The Existence Role of Data Science in BukaToko

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AI models for e-commerce include recommendation systems, pricing algorithms, predictable customer segmentation, personalized product image searches, and AI chatbots. These models can apply as single solutions or in combination to solve different business needs. E-commerce companies are successfully using them for marketing and business objectives.

Ecommerce retailers have one massive advantage over brick-and-mortar business owners: easy access to critical data. 97% of data executives believe data is crucial for maintaining a business's profitability. That is because data can enhance your decision-making process and consequently help improve your bottom line. However, capitalizing on the humongous volumes of available data requires effective data management and continues to be among the top challenges facing ecommerce merchants today.

Data science: A force that promises increased revenue

Data is no longer an option for ecommerce businesses. Accessing, interpreting, and using it effectively has become the difference between life and death for modern online retail. The onset of the digital age and its proliferation has led to excessive data production. According to some resources, 2.5 quintillion bytes of data is produced every day. This number reflects the volume of profit-driving insights and value you might be able to get your hands on if you manage to tap into this data

Data science can help you do that. Helping people interpret data, data science enables marketers and business owners to gain critical insights into their business performance, customer behavior and demographic, inventory and competitors. It converts raw, meaningless data into valuable, meaningful insights and guides all business processes, from decision-making to strategizing.

Businesses are quickly adopting data science, with steady investments made in AI and ML initiatives. As a result, data science is expected to grow by 300% in the upcoming years. Here are a few of the many areas data science works on to enhance your business's profitability:

1. **Increased sales**

As a business owner, either ecommerce or brick-and-mortar store, you wouldn't mind having more sales, would you? Of course not. In fact, you would want to generate as many sales as you possibly could because more sales translate into greater revenue.

Psychology plays an important role in the buying process and data science can explicitly help with increasing your business sales by helping you learn consumer behavior. As humans, we tend to buy things in pairs or groups. If we go out to buy bread, we may buy milk and eggs as well. When we buy mobile phones, we tend to buy other mobile accessories such as headphones or earbuds, chargers, screen guards etc.

Data science helps you capitalize on this aspect of human nature and maximize your sales. Market basket analysis, also known as affinity analysis, is a data mining and analytics technique that helps identify relationships between certain common items. It works by analyzing large datasets and uncovering a combination of items that are often bought together in transactions. This helps progressive retailers understand purchase patterns and use this understanding to increase sales.

How?

When you know bread and eggs are bought together, you can put up offers for eggs on the bread's page to remind people they may like to buy eggs with their bread. Market basket analysis is said to be one of the best machine learning applications in retail. It helps you gain insights into product affinity and empowers you to make the right product recommendations. And it is this approach that has led to the success of recommendation engines in the ecommerce space.

Apart from increasing sales by building on human insights, market basket analysis–driven recommendation engines also build a positive customer experience, which in turn promises revenue as customers may be willing to spend as much as 17% more for a good experience

2. **Price Optimization**

Price is the first feature 60% of online shoppers worldwide consider as they make a purchase decision. If your price is too low,

you lose customers' trust. And if it is too high, you push the customer toward your lower-priced competitor. Therefore, getting your price just right is critical for business profitability.

The price you choose for your products or services depends on many variables like customer behavior, psychographic and demographic data, market geography, operating costs, LTV and churn rate, etc. The presence of data and the need for effective data analysis calls for data science.

Technology-driven price optimization effectively considers all the factors that go into setting the right price and reads the available data to generate an optimal price. Machine learning-enabled price optimization leverages both qualitative and quantitative data, plugging it into pre-developed algorithms that give retailers a well-informed and granular approach to setting optimal prices.

Customers are more likely to pick your products if they are optimally priced, which inevitably increases sales that reflect in your revenue. This is why a 1% improvement in pricing can bring up to an 11.1% increase in profit.

3. **Inventory management and optimization**

Inventory management is the process of managing a business's inventory to avoid shortages, as it can result in deferred profit. Being out of stock means potentially losing your customers, as 31% of online shoppers tend to switch to a competitor if a product is unavailable on their preferred site. On the other hand, overstocking can lead to increased warehousing and logistics costs, as warehouse space comes at a price, and in the U.S., that is around $5.08 per sq. ft.

