

# Improving the Offer Creation Process by Standardizing ArcBest's Bid Model

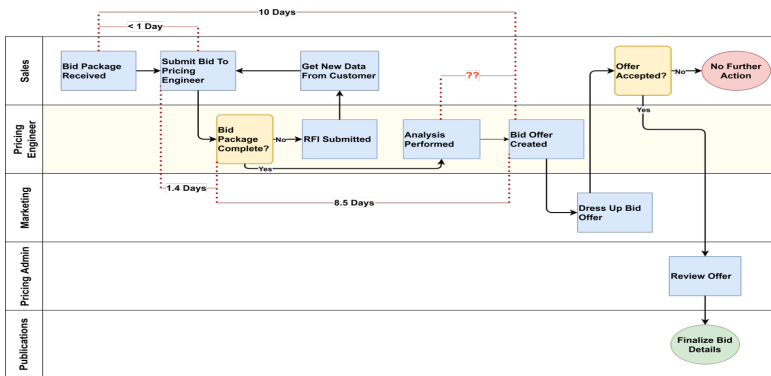
Benjamin Barron, Benjamin Baser, Blake Parrish, Jackson Marshall, Joseph Ellis

## ArcBest's Yield Division



ArcBest is a logistics, trucking, and transportation company headquartered in Fort Smith, Arkansas, with operations that span throughout the United States, Canada, and Mexico. ArcBest is a parent company with multiple subsidiaries including ABF, FleetNet, U-Pack, and Panther. Our system of interest falls within ArcBest's yield division, which includes the pricing division and the yield strategy team.

## Bid Processing

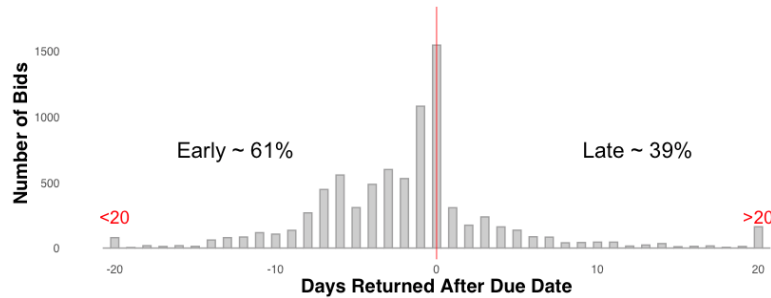


When a customer wants to do business with ArcBest, they submit a bid package to the sales team which includes information about the shipment, and the sales team assigns this bid to a pricing engineer. The pricing engineer analyzes the bid package and creates an offer to be presented to the customer by the sales team. If the bid is formal, the bid is "dressed up" by the marketing team prior to being presented to the customer. If the customer accepts the offer, a pricing admin translates the bid into a format that the publications team will understand, and the bid is finalized by the publications team.

## Standardization in Bid Processing

ArcBest's main concern about the bid processing system was a lack of standardization in bid formats when bids are submitted to either the sales or marketing teams after analysis. This lack of standardization leads to additional delays for the marketing and sales teams when they receive and process the bids.

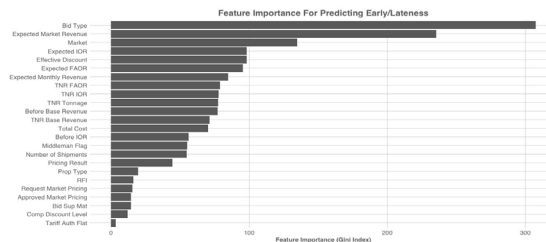
## Current Bid Processing Performance



We define the performance measure we use as lateness, the completion time of the bid minus the bid's due date. Using data from 2015-2020, we computed the lateness of 8,200 bids. Of these bids, 61% were completed before the due date and it is likely that this is an underestimate. It is very common for the due date on a bid to be pushed back during the analysis process and the data we have been provided only contains the initial due date.

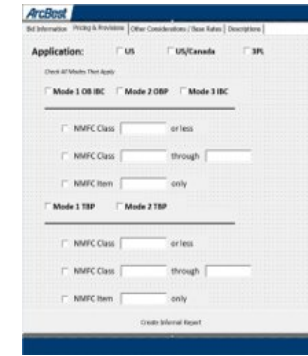
## Factors That Influence Bid Processing

To gain a better understanding of the factors that influence if a bid is returned to the client on time we utilized a Gini Index derived from a Random Forest Algorithm.



The three most important features when deciding which Pricing Engineer is assigned to a bid are the Bid Type, Sales Region, and Market.

## VBA Tool Development

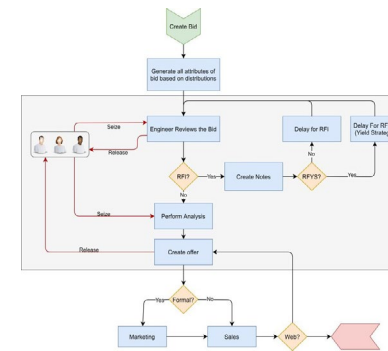


Since there are different types of bids that ArcBest accepts, there was a need to develop two separate Userforms because the different types of bids contain widely different information and work needed to process them. based on the type of bid being processed. The Userforms are split to handle the two primary bid types, Informal and Formal, creating two forms allowed for the customization needed for each type while at the same time allowing each to be dynamic and changed for the current needs of the sales and marketing teams.

Developing a dynamic VBA Userform tool in Excel provides the same format for each Pricing Engineer. It also eliminates the need for information to be copied from Word to Excel and the issues that arise in that transfer between programs. This tool results in a reduction in non-value added time spent clicking between screens and reformatting information.



## Simulating the System and Potential Impact



Arena Simulator allowed us to visually see how our simulation was functioning and estimate the potential impact of our tool. The estimated impact includes:

**1.9% decrease** in engineer utilization

**5.0% decrease** in time a bid spends in the system

**2.1% increase** in the amount of bids completed in a year

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Thank you for visiting our team.

We are currently either preparing for, delivering, or  
recovering from our presentation.

We will return to this meeting at X:30 pm.



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