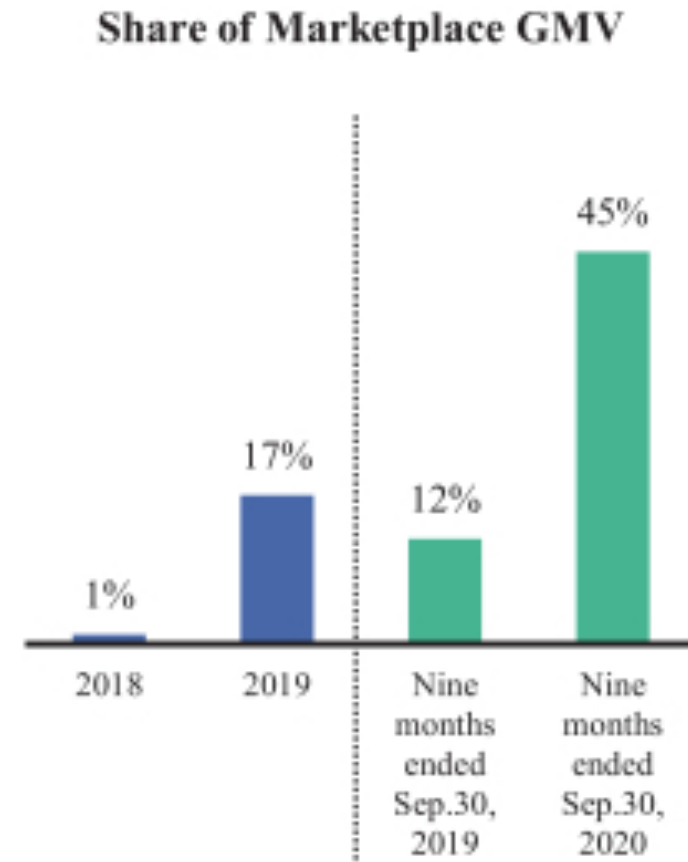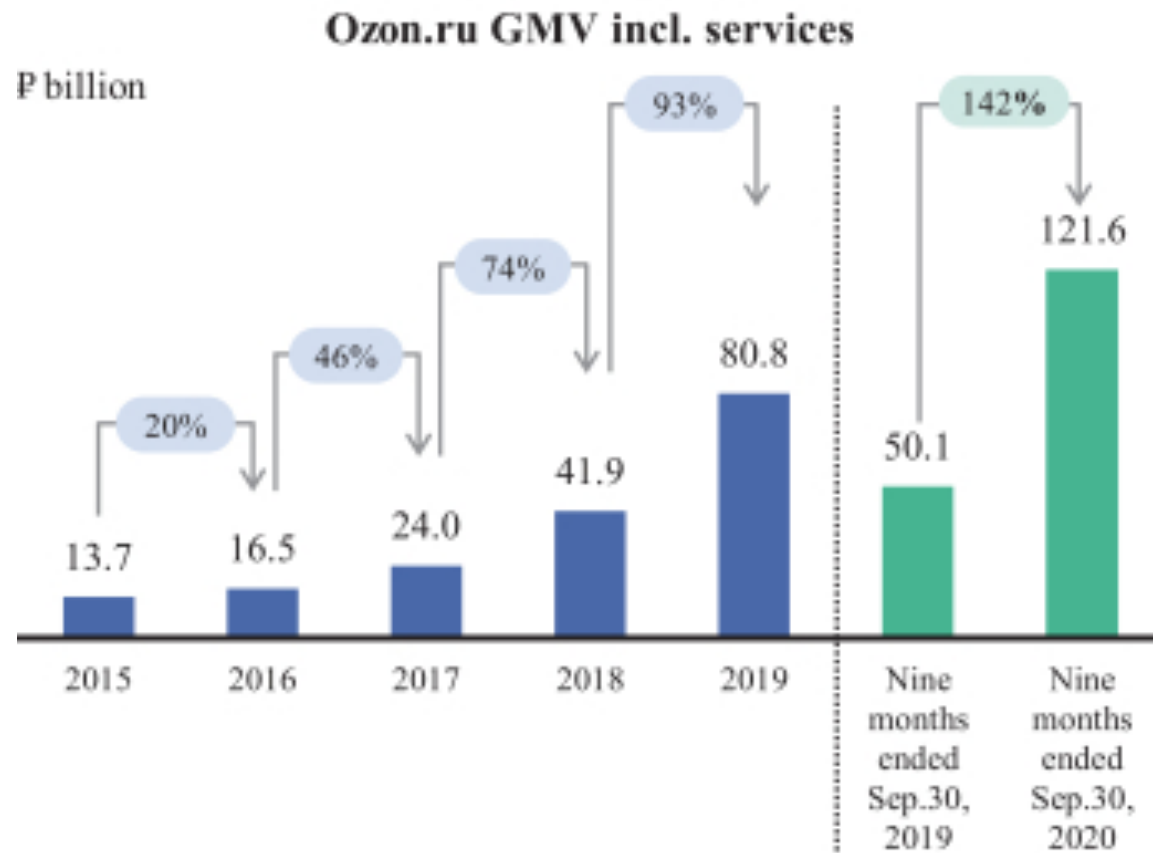# BUSINESS USE CASE

