



Identifying Barriers in the Customer Journey Affecting Conversion Rates in E-Commerce

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IDS 701: Solving Problems with Data Science

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Executive Summary

This report aims to identify the key barriers in the customer journey that contribute to low conversion rates despite higher website traffic and customer engagement at JD.com. To address this problem, we investigate three critical questions: (1) What are the most common reasons for cart abandonment? (2) Which demographic groups have the lowest conversion rates? (3) Are discounts a driver for sales and how effective are discounts in overcoming conversion barriers?

We combined external industry research and JD.com's internal data analysis. Our findings through these exploratory questions reveal that high delivery costs, unexpected checkout fees, and limited payment options are among the top reasons for cart abandonment. Additionally, demographic insights show that female shoppers and younger consumers (ages 16-25) have the lowest conversion rates, indicating potential engagement and purchasing barriers. Our analysis also confirms that discounting is an effective tool for boosting short-term sales but there is a limitation on long-term purchases.

To combat these challenges we recommend JD.com to reduce cart abandonment by looking at pricing transparency, ensuring more flexible payment options, and validating favorable shipping costs. In addition, targeted marketing and personalized engagement strategies, particularly for female shoppers and younger consumers may also help improve conversion rates within these segments. Furthermore, shifting from broad, frequent discounting to a more strategic, loyalty-based approach can drive long-term customer retention while maintaining profitability. By implementing these proposals, JD.com can create a more seamless shopping experience, boost conversion rates, and strengthen its competitive standing in the e-commerce market.

Introduction

E-commerce platforms like JD.com attract millions of visitors each day, they operate in a highly competitive and rapidly evolving market, where businesses invest heavily in attracting traffic and engaging potential customers. However, low conversion rates remain a major challenge, preventing online retailers from fully capitalizing on their customer base. Despite significant website visits and product views, many users fail to complete their purchases, leading to low conversion rates and lost revenue opportunities. This gap between engagement and actual sales suggests that specific friction points in the customer journey discourage users from completing transactions.

Understanding these barriers is essential for improving the online shopping experience and increasing conversion rates. Several factors contribute to this issue, including pricing transparency, payment flexibility, user experience at checkout, and logistical considerations such as delivery speed and cost. By identifying the most significant obstacles within the customer journey, e-commerce platforms can develop targeted solutions to enhance customer satisfaction and drive sales.

This report explores three key exploratory questions to better understand the barriers affecting conversion rates:

- What are the most frequently reported reasons for cart abandonment in online shopping? (Based on external research)
- Which demographic groups (age, gender) have the lowest conversion rates on JD.com? (Analyzed using JD.com's internal dataset)
- Are discounts a driver for sales and how effective are discounts in overcoming conversion barriers? (Analyzed using JD.com's internal dataset)

By answering these questions, this study will provide data-driven insights to help JD.com reduce cart abandonment, optimize pricing and payment strategies, and enhance the overall shopping experience.

Findings & Analysis

What are the most frequently reported reasons for cart abandonment in online shopping?

One of the key barriers to conversion in e-commerce is cart abandonment, where users add items to their shopping cart but leave before completing the purchase. Understanding why customers abandon their carts is crucial for improving conversion rates and optimizing the overall shopping experience. High cart abandonment rates indicate weaknesses in the customer journey, which ultimately contribute to low conversion rate and lower revenue. By identifying these specific barriers, e-commerce platforms like JD.com can implement targeted strategies to reduce abandonment and increase completed transactions.

According to a 2024 survey of global online shoppers conducted by E-commerce Nation and published by Statista (E-commerce Nation, 2024), as we can see on Figure 1, the leading cause of cart abandonment globally is high delivery costs, cited by 41% of respondents. Consumers increasingly prioritize affordable shipping, and excessive delivery fees often outweigh the perceived value of a purchase, leading shoppers to abandon their carts. Additionally, 30% of respondents reported abandoning their carts due to unexpected costs at checkout, and another 30% stated they found the item cheaper elsewhere. Beyond pricing concerns, consumer behavior also plays a crucial role in cart abandonment. The survey found that 26% of shoppers abandoned their carts simply because they were browsing without a strong intent to buy, suggesting that not all cart abandonments represent lost sales but rather an opportunity to engage potential customers more effectively. Additionally, 20% of shoppers abandoned their carts due to slow delivery times, underscoring the importance of speed and efficiency in logistics. Other notable factors included a lack of preferred payment options (17%), discount codes not working (17%), and missing return policy information (13%)—all of which contribute to hesitancy in completing a purchase.

