AI Based Order Management System: Rehash and Recap (RR)

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Abstract:
Artificial intelligence (AI) and machine learning (ML) are paving the way to completely transform order management. AI and ML enable vast business opportunities, from easing processes to enhancing customer experiences. The true potential of AI-based **order management systems** (OMS) lies in the ability to integrate data across various platforms for real-time inventory management and predictive analytics. In this article, we'll dive into the best practices to integrate AI. and ML with the order management solution.

Keywords: Artificial Intelligence, Machine Learning, Order Management Systems, customer expectation, supply chain management

Introduction:

AI is rapidly paving its way into digital commerce by significantly reducing repetitive manual tasks, streamlining business workflows, and collecting large sets of data in no time. Today, order management systems are continuously looking to boost efficiencies and deliver excellent UX by leveraging digitalization and automation refers to utilizing digital technologies and automated processes to enhance the user experience (UX) of a product or service, making interactions more seamless, efficient, and personalized for users, often through features like dynamic interfaces, data-driven design, and automated feedback loops. AI systems have evolved to be able to reason, self-learn, organize data, solve problems, and perform human-like tasks as well. Succeeding in digital commerce requires to first leverage. AI for faster order fulfillment and second use analytics to strike a balance between supply and demand.

Artificial intelligence: AI is an umbrella concept, comprising a set of cutting-edge technologies that mimic cognitive functions similar to human intelligence. It is used to build computers and machines that can reason, learn, analyze, and solve complex problems. AI systems leverage decision and logic trees to learn, reason, and improve. AI can work with any data—be it unstructured, semi-structured, or structured.

Machine learning: ML is a subcategory of AI that allows a system or machine to automatically learn from data and experiences to continually improve using algorithms. It analyzes large volumes of data, derives insights, learns, and aids better decision-making.

AI Based OMS: There are different steps involved for OMS:

- Understand the business architecture and current OMS capabilities.
- Run a comprehensive analysis of the order fulfillment cycle and identify areas, pain points, and gaps in the supply chain that could be improved with the power of AI.
- Define customer expectations.

- Analyze the operational maturity to gauge the stability of the business, consistency in processes, and optimal allocation and use of resources.
- Identify which AI features, such as predictive analysis, automation, or **inventory optimization** will reap maximum benefits for which areas of the order management.

ML based OMS: The steps used for ML is:

- With time, ML algorithms boost performance as they collect more data, identify pattems, and create accurate ML predictive models.
- ML can only work with semi-structured and structured data.
- ML systems use statistical models for learning and can self-correct when introduced with new data.

Accordingly, one can customize a solution that aligns the power of AI with the unique business needs to yield the desired results.

1. **Set clear objectives:** Hire experts who are well-versed with OMS, ML techniques, AI. algorithms, and data analysis, as they will help to set clear objectives for the project and monitor. These experts will collaborate with the teams to ensure seamless implementation and operation of AI-based OMS.
2. **Data Collection:** Since AI heavily relies on data, make sure to maintain data. quality and security throughout order management processes. The following is recommended:

- Gather customer information, historical order data, market trends, inventory records, etc.
- Conduct data cleaning and preprocessing methods to eliminate duplicate entries, errors, and inconsistencies.
- Take proper data security, privacy, and governance measures to safeguard customers' personal information.

- Make sure to maintain utmost data integrity, accuracy, and compliance when preparing data to input into your AI models.

