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Selling flowers with analytics

By *Eric van Heck*

Much has been said about “big data” and its potential impact on the international commercial world. By itself, big data will not transform a business, let alone the global landscape. Ways have to be found to make it financially worthwhile to invest the time, effort and cash required to assemble and then mine significant volumes and varieties of data. Not everyone immediately sees the advantage in going down this exploratory route.

A number of colleagues and I are, however, currently closely involved in an ongoing project that is doing exactly that. Big data is making a noticeable difference to the Dutch horticultural sector, where the buying and selling of flowers at auction is worth an estimated €4.5 billion a year.

The interest in big data hasn't happened overnight. It took around three years of coaxing to persuade the powers that be in the industry to allow my colleagues and me to carry out essential initial field experiments. By contrast, the field experiments themselves took a mere three weeks.

When we examined the results harvested in those three weeks and compared them with what happened during the weeks before and after, and data from a control group from an auction elsewhere, we found that prices were more stable and sometimes higher than in the control groups. Working together closely, we have devised an analytics solution that is commercially positive.

As a result, the way in which the Dutch flower industry works is changing dramatically. A traditional market

place with sellers and products assembled on site is becoming a 21st century market space. Pictures on screens are replacing the physical product and bidding is taking place remotely and electronically rather than in an auction room.

Growers who are members of the auctioning co-operative movement are achieving more stable and sometimes higher prices. And buyers are happy too. Buyers prefer more stable prices and even though they sometimes are paying higher prices than has been customary, they are seeing spin-off benefits that more than compensate for their higher purchasing costs. The industry is achieving genuine price discovery for its fresh products in a way that was previously unimaginable.

Many advantages

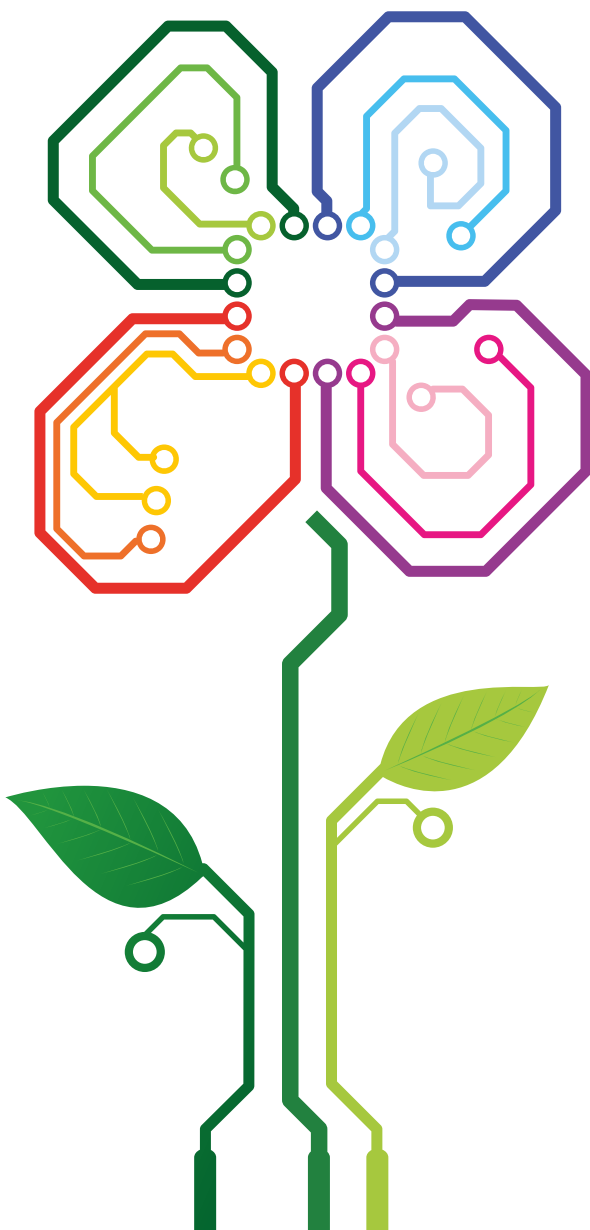
A lot of work has already taken place out of sight to transform procedures and practices in the complex world of flower auctions. I have personally been involved with the flower industry for over 20 years. Much remains still to do in an ongoing project, called the i-Flow project, that will continue until

December 2019. The Dutch horticultural sector has long worked with the traditional Dutch auction at its core. Some readers will already know that the Dutch auction works in a very different way to what, for the sake of simplicity, we will refer to here as the English-style auction.

