STRATEGY DAY
June 2018
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Oliver Hughes
CEO

Russian Financial Market
Russia stands out for Digital/FinTech development

- 67% of Russian adults have a bank account
- Internet Penetration 76% (#2 in the World after UK) up to 90% in 2020
- Smartphone penetration 55% up to 75% by 2020
- High dwell time on the Internet 6.31hrs/day (vs the leader Brazil 8.67hrs)
- 268mn of payment cards in Russia at YE2017
- ₽60.8tn transaction volumes in 2017
- 26% of PCE (personal consumption expenditures) on cards

Source: World Bank, the CBR
Russia is different from other countries

Tinkoff breaks traditions

- An IT company by nature but a Bank by regulatory status
- In-house IT development and innovation vs Outsourcing and legacy systems
- A hybrid of smart balance sheet and broker solutions vs Heavy balance sheet traditional banking
- 100% Digital vs Brick & mortar model
- On-line acquisition with off-line fulfilment capability
- Moving into lifestyle, travel and entertainment

From consumer finance to lifestyle banking
Defining Publicly Traded Peer Universe

Platform Players
- Tencent
- Alibaba Group
- Baidu
- JD.com
- Alibaba
- Safaricom
- Alphabet
- Amazon
- Facebook
- PingAn

Digitally Advanced Traditional Banks
- DBS
- Nordea
- Virgin Money
- Sberbank
- BBVA

Comparison Websites
- Tinkoff Bank
- MoneySuperMarket.com
- GoCompare

Fully Digital Players – Developed Markets
- ally
- BOFT
- TFBank
- Norway
- Resurs Holding
- Collector Bank
- Ferratum
- enova
- elevate
- First Internet
- Skandia Banken

Fully Digital Players – Emerging Markets
- SAMSUNG CARD
- KBank
- MyBucks
- Qudian.com
- Kakao

Non-listed Banks
- Kreditech
- Atom Bank
- Starling Bank
- SIMPLE
- N26
- Atom
- Revolut
- TransferWise
- Orange Bank
- bankbazaar.com
Innovation will thrive
Evolving customer preferences drive Innovation in banking

Current trends:

- Move to on-line vs physical visit to a branch
- Rapid growth of NFC payments (ApplePay, Google Wallet etc)
- Open banking API’s (PSD 2 analogues)
- Bank requisites are fading out in favour of Payments by telephone number

Threats for traditional banks:

- Rapid development of existing ecosystems (Sberbank, Tinkoff, Alfa Bank)
- Entry of technology companies to financial market (Yandex, Google, etc)
- Lack of interface in favor of social media apps

New-age digital bank = Mobile App

In Russia only few big players can afford being technological and competitive
Global trends in mobile app usage

• Less than 5-7 apps are used by customers on a frequent/daily basis

• Good news - mobile bank app is one of these apps

• More than half of Mass Affluent customers visit mobile app every day

• Tinkoff customer visits mobile app c.200 times/year WHILE for example Facebook user makes 200 visits/month

• High activity allows to push new ecosystem products
Customer Data is Key

Big Data enables more efficient customer engagement:

- Boost dwell time and expand interaction tools with customers
- A different angle of financial services – fascinating, not boring
- Provide highly targeted offerings based on a psychological profile of a certain customer segment or even a specific person
- Fine-tune targeting and content/service provisioning models based on customer feedback and activity
- Involve partners, merchants, bloggers & vloggers in content/service generation and offering

BIG Data available for banks:

- transactions, merchants, receipts
- digital footprint
- geodata, money transfers, social network
- integration with social media
Product Evolution

Before

Product = 
Product + Speed/Interface

• Most of people cannot verbalize what they want
• People have a problem of choice

Now

Product = 
Solution (Advice/Content/AI) + Product

• Most people cannot verbalize what they want
• People have a problem of choice

Banking + Solutions for life = 
LIFESTYLE BANKING
2007–2009
DIRECT MAIL & TELE-SALES

2010–2011
ON-LINE BANKING

2012–2018
MOBILE BANKING

2018+
LIFESTYLE BANKING
On-line customer-centric ecosystem
Customer profile: a wealth/age cross-section

Wealth

Mass affluent

Mass market

Cash/POS loans

Insurance, travel, ticketing, entertainment

Tinkoff Mortgage

Tinkoff Business

Customer profile: a wealth/age cross-section

Younger Older

Tinkoff
Cross-sell platform expansion
How Tinkoff Black is involved into this story

