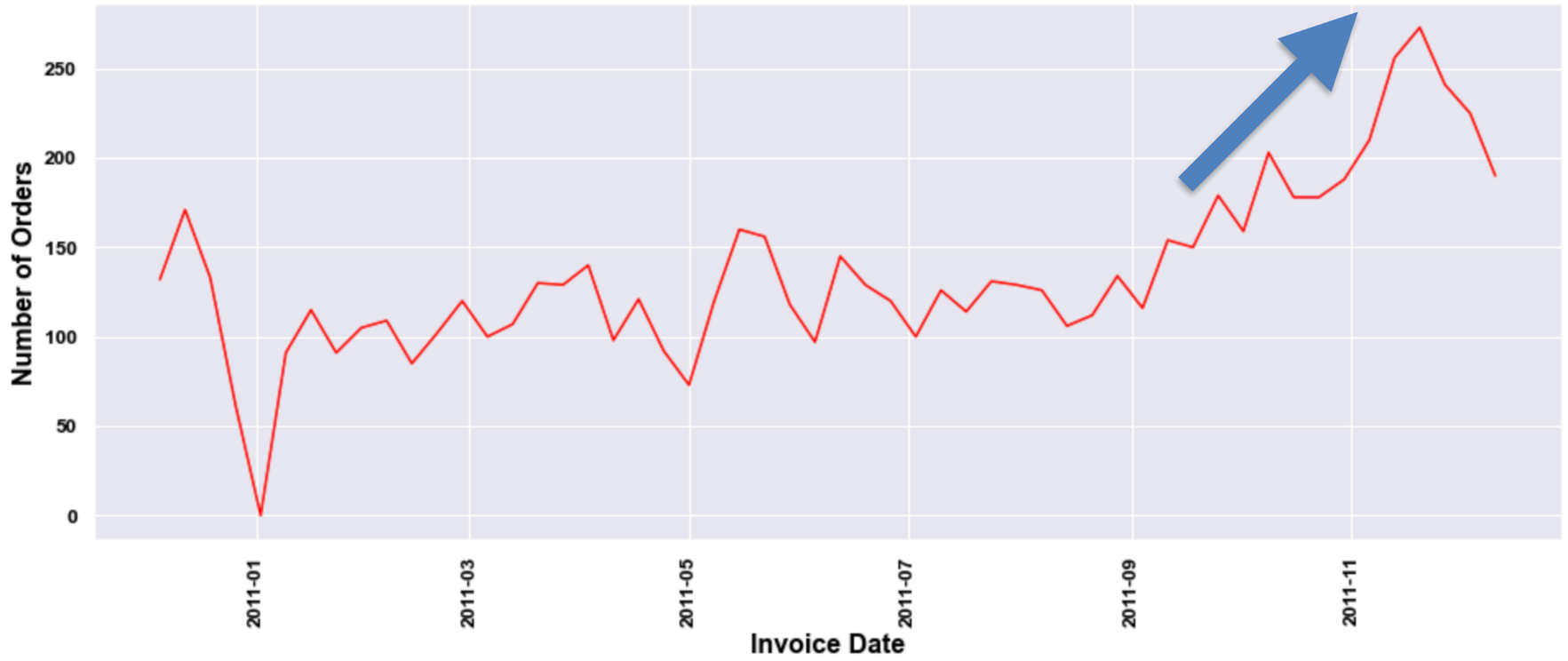
GloboSales: Data Analytics & Sales Forecasting



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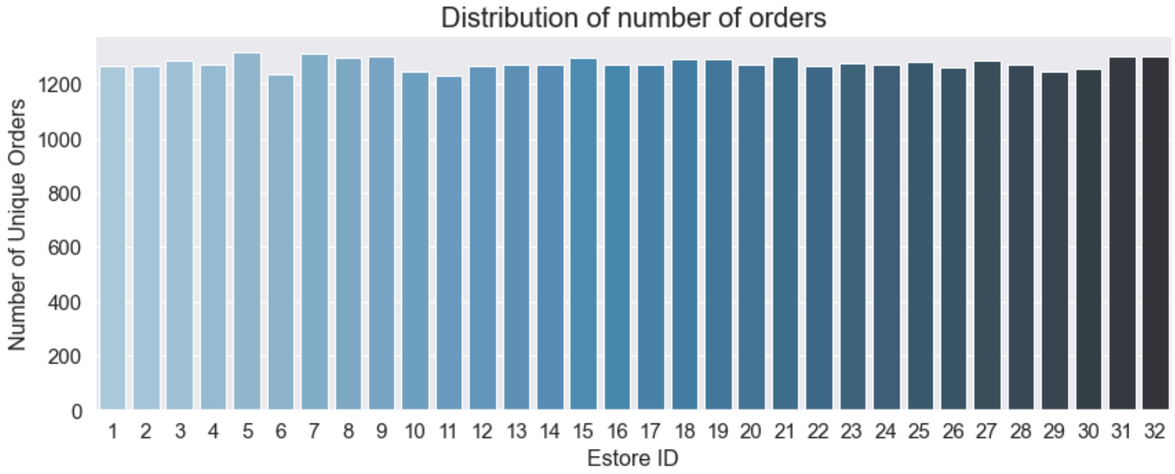
Outline: Data Driven Growth Tools for Globosales and its E-stores