In an English auction, prices start low and will be expected to increase as competing bidders emerge to push up the price. The lot goes to the highest bidder, however long it takes for that bidder to be the last one left standing. In a Dutch auction, the auctioneer proposes a higher starting price per stem, drawing on extensive experience and market knowledge. The price then drops until a buyer emerges. The first person to make a bid for the lot on offer (or portion of the lot) wins the contest.

This has a number of advantages over the English auction, not the least of which is sheer speed. An experienced auctioneer can launch and execute a new transaction every few seconds. This is of great importance in a sector where the products are so perishable and where we can see 120,000 transactions on 36 auction clocks in six different locations. An entire auction can start at 6am and be finished by 9am. The English equivalent might literally take all day.

A second advantage is that it is very difficult for bidders to collude with one another to distort the price. One cannot signal a willingness to bid because in the Dutch auction there is only one bid, the winning bid. In a Dutch auction there is little or no exchange of information taking place. A third ad-



vantage, as I indicated earlier, is that the auction process delivers genuine price discovery.

Understanding bidders

A major challenge for the auctioneer in the new market space is the inability to see bidders in the room. However, our experiments and advice have started to help them become more aware of the new online and digital technologies and how to make the best use of it. Big data and analytics can help improve the auctioneer's decision-making in a very high-speed environment.

At any one time, the auctioneer observes both sides of the market to create a stable price discovery process.

research had previously been done on the online bidding behaviour of buyers. We now have a data set covering thousands of transactions. We analysed when bidders were bidding and how many times they were bidding. We looked at their time of entry and time of exit on the day and used advanced clustering techniques.

We identified five types of buyer: conservative early bidders; conservative opportunists; conservative analysts; forward-looking early bidders, and forward-looking opportunists.

Our analysis has helped paint a picture of different bidding behaviours, affected by considerations such as budget constraints, appetite for in-

“Working together closely, we have devised an analytics solution that is commercially positive.”

One, there are thousands of growers putting their products into auction. Two, there are thousands of buyers. The role of the auctioneer is to get the best price. One way of doing this, paradoxical as it might sound, can be to split a large lot into a number of smaller lots. This can increase the number of potential bidders and deliver more stable prices.

Another consideration is the type of bidder taking part in an auction. No

dividual products and whether the bidder was online or on-site (online bidders are not able to inspect the physical flowers in the warehouse before the auction takes place). The auctioneer is thus able to form an overview of who is participating in an auction and fine tune the setting of minimum purchase quantities. Setting minimum purchase levels low in the morning, for example, will help the auctioneer to achieve more stable prices. It helps ▶

attract smaller buyers and therefore a more mixed portfolio of buyers.

A further twist is that we experimented with withholding the identity (ID) of winning bidders. Prices were more stable and sometimes went up. Why should that be so? We think one element might be that a bidder's ID acts as a signal to other bidders who know each other well. If, for example, they see a major high street retailer buying roses in unusual bulk, they might deduce that the retailer in question is planning a major rose-based sales campaign. They can then decide whether to jump on the bandwagon. Or not.

Another element is that most bidders today are wholesalers, but some retailers can see the results of online auctions. If they know a wholesaler has paid 30 cents a stem they will query a price offered to them as retailers that is set significantly higher. If a buyer's ID is withheld, retailers do not know what the individual wholesaler paid.

It is a classic win-win situation. The growers in the co-operative get more stable prices and could receive more money for their products. And while the wholesalers might pay a higher price, their own customers will have reduced leverage to challenge prices if they do not know what the wholesaler paid.

“It is a classic win-win situation. The growers in the co-operative get more stable prices and could receive more money for their products.”



The upshot of this ongoing work is that we finally convinced the Dutch flower industry to experiment and we are confident that it is on the right track to become a fully fledged data-driven analytics operation. Other businesses might care to experiment in collaboration with RSM researchers.

The challenge with big data and analytics is to use them to create business value. We firmly believe that we have shown it can be done. ■

This article draws its inspiration from the paper *Exploring bidder heterogeneity in multichannel sequential B2B auctions*, written by Yixin Lu, Alok Gupta, Wolfgang Ketter, and Eric van Heck, and published in *MIS Quarterly*, (40:3) pp.645-662. DOI: <http://dx.doi.org/10.25300/misq/2016/40.3.06>

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