OZON. Sales predictions and Purchase order automation in retail

Ekaterina Kryukova

Company overview

Ozon.ru GMV incl. services

₽ billion

- 2015: 13.7
- 2016: 16.5 (20%)
- 2017: 24.0 (46%)
- 2018: 41.9 (74%)
- 2019: 80.8 (93%)
- Nine months ended Sep.30, 2019: 50.1
- Nine months ended Sep.30, 2020: 121.6 (142%)

Share of Marketplace GMV

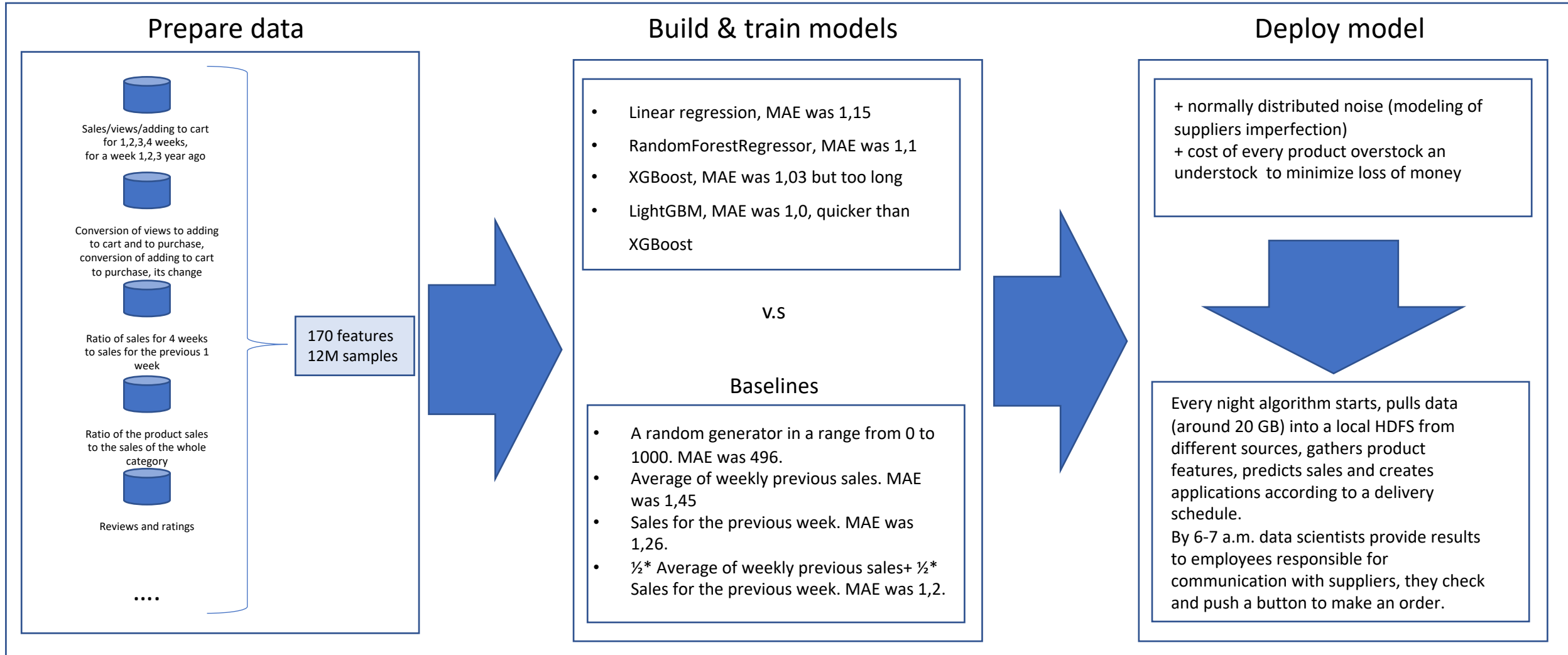- 2018: 1%
- 2019: 17%
- Nine months ended Sep.30, 2019: 12%
- Nine months ended Sep.30, 2020: 45%

Sales predictions and Purchase order automation in retail

Task: Predict sales for each product from product lists of 1.5 M for a certain period

Prepare data

Sales/views/adding to cart
for 1,2,3,4 weeks,
for a week 1,2,3 year ago

Conversion of views to adding
to cart and to purchase,
conversion of adding to cart
to purchase, its change

Ratio of sales for 4 weeks
to sales for the previous 1
week

Ratio of the product sales
to the sales of the whole
category

Reviews and ratings

....