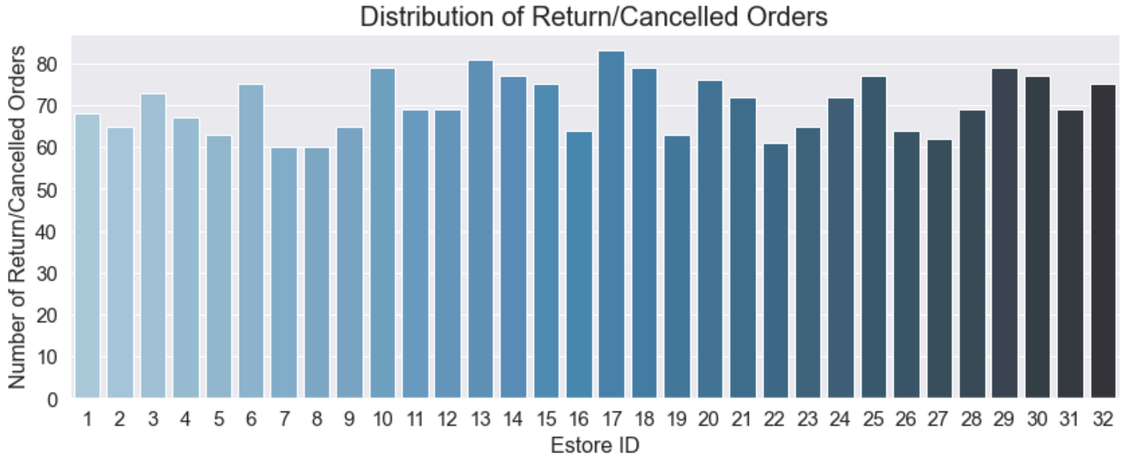
- Initial data exploration and general trends
- Sales forecasting tool for E-stores
- Helping E-stores identify and retain returning customers
- Recommendations for GloboSales

Initial Data Exploration and General Trends: Key Facts

- Key facts about the data:
  - Number of invoices: **7837**
  - Total E-stores in data: **32**
  - Number of customers: **2598**
  - Number of countries of customers: **13**
  - Number of invoices that were cancelled or returned: **508**
  - Invoices between the dates: **2010-12-01** to **2011-12-09**