It gives % of share of new customers inflow

<table>
<thead>
<tr>
<th>Product</th>
<th>2015</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investments</td>
<td>80%</td>
<td>32%</td>
</tr>
<tr>
<td>All Airlines</td>
<td>32%</td>
<td>32%</td>
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<tr>
<td>Cash loans</td>
<td>31%</td>
<td>30%</td>
</tr>
<tr>
<td>Insurance</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>SME</td>
<td>30%</td>
<td>31%</td>
</tr>
<tr>
<td>Co-brands</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>Platinum</td>
<td>8%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Is utilised by % of share of active customer base

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<thead>
<tr>
<th>Product</th>
<th>2015</th>
<th>2018</th>
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</thead>
<tbody>
<tr>
<td>Investments</td>
<td>96%</td>
<td>47%</td>
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<tr>
<td>All Airlines</td>
<td>47%</td>
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Customers tend to own more products

The new disruptors

- **70%** of SME decision makers take Tinkoff Black in 1 year
- **42%** of SME customers use one or more additional corporate service vs. 30% a year ago
- **20%** of POS customers have utilized a credit card within 1.5 years
- **20%** of SME customers were newcomers in 2015 and 2018 correspondingly
- **5x** 4+ products
- **3x** 2+ products
- **2x** 1+ products
- **2x** 1+ products
Tinkoff Black current accounts: juicy product for sophisticated customers

Issued cards (mn)

- Multi-currency card
- Family Banking & Tinkoff Kids
- Premium Black Edition cards
- Special offers and entertainment

Stellar results (x2 per year)

Top-4 by transactions volume in Mastercard

Issued cards

Transactions (quarterly)

Balance (end of period)

2015  2016  2017  2018  2019

0.8  4.5  6.5

220  420

₽ bn
Current accounts economics

New customers

Unit economics

CAC

Business line P&L

Revenue per customer

OPEX per customer

Fee and commission income

Interest expense

Transaction and service costs

Acquisition costs

Operating income
Maksim Evdokimov
Head of Mobile

Lifestyle Banking
Lifestyle Banking

There are Only 2 Types of spending:

- **Negative Spending**
  (those you HAVE TO pay, e.g. Taxes, Fines, Utility Bills, Loans, etc.)

- **Positive Spending**
  (those you WANT TO pay, e.g. Restaurants, Leisure, Shopping, Travel, etc.)
Lifestyle Banking

Know You Customer:

Not (Only) About Regulation

It Is Much More About Targeted Offering
Lifestyle Banking

We Know Our Customer

• What, When And Where He/She Needs?

• And We Provide It Within The App
ТЦ Метрополис
Ленинградский проспект, 120
12:00 - 23:00
МЕТРОПОЛИС — это современный торговый центр, на трех этажах которого располагаются более 350 магазинов и ресторанов.

Сегодня Каро Фильм
Все 32

Рестораны в ТЦ
Все 32

М.Видео — международная сеть магазинов модной обуви и аксессуаров. В магазинах сеть магазинов очень модной обуви, аксессуары.

Отзывы
4,9 из 5

Сергей
24 июля
Хороший круглосуточный гипермаркет рядом с домом.
Лайфстиль Банкинг

Либерти

Информация

Срок начала: 7 дней после операции
Срок действия: 3 – 16 дек (осталось 6 дней)
Минимальная сумма покупки: 1200 ₽
Количество: На первые 5 покупок (осталось 2)

Купить билет

Итого 780 ₽
За 2 билета

2 билетов
20 марта, 20:00
Кинотеатр Соловей
**Percorso**
Вознесенский пр-т., 1

**Более 2500 ₽ 13:00 - 0:00**
Ресторан высокой итальянской кухни, где современный дизайн создает смелый контраст с традиционной роскошью дворца 19 века. Percorso предлагает редкое сочетание региональных рецептов и свежих фермерских продуктов.

---

**Количество гостей**
- 2

**День**
- Пт: 13
- Вс: 14
- Пн: 15
- Вт: 16
- Ср: 17
- Чт: 18

**Время**
- 10:30
- 11:00
- 11:30
- 12:00

Напишите ваши пожелания

Забронировать

Нажмите «Забронировать», Вы соглашаетесь с условиями оферты

---

**2 25 сентября, 19:00**
**Количество гостей** **Дата бронирования**

**Номер бронирования** RW1QB

**Адрес**
Пресненская набережная, 2
Москва

**Как добраться**
Доехать с Яндекс.Такси (0+)
1 ч 32 мин / 16 км / 549 ₽
Зимний дворец
Зимний дворец, построенный Растrellи в середине XVIII века, — самое узнаваемое здание в городе. Сейчас здесь находится «