170 features
12M samples

Build & train models

- Linear regression, MAE was 1,15

- RandomForestRegressor, MAE was 1,1

- XGBoost, MAE was 1,03 but too long

- LightGBM, MAE was 1,0, quicker than XGBoost

V.S

Baselines

- A random generator in a range from 0 to 1000. MAE was 496.
- Average of weekly previous sales. MAE was 1,45
- Sales for the previous week. MAE was 1,26.
- ½* Average of weekly previous sales+ ½* Sales for the previous week. MAE was 1,2.

Deploy model

+ normally distributed noise (modeling of suppliers imperfection)
+ cost of every product overstock an understock to minimize loss of money

Every night algorithm starts, pulls data (around 20 GB) into a local HDFS from different sources, gathers product features, predicts sales and creates applications according to a delivery schedule.
By 6-7 a.m. data scientists provide results to employees responsible for communication with suppliers, they check and push a button to make an order.
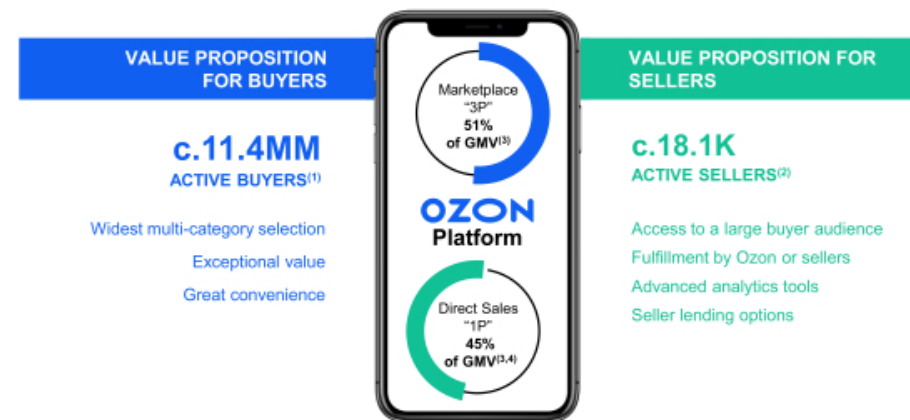
Business effects

As a mistake of purchases in excess of 1% would cost 10 million rubles (~120 K $), the model is very important

Using sales prediction model, the company efficiently plans warehouse, replenishes stocks, avoids the overflow and estimates demand elasticity (price, temperature and other factors).

- Products availability at the end of week increased by 20%
- Manual work has decreased
- As a side effect the opportunity to illustrate dependences of demand on each feature is available now
- Opportunity to price, description and photos optimization is available now

APPENDIX

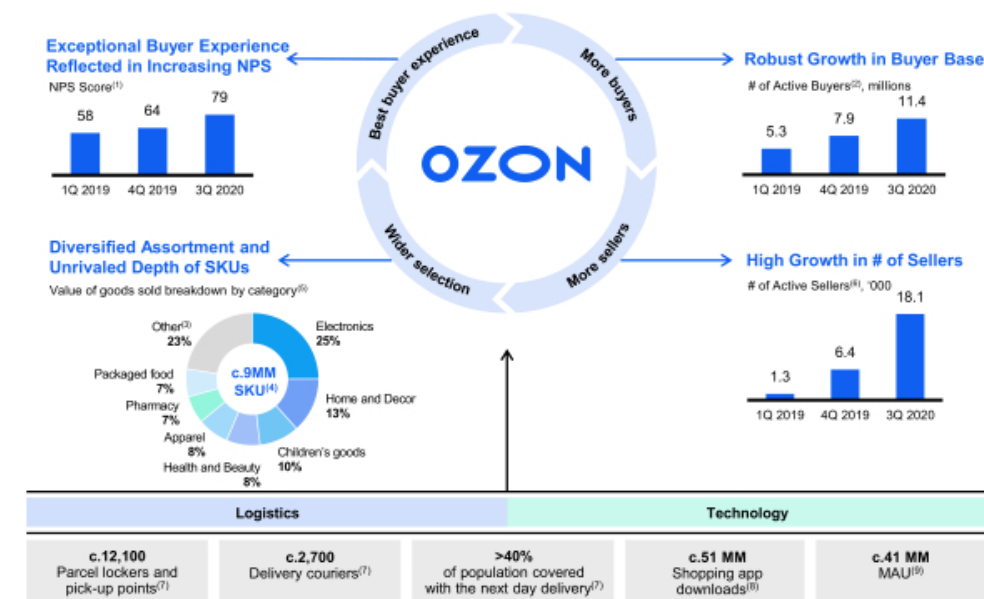**Globally Proven Business Model of 3P Marketplace Complemented by 1P Offering…**

| VALUE PROPOSITION FOR BUYERS | | VALUE PROPOSITION FOR SELLERS |

Marketplace "3P" 51% of GMV[3]