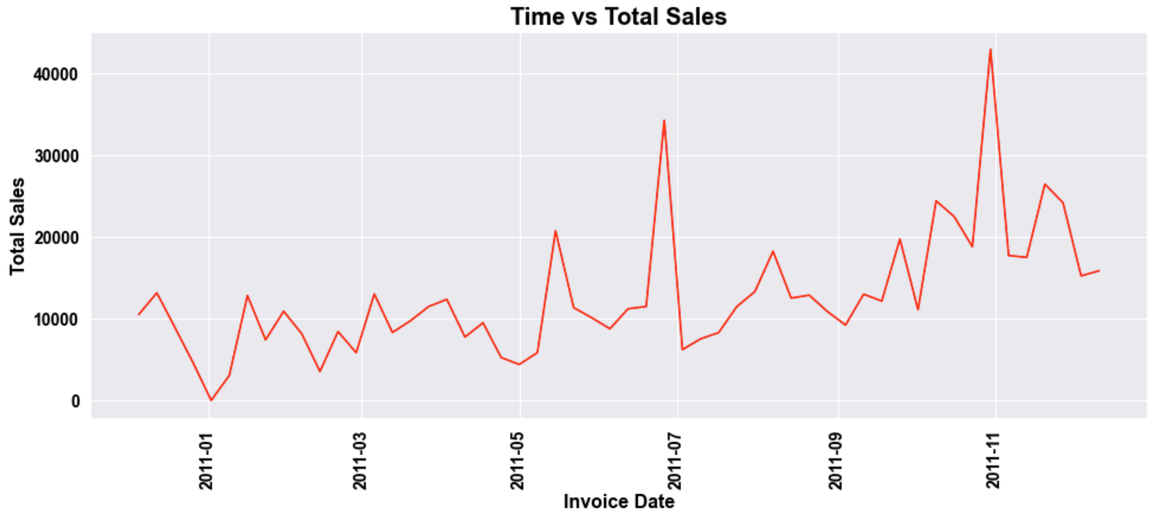


Number of Orders/Invoices are uniformly distributed across all E-stores

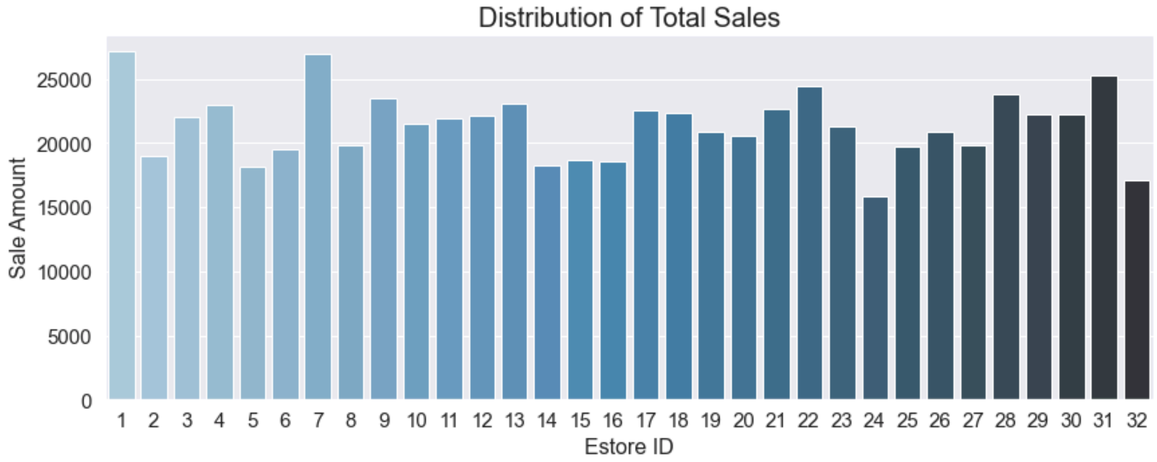


Initial Data Exploration and General Trends: Sales

- Sale amount defined as Quantity x Unit Price
- For quantity values that were empty, we assumed that the quantity was 1
- Included returned/cancelled orders in the analysis



Time vs sales figure shows that there is a gradual increase in total sales with time . We see 2 sharp peaks in the data (at about 2011-06 and 2011-11) due to high sale amount orders in those weeks.



Total sales amount can vary between E-stores:

E-store with ID 1 had the highest number of sales: 27.2k
E-store with ID 24 had the lowest number of sales: 15.9k

Initial Data Exploration and General Trends: Customer Behaviour

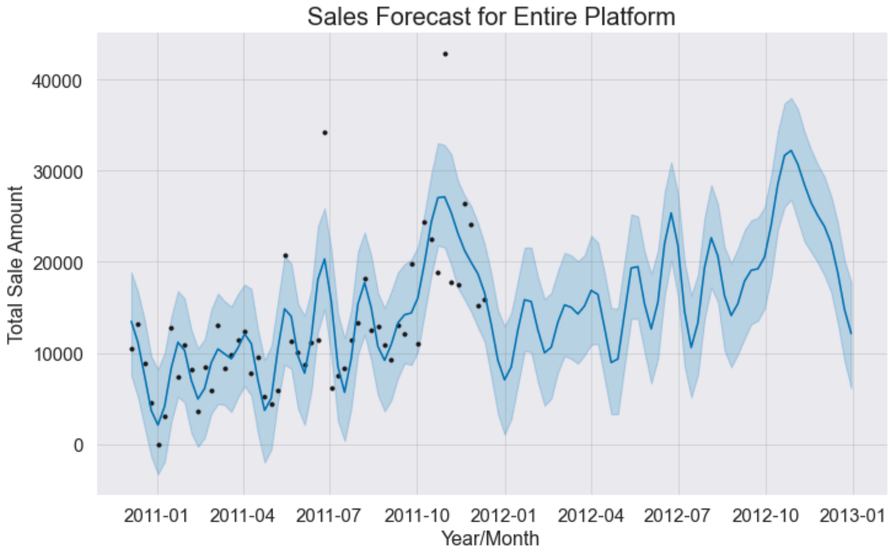
- We found that for many invoices/orders, the customer ordered from more than 1 E-store:
  - The median value for the number of E-store per invoice was **1**.
  - However, on average, products were ordered from about **5.5** E-store in each invoice (due to significant outliers)
- **3561** invoices ordered from more than 1 E-store
  - Maximum number of E-stores in a single invoice was 32 (customer ordered from all E-stores in a single order)
- **3768** invoices ordered from 1 E-store
- **48%** of the customers have ordered more than once.
  - We can also check the number of repeat orders placed by customers with a particular E-store