Knowing how much to keep in stock, what and when to order, and forecasting demand is a challenge that plagues many business areas, and ecommerce is no exception. 75% of all supply chain management professionals wish to improve their inventory management practices. And there is no better way to do it than to implement data science.

The supply chain, just like most areas of ecommerce, overflows with data. You can either ignore it or capitalize on it and use it to your advantage with the correct data analytics methods.

There are many modern inventory management programs and applications that are rooted in data science and use historical and current data to keep your inventory accurate.

These programs leverage past sales data and seasonality, among other factors, to anticipate future demand. This can help you determine how much inventory is needed while keeping the stocks at a minimum level.

4. **Customer segmentation and personalization**

Customer segmentation is the process that divides a business's customers that have common characteristics into discrete groups. This helps marketers develop targeted marketing campaigns that resonate more with the audience and promise better results. This could be why 77% of the returns generated from marketing campaigns come from the ones built with customer segmentation. Therefore, this approach helps you optimize your marketing spend, enhance your ROI and eventually enjoy better profits.

Your customer data is scattered all over the internet.

Data science helps you collect all of this data, clean it, and use it to divide your customers into segments. In this way, data science is what lies behind the efficacy of customer segmentation because effective segmentation stems from efficient data analytics. Once your customers are divided into discrete segments, you can target them with personalized messages on their preferred channels.

5. **CLTV Prediction**

You spend money on customer acquisition, and your business model can be profitable only if the customers you acquire contribute more than what was spent on acquiring them. The money your customer spends on your business, from the first transaction to the last, is called customer lifetime value or CLTV.

Normally businesses calculate CLTV after they have acquired customers. But that's not a very efficient approach because this is more reactive, and you could be spending more on acquiring a low-value customer and impacting your profitability. You have to be proactive to make sure your business model sustains good progress and generates appreciable profit.

Data science can help you be proactive with using predictive analytics to calculate your CLTV. It helps collect, clean and generate key insights from customer data, like their preferences, behavior, frequency, recency and amount of purchases. Based on this data, machine learning algorithms churn out a presentation on the possible lifetime value of each customer.

With this information on hand, you are better equipped to focus your marketing spend on customers that promise more returns and build a more sustainable and profitable business model. For example, predictive analytics have informed you that the CLTV of customer type A is around $200, while that of customer type B is around $1000. Now you know that you have to spend less than $200 on trying to acquire customers from group A and can spend a bit more on type B customers. By predicting CLTV, data science can help build a marketing strategy with a positive ROI.

End to End Data Ecosystem

A data-driven organization is likely to have a variety of analyst roles, typically organized into multiple teams. Different people describe different analyst roles differently, and many of the skills are overlapping among them.

Analytics is a team sport. A well-oiled, data-driven organization is going to have both a range of analytical personnel with different roles and also personnel with complementary skills. It needs to consider the "portfolio" of skills in the team and the profile of new hires that would work best to flesh out and strengthen missing or weak areas in that team.

Ecosystems—interconnected sets of services in a single integrated experience—have emerged across a range of industries, from financial services to retail to healthcare. Ecosystems are not limited to a single sector; indeed, many transcend multiple sectors.

Simply put, a data ecosystem is a platform that combines data from numerous providers and builds value through the usage of processed data. A successful ecosystem balances two priorities:

1. Building economies of scale by attracting participants through lower barriers to entry. In addition, the ecosystem must generate

clear customer benefits and dependencies beyond the core product to establish high exit barriers over the long term.

2. Cultivating a collaboration network that motivates a large number of parties with similar interests (such as app developers) to join forces and pursue similar objectives. One of the key benefits of the ecosystem comes from the participation of multiple categories of players (such as app developers and app users).

The success of a data-ecosystem strategy depends on data availability and digitization, API readiness to enable integration, data privacy and compliance—for example, General Data Protection Regulation (GDPR)—and user access in a distributed setup. This range of attributes requires companies to design their data architecture to check all these boxes.

As incumbents consider establishing data ecosystems, we recommend they develop a road map that specifically addresses the common challenges. They should then look to define their architecture to ensure that the benefits to participants and themselves come to fruition. The good news is that the data-architecture requirements for ecosystems are not complex. The priority components are identity and access management, a minimum set of tools to manage data and analytics, and central data storage.