF is another vital module of SAP CAR, performing demand modeling and forecasting based on customer behavior and market conditions. The predictions generated, assist retailers in making accurate decisions regarding inventory management, product ordering, and distribution, thereby streamlining business processes.

### Multichannel Transactional Data

SAP CAR gathers transactional data from various retail points through multiple channels and stores it in a centralized data repository. Additionally, sales documents generated by SAP ERP are stored in the same repository, making SAP CAR a unified data platform.

### Demand Data Foundation (DDF)

DDF serves as a reusable data layer within SAP CAR, featuring essential elements such as data models, mass maintenance tools, and reusable frameworks. This module aids in planning sales and marketing strategies, analyzing sales and customer data, and forecasting future product demands. DDF supports storing and managing vast volumes of data, including master data, facilitating seamless data importing and exporting between SAP ERP and SAP HANA.

### Inventory Visibility with Omnichannel Article Availability (OAA) and Sourcing

OAA provides retail-specific information to customers across various communication channels, ensuring improved customer experiences. It offers near real-time information on inventory availability and sourcing across all sales channels, enhancing overall inventory visibility.

### Omnichannel Promotion Pricing (OPP)

OPP is a unified price and promotion repository located within SAP CAR. It centralizes all necessary information for calculating sales prices, leveraging the promotion pricing service provided by SAP CAR to effectively determine sales prices.

### On-Shelf Availability (OSA)

OSA, another module of SAP CAR, facilitates insights into on-shelf product availability. It enables real-time alerts to customers based on product availability on shelves, usable in both analytical and operative scenarios [2].

### Integration with other SAP Applications

SAP Customer Activity Repository is designed to function with Receiving Applications and with Consuming Applications.

A Receiving Application is one that receives data sent from the repository using outbound tasks. SAP Customer Activity Repository integrates with the following receiving applications:

- SAP Business Warehouse (SAP BW)
- SAP Retail (add-on to SAP ERP) / SAP Fashion Management (add-on to SAP Retail)
- SAP Forecasting and Replenishment (SAP F&R)
- SAP Workforce Management (SAP WFM)

A Consuming Application is one that makes use of, or consumes, data stored in the repository using SAP HANA views included in the SAP HANA content for SAP Customer Activity Repository. The repository integrates with the following consuming applications:

- SAP Allocation Management
- SAP Assortment Planning
- SAP Merchandise Planning
- SAP Promotion Management
- SAP Replenishment Planning

Similarly, you can use SAP Business Objects to build custom analytical reports on the virtual data models (VDMs) included in the SAP HANA content for SAP Customer Activity Repository [6].

### Benefits of Implementing SAP CAR

Implementing SAP Customer Activity Repository (CAR) offers numerous benefits for retailers:

**Increased Sales:** Real-time insights into customer behavior enable targeted marketing campaigns and personalized promotions, leading to improved engagement and higher sales.

**Inventory Optimization:** Accurate and timely data across channels helps optimize inventory levels, reducing stockouts, excess inventory, and carrying costs.

**Improved Operational Efficiency:** Integration of data from different retail systems streamlines processes, saving time, reducing errors, and improving overall efficiency.

**Enhanced Customer Experience:** Unified customer interactions enable personalized experiences and consistent service across channels, boosting satisfaction and loyalty.

**Cost Savings:** Informed decisions on pricing, promotions, and markdowns lead to cost savings, better profit margins, and improved financial performance.

**Better Demand Planning:** Advanced analytics capabilities facilitate accurate demand forecasting, reducing excess inventory and minimizing markdowns.

**Centralized Merchandise Planning:** CAR provides a centralized repository for merchandise planning, streamlining strategic planning and reducing manual effort.

**Streamlined Assortment Planning:** Efficient assortment planning maximizes sales and net margin.

**Efficient Allocation Management:** Allocation management optimizes product distribution to stores based on sales performance and promotional needs.

**Replenishment Planning:** Automated replenishment planning speeds up the process and makes ordering more cost-effective [4].