Example: Customer count distribution for number of repeat orders placed with E-store that had ID 1.

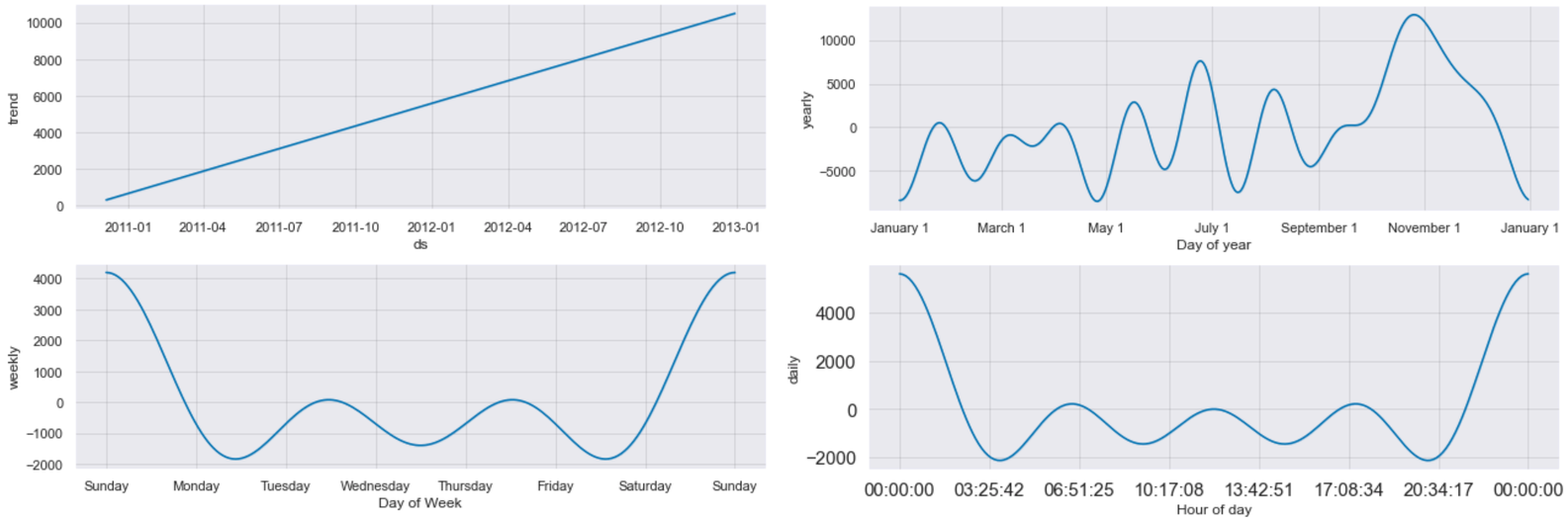
- **Several customers placed between 2 to 10 orders**
- **One customer ordered 120 times from E-store 1**

Sales Forecasting Tool for E-stores

- Carried out Time-Series forecasting using Invoice Date and Total Sale Amount (Quantity x Unit Price)
- Taking into account yearly, weekly, daily seasonality, we can forecast sales future sales and determine which E-stores are likely to bring in more revenue.