3. **Choosing AI algorithms:** Choosing an optimal tech stack is important when building a scalable and reliable AI-based OMS. It involves selecting a set of applications or software to leverage to fulfill a specific purpose. This comprises the right programming languages, frontend/backend tools, frameworks, API integration, databases, cloud platforms, machines, control robots, etc. Most importantly, choose suitable AI algorithms and models that will fill the gaps in the OMS and align well with the defined project goals. These include ML algorithms, NLP models, and deep learning architectures. When choosing algorithms, make sure to consider factors like ease of use, scalability, security, and development teams' skills and knowledge, data complexity, computational requirements, and model interpretability.
4. **Testing and Validating:** Next comes training the predictive AI models with the prepared data. Divide the prepared data into sets of training and validation to check their accuracy and performance.
5. **Analyze data** and customer feedback to detect opportunities for improvements. Identify false negatives/positives, accuracy of predictions, and modify AI models based on real-time feedback. Based on the validation results, one can make further amendments.
6. **User Training:** Employees may feel skeptical about AI. To help them overcome this unfamiliarity, implement user training via detailed, clear documentation to introduce them to AI-based OMS, and communicate the value proposition of AI-based OMS.
7. **Involve users** in the development processes, such as feedback meetings and user testing, to promote their interest. Address any misconceptions through strategic change management. initiatives.
8. **Collaborate with data scientists**, AI experts, and domain experts to overcome any change management challenges.

An order lifecycle typically consists of the following processes:

- Inquiry
- Order entry
- Quotation request
- Creating a purchase order and order validation
- Order Processing/Fulfillment
- Order Distribution and Invoicing
- Mapping customer experience and managing returns (if any)

Often businesses do not have real-time inventory visibility to conduct demand predictions, data accuracy, and streamlined order fulfillment. This may further lead to understock, overstock, and holding cost issues. Likewise, businesses may not be able to deliver on time, causing poor customer experiences. AI not only offers real-time inventory visibility but also analyzes changing market dynamics and predictive behavior patterns of customers.

How does AI/ML differ from traditional order management methods?

Traditional order management methods often come with a series of pain points known to drastically (and negatively) impact revenue.

1. **Manual** Processes: Traditional order management methods heavily relied upon humans, spreadsheets, paper-based systems, and manual data entry. Typically, order data was gathered manually, making it time-consuming and prone to errors. AI reduces manual errors by

automating repetitive tasks, allowing for strategic decision-making and more efficient inventory management.

2. **Imprecise** Forecasts: Traditional methods used historical data and lacked real-time visibility and data across inventory at various locations and stages. This made it difficult to predict unforeseen events and respond. quickly to changing markets. AI leverages ML predictive models to gather and analyze large data sets in real time to derive actionable insights and generate accurate demand forecasts.
3. **Inventory Optimization:** poor analytic abilities of traditional methods led to understock/overstock issues, inflexibility, and ultimately lost revenue and disappointed customers. AI leverages historical data, seasonality, market trends, and many other factors to maintain optimal inventory levels, promote omnichannel engagements, and reduce inventory holding. costs as well.
4. **Support:** Traditionally, support involved a human agent attending to customer queries. round-the-clock. Today, AI-based chatbots can intelligently handle common customer queries without human intervention.

Role of AI and Machine Learning in Order Management

AI and ML systems are prevailing in the digital commerce industry due to their robust capabilities such as:

- Better decision-making
- Collect, process, and analyze big data
- Creating smart recommendations
- Deriving real-time insights
- Making accurate predictions and forecasts

Regardless of the organization's size, AI and ML will help to automate tasks, improve data integrity, process data faster, reduce human errors, extract valuable and actionable insights, and increase operation efficiency. This will eventually reduce the operational costs.

Relevance of Using AI/ML in Order Management

As a company and its data grow, inventory management could quickly become complex as it requires seamless collaboration between procurement, warehouse, distribution, and fulfillment workflows. To make an OMS more efficient and accurate and deliver immersive customer experiences, businesses must leverage cutting-edge automation technologies. AI and ML systems will help learn behavior patterns, predict fluctuating market demands, and cater to customer expectations strategically. AI can analyze big data, derive valuable insights, create intelligent recommendations, accurately make forecasts and predictions, and help you with informed decision-making. Without AI, businesses are at risk. of underselling, overselling, delayed shipments, inflexible workflows, and frustrated customers.

Conclusion

AI is rapidly paving its way into digital commerce by significantly reducing repetitive manual tasks, streamlining business workflows, and collecting large sets of data in no time. Succeeding in digital commerce requires to first leverage AI for faster order fulfillment and second use analytics to strike a balance between supply and demand.

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