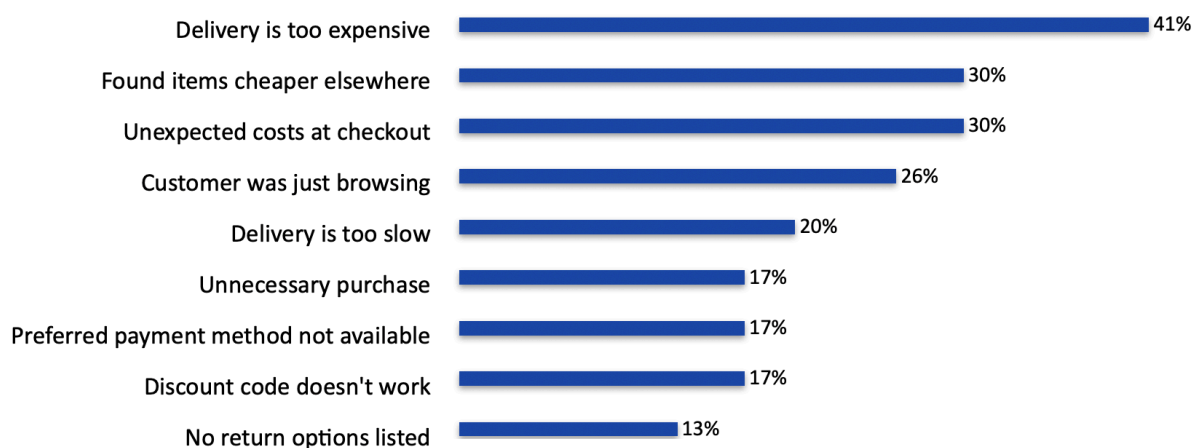


Figure 1. Top reasons for cart abandonment among online shoppers worldwide 2024

For JD.com, these insights into the key barriers to cart abandonment at one of the final stages of the customer journey on a global scale can serve as a benchmark for identifying and addressing similar issues within its own platform.

Which demographic groups (age, gender) have the lowest conversion rates on JD.com?

When analyzing JD's internal dataset, we examined conversion rates across different demographic segments and focused specifically on gender and age groups. This is because understanding which groups have lower conversion rates allows JD to acknowledge and implement targeted strategies to improve engagement and drive sales.

First, we analyzed gender-specific conversion rates. Our analysis revealed that the female group had the lowest conversion rate compared to males (M) and unknown shoppers (U), as illustrated in *Figure 2: Conversion Rate by Gender*. This suggests that JD could explore gender-targeted marketing strategies, improve product recommendations so they are tailored to specific genders, and enhance personalized shopping to engage female consumers better. These efforts may lead to higher conversion rates within this demographic.

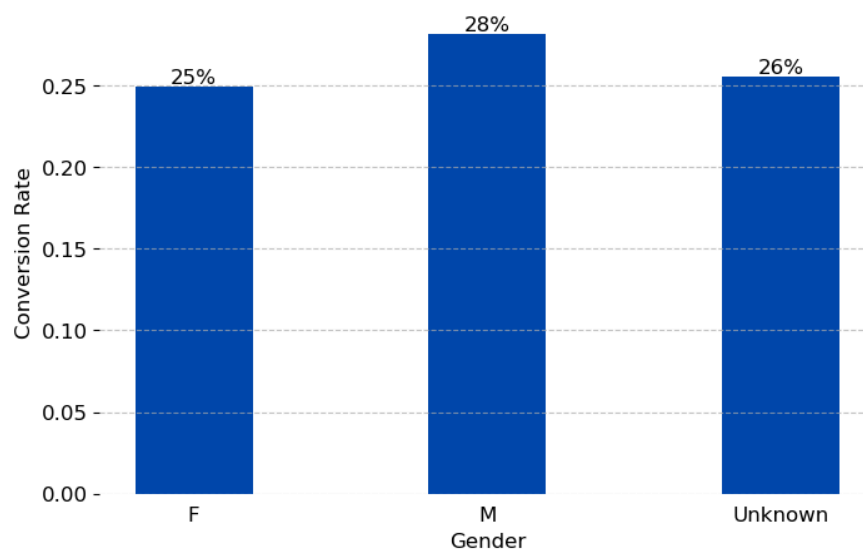


Figure 2. This chart highlights the conversion rate across different gender groups on JD.com, March 2018