1 year sale forecast (2012) for the entire GloboSales platform

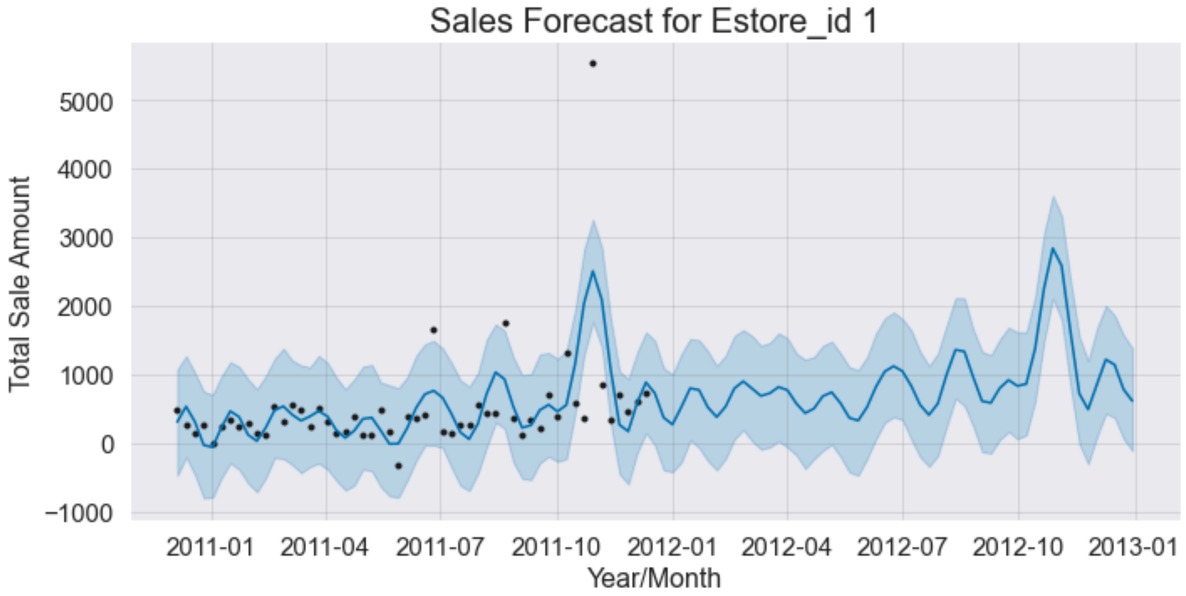


The 4 plots above show the components of the forecast model.

- These components include the general trend (top left) + yearly (top right), weekly (bottom left), daily (bottom right) seasonality of the time-series

Sales Forecasting Tool for E-stores

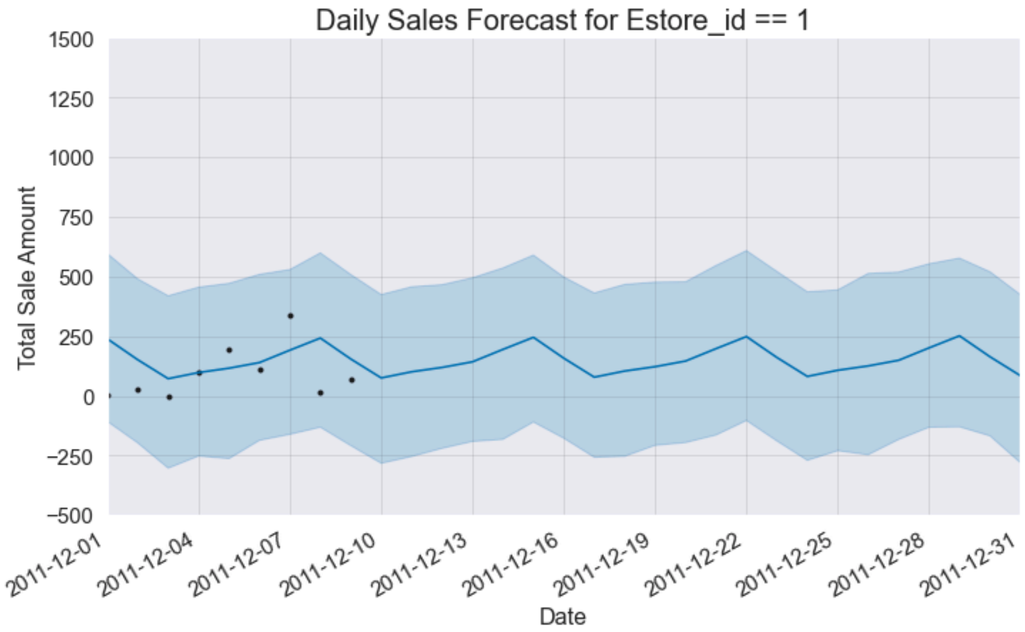
- We can use the forecasting tool on a specific E-store (e.g. E-store with id1)