### Real World use Cases

Coop Norge, one of Norway’s largest supermarket chains, operates 1,200 stores nationwide alongside a thriving e-commerce platform. Despite adopting automated forecasting and replenishment tools, the company faced challenges due to inaccurate inventory data in stores, resulting in underutilization of the software across product categories. To enhance store efficiency and fully leverage their powerful software, Coop Norge sought to innovate a solution enabling store associates to maintain precise inventory data. The objective was to streamline the manual effort involved in the annual inventory count process and stock movements while maximizing the potential of their forecasting and replenishment software.

### Value-Driven Result

Simplified the annual inventory count process, empowering store associates to maintain accurate inventory data through new apps for goods receipts, returns, and stock transfers. Increased utilization of SAP Forecasting and Replenishment by establishing a single, consistent source of stock information, leading to reductions in overstock, out-of-stock, and food wastage in stores. Laid the groundwork for future forecast enhancements by implementing the SAP Customer Activity Repository application’s unified demand forecast component in 10 stores, enhancing overall store replenishment efficiency [8].

### Beeline GmbH

A jewelry and accessories firm, recognized the need to keep pace with the fast-moving fashion industry to maintain competitiveness. However, their omnichannel planning processes, relying on data from various systems, were causing delays in getting products to retail stores. To address this challenge, the company implemented retail management solutions from SAP, streamlining forecasting

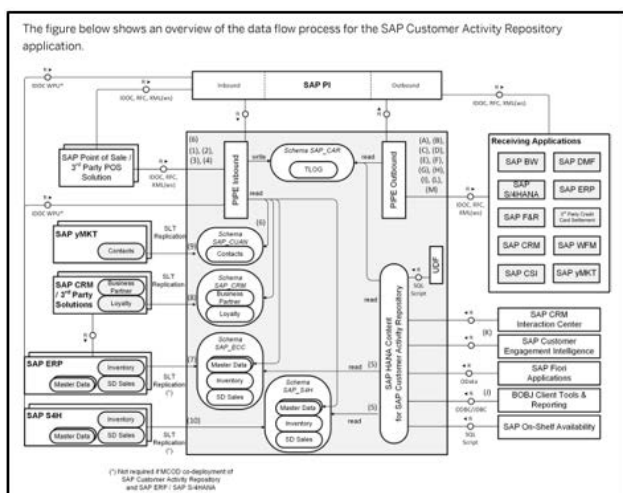


Image source [7].

processes and shortening planning cycles. This allowed for a more agile response to fluctuations in demand within rapidly changing markets.

### Value-Driven Results

Reduced timeframes for bringing products to market, enabling quicker responses to consumer trends. Increased agility in producing and adjusting planning reports, facilitating more timely decision-making. Enhanced visibility into product performance, enabling the identification and discontinuation of low-performing products, leading to more efficient inventory management [9].

### Conclusion

In the ever-evolving landscape of retail, the challenges posed by omnichannel logistics are manifold. From managing inventory visibility and transit to ensuring seamless order processing and efficient return logistics, retailers face a complex array of hurdles. However, SAP Customer Activity Repository (CAR) emerges as a beacon of hope, offering a robust solution to navigate these challenges effectively. With its ability to integrate data from diverse sources, including point-of-sale systems, e-commerce platforms, and more, SAP CAR provides retailers with a unified view of customer interactions across multiple channels. This comprehensive insight empowers retailers to make informed decisions, optimize inventory levels, and deliver personalized experiences to customers.

Moreover, SAP CAR's advanced analytics capabilities enable retailers to forecast demand accurately, aligning inventory levels with customer expectations and market trends. This not only reduces excess inventory but also minimizes stockouts, ensuring a seamless shopping experience for customers. Through case studies like Coop Norge and Beeline GmbH, we witness firsthand the transformative impact of SAP CAR on retail operations. By streamlining processes, enhancing visibility, and improving agility, SAP CAR enables retailers to stay ahead of the curve in today's dynamic retail landscape.

In the following papers, we will explore in greater detail the features, benefits, and implementation strategies of SAP CAR, demonstrating how it can revolutionize retail logistics and propel businesses towards greater success in the omnichannel era.

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