Next, we examined conversion rates by age groups. Through this analysis, we found that the 16-25 age group exhibited one of the lowest conversion rates, as shown in *Figure 3: Conversion Rate by Age Group*. This younger customer segment may have lower purchase intent due to budget constraints and a tendency to browse more frequently without making any online purchases. Additionally, users in the unspecified (U) age group also demonstrated relatively low conversion rates, which could indicate data gaps or browsing behaviors associated with guest accounts that do not complete transactions or abandon their carts.

On the other hand, the highest conversion rates were observed in the ≤ 15 and 56+ age groups. The strong performance of the youngest cohort (≤ 15) may be influenced by parental purchasing behaviors (For example, new-registered customers have special coupons. Thus, parents registered and were price-oriented), while older consumers (56+) likely have higher disposable income and stronger purchase intent when shopping on JD.com. These insights indicate that JD.com could benefit from strategies targeting younger and unspecified users, such as personalized promotions, student discounts, and flexible payment options, to improve conversion rates.

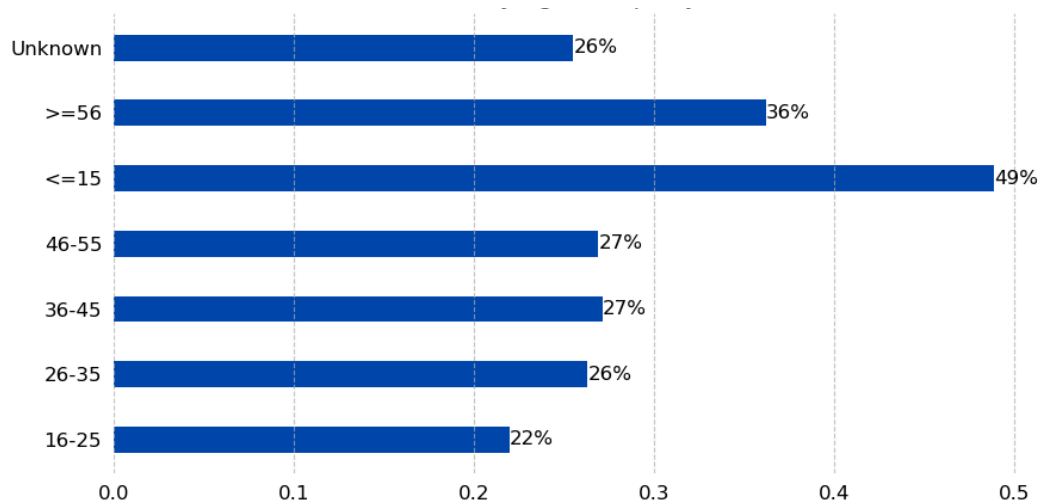


Figure 3: This chart highlights the conversion rates across different age groups on JD.com, March 2018

Are discounts a driver for sales and how effective are discounts in overcoming conversion barriers?

One of the key strategies e-commerce platforms use to increase conversion rates is offering discounts. For JD.com, understanding whether discounts contribute to long-term sales growth or merely result in short-term spikes is critical to optimizing pricing strategies and improving overall conversion rates.

Our analysis, as shown in Chart 3, confirms that discounted products experience a 111.9% increase in total sales volume compared to non-discounted products. The average sales per SKU nearly doubled when a discount was applied, with each discounted SKU selling an average of 83.39 units compared to 39.35 units for non-discounted items. The pattern suggests that discounts drive both total sales volume and individual product performance, as discounted products attract more attention and convert at a higher rate.

While the data confirms that discounts boost short-term demand, the long-term effects are less clear, and price reductions alone may not guarantee sustained customer retention. Only 35% of customers who purchase discounted products return to buy at full price, which suggests that many shoppers are primarily motivated by promotions. Industry research shows that frequent discounting can lead to consumer habits that make them hesitant to pay regular prices.

Despite this limitation, discounts remain an effective tool for driving immediate sales. JD.com could refine its approach by shifting from broad price cuts to more targeted strategies, such as personalized promotions for repeat buyers, exclusive discounts for members, or bundling lower-margin products with high-demand items. These strategies could encourage customers to return even when discounts are not available and help JD.com build long-term engagement while improving overall conversion rates. A more strategic

approach to discounting would allow JD.com to maximize revenue while reducing over-reliance on promotions and preventing excessive price sensitivity.

