

Team N/A

Background and topic of Interest

Consumers nowadays tend to use a combination of their laptop, smartphone and/or tablet to shop for vehicles. One of the critical factors people use Edmunds.com is that the website could simplify and shorten the car shopping process. Therefore, we are interested in if multi-device car shopping will also make car shopping easier compared to people who only use laptop, and also, what other potential factors can explain and predict the time they spend on the Edmunds.

Data

We used two data sets: visitors and leads. For each lead, we matched data of customers using visitor keys. We filtered observations that have proper entries of our variables of interest and eliminated outliers. Our final data had 9,970 cases and 8 variables including: total dwell time, car price, total advertisement click, customer's age, creditworthiness, fuel preference, dealer distance and whether they are using a mobile device to search car.

Model

As the response is time spent (nonnegative variable), we consider a generalized linear regression (exponential regression) model. We used logarithmic transformation for y . However, based on diagnostic plots, the response variable, total time spent on the site, has very heavy tail which largely skewed our estimation and violated basic assumption of generalized linear regression. Therefore, to get a more reliable conclusion, we focused on the main part of the data, cutting-off the high-leverage data points, symmetric 70% response variable data.

Conclusion

Below are the exponential regression coefficients of significant predictors using scaled data.

Variables	clk_total	dealer_distance	age	msrp	mobile
Coefficient	0.344	0.0435	-0.0193	0.00506	0.314

Mobile app didn't significantly improve but even worsen the efficiency (the coefficient is positive). Distance between customer's location and the dealer with desired car has negative correlation with efficiency. Younger people have higher efficiency. Searching more expensive car might need more time.

Suggestion

1. According to the AutoTrader's study, the multi-device users use less time for car shopping, which is opposite to our conclusion. We suggested attracting multi-device user by shorten the purchase process from mobile App.
2. We found that consumer information (income, gender) was more important to predict consumer preference (like desirable make and model) and we suggested creating a sign-in system to collect customers information.