OZON Platform

Direct Sales "1P" 45% of GMV[3,4]

c.11.4MM
ACTIVE BUYERS[1]

Widest multi-category selection

Exceptional value

Great convenience

c.18.1K
ACTIVE SELLERS[2]

Access to a large buyer audience

Fulfillment by Ozon or sellers

Advanced analytics tools

Seller lending options

Source: Company data.
Notes:
[1] Unique buyers who placed an order on OZON.ru platform within the 12 month period preceding September 30, 2020.

[2] Number of unique sellers who made a sale on our Marketplace within the 12 month period preceding September 30, 2020.
[3] GMV incl. services for the three months ended September 30, 2020.
[4] Remaining 4% comprised of services revenue.

… With Powerful Network Effects Driven by Strong Buyer and Seller Value Propositions

Exceptional Buyer Experience Reflected in Increasing NPS

NPS Score[1]

58	64	79
1Q 2019	4Q 2019	3Q 2020

Best buyer experience — More buyers

OZON

Wider selection — More sellers

Robust Growth in Buyer Base

# of Active Buyers[2], millions

5.3	7.9	11.4
1Q 2019	4Q 2019	3Q 2020

Diversified Assortment and Unrivaled Depth of SKUs

Value of goods sold breakdown by category[5]

Other[3] 23%
Electronics 25%
Packaged food 7%
c.9MM SKU[4]
Pharmacy 7%
Home and Decor 13%
Apparel 8%
Children's goods 10%
Health and Beauty 8%

High Growth in # of Sellers

# of Active Sellers[6], '000

1.3	6.4	18.1
1Q 2019	4Q 2019	3Q 2020

Logistics			Technology	
c.12,100 Parcel lockers and pick-up points[7]	c.2,700 Delivery couriers[7]	>40% of population covered with the next day delivery[7]	c.51 MM Shopping app downloads[8]	c.41 MM MAU[9]

Source: Company data, INFOLine.
[1] Net Promoter Score ("NPS") based on information gathered from OZON's internal surveys sent to customers after a purchase.
[2] Unique buyers who placed an order on OZON.ru platform within the 12 month period preceding the relevant date.
[3] Includes books, sports goods, FMCG, pet care and other smaller categories.
[4] As of September 30, 2020. Includes different sizes of apparel.

[5] Total value of goods sold through our platforms in the nine months ended September 30, 2020. Percentages may not equal 100 due to rounding.
[6] Unique sellers who made a sale on OZON.ru marketplace within the 12 month period preceding the relevant date.
[7] As of September 30, 2020.
[8] Since the launch of our Shopping App in December 2010 by September 30, 2020.
[9] On average over the last twelve months as of September 30, 2020.

Strong technology foundation and scalable infrastructure to support future growth

Technology is at the core of our business, and our research and development team is essential to our ability to implement our business strategy. We have built a reliable and scalable technology infrastructure that can handle the large transaction volumes generated on our platform. As of September 30, 2020, our IT systems were able to

process more than 270,000 parcels per day and were tracking approximately 27 million items stored at our fulfillment centers. We continually invest in technology to support the growth of our business and the ongoing evolution of our services that we offer to our buyers and sellers. In pursuit of our goal to provide an outstanding selection of products, value and online shopping convenience to our buyers, we use technology, such as artificial intelligence ("AI") and machine learning, across different parts of our platform, including our search engine and recommendations functions to inventory management and product pricing. Our technology also serves as a backbone of our seller experience, allowing them to effortlessly integrate into our Marketplace and to achieve maximum value by using our price matching and comparison algorithms, data analytics and other tools.

https://www.sec.gov/Archives/edgar/data/1822829/000119312520284083/d29162df1.htm

Pricing strategy

We strive to provide our buyers with the best value proposition by offering products at competitive prices on our platform. We use internally developed machine learning algorithms to parse through websites of online retailers in the Russian e-commerce market to identify the market prices for each product listed on our platform in real time. We use this real-time pricing information to match our prices for products sold through Direct Sales, with the most competitive prices offered for the same or similar products that can be found on the wider Russian e-commerce market. While we do not control the price of the products offered by our sellers through our Marketplace, we provide our sellers with "price indices" for their products, based on up-to-date market data, to help them price their products competitively. Our provision of "price indices" to our sellers, together with the high volume and large variety of products offered more broadly on our platform, naturally fosters a competitive environment that benefits our buyers.