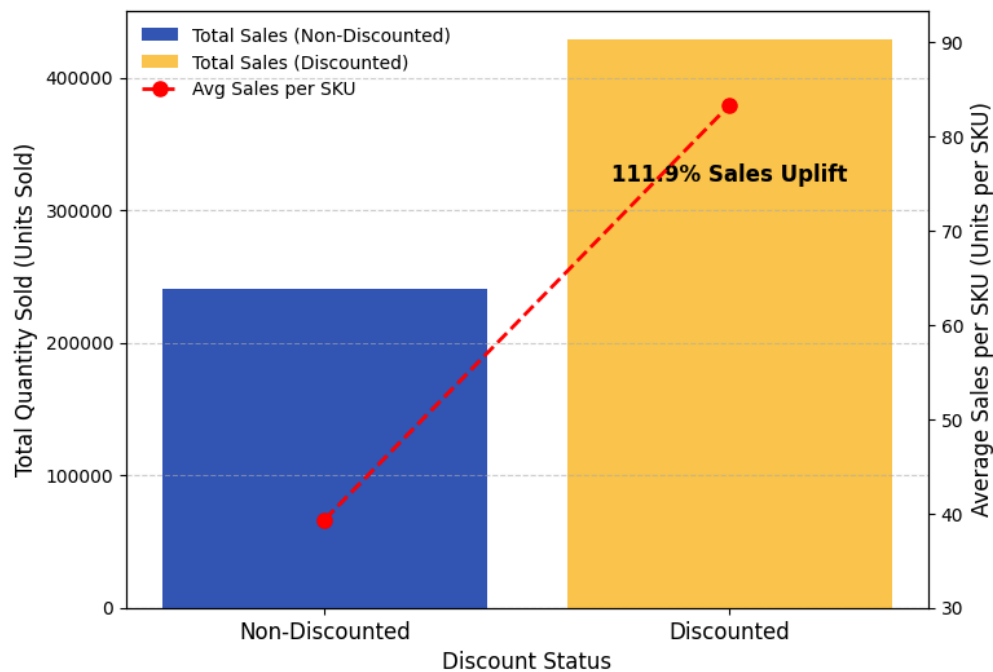


Figure 4. Impact of Discounts on Sales Volume and Product Performance on JD.com, March 2018

Conclusion

JD.com's low conversion rates stem from a range of barriers across the online customer journey. High cart abandonment rates reflect that unexpected costs and limited payment options deter customers from finalizing purchases. Demographic analysis further reveals that younger consumers and female shoppers convert at lower rates, pointing to engagement gaps that may require more tailored marketing approaches. Although discounts yield short-term sales gains, their longer-term impact remains unclear, as many price-sensitive shoppers fail to return at full price.

Addressing these challenges requires a more strategic approach. Improving transparency in pricing and shipping costs could help reduce cart abandonment, while offering flexible payment options may increase conversions among younger shoppers. Targeted engagement strategies, such as personalized product recommendations, could improve conversion rates for underperforming demographic groups. Refining the discounting model to focus on loyalty-based incentives rather than frequent price reductions may help sustain revenue growth without eroding pricing power. By resolving these issues, JD.com can create a more seamless shopping experience by reducing customer journey barriers, boosting conversion rates, and strengthening its competitive standing in the e-commerce market.

References

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- JD.com (2020). *Transaction-level data for the 2020 MSOM Data Driven Research Challenge* [Dataset]. Provided via the MSOM Data Driven Research Challenge. Retrieved from <https://connect.informs.org/msom/events/datadriven2020> (Access limited to MSOM members or other authorized users.)

Appendix

Source of Data

Our analysis is based on JD.com's internal click, user, and order data from March 2018, capturing detailed user interactions across the platform. This dataset includes detailed user interactions on JD.com's platform. It contains demographic information, specifically age and gender, allowing us to examine conversion rates across different customer segments.

Furthermore, the dataset includes transaction-level data and offers a comprehensive view of order values, applied discounts, and payment methods used. By leveraging this data, we can gain a granular understanding of the factors influencing purchase decisions, assess barriers to conversion, and evaluate the effectiveness of pricing and promotional strategies on JD.com.