1 year sale forecast (2012) for E-store with id 1 (store had the highest number of total sales)

Black points indicate weekly sale data:

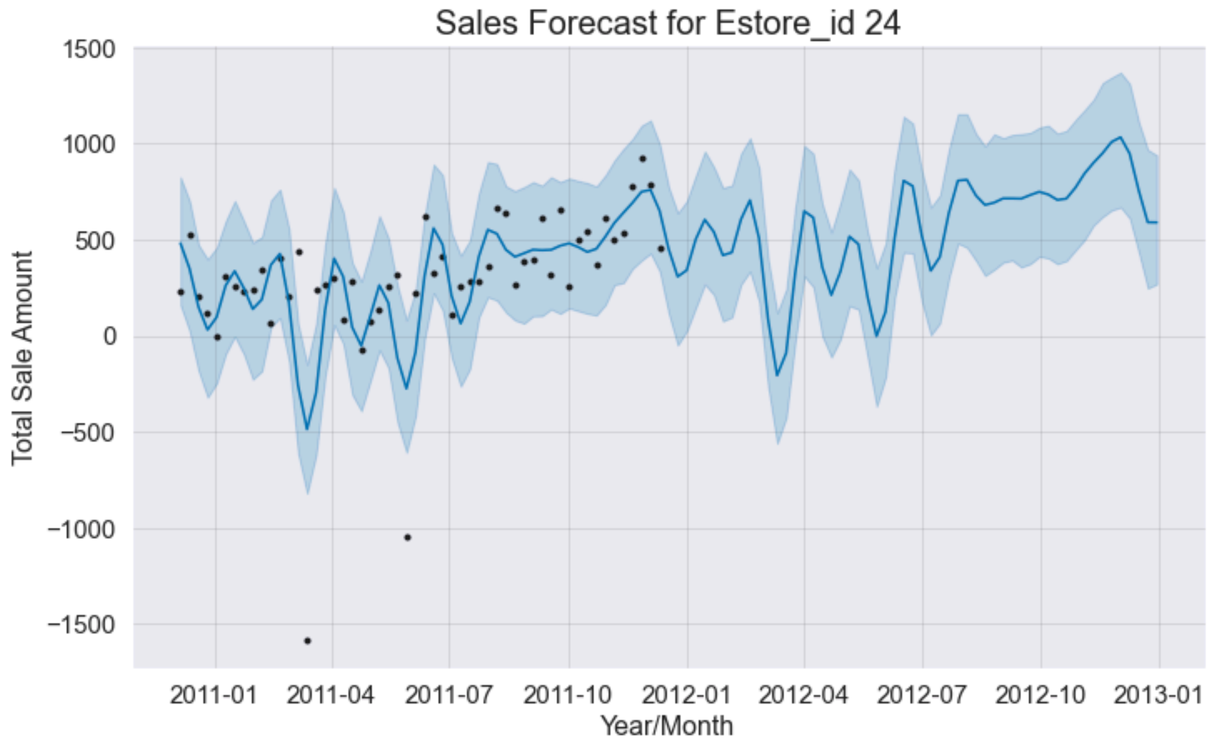
- One good week of sale around 11-2011 has a strong influence on the forecast.



Forecasting tool can also be used on daily sales data to make predictions close to holiday season.

Sales Forecasting Tool for E-stores

- We can use the forecasting tool on a specific E-store (e.g. E-store with id 24)



1 year sale forecast (2012) for E-store with id 24
(store had the lowest number of total sales).
Black points indicate weekly sale data.

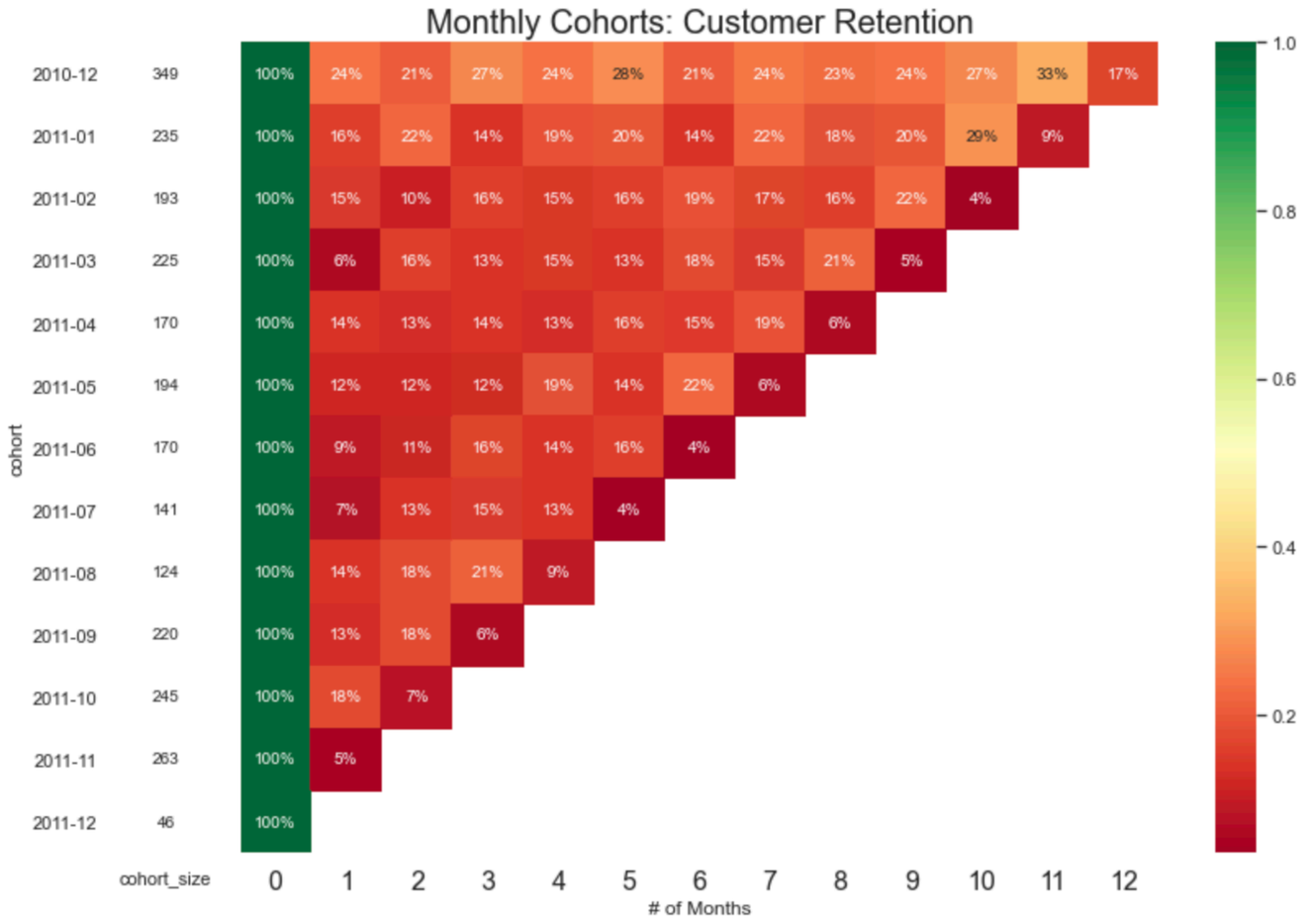
- During a week around 2011-03, a large return/refund order was made by the E-store.

- Another return order was placed in a week in 2011-06.

- These return orders reduced the total sale amount for E-store 24 and also strongly influence the future forecasting/ prediction for sales.

Helping E-stores Identify and Retain Returning Customers

- Created cohort of customers that placed their first order in a given month
- We then checked what percentage of each cohort placed another order in subsequent months
- A significant percentage (from 17% to 33%) of the 2010-12 cohort also made orders every month in 2011.
- Cohorts that placed their first order later in the year 2011 were less likely to make another order in subsequent months.



This heatmap illustrates the retention percentage of customers after they placed their first order on the GloboSales platform

Recommendations for GloboSales

1. Help E-stores identify repeat customers and target them through discount/offers
2. Offers/discounts for customers that place orders with more than 1 E-store of above a certain value
3. Pricing strategy based on E-store performance and sales forecasts
   - If E-store sales above threshold then charge lower commission or offer discount
4. Have different pricing options for E-stores
   - E-stores can opt to be promoted during high sale season based on their seasonality data
5. Further investigation into offers given to 2010-12 cohort needs to be conducted so that that these incentives/offers can be periodically offered to customers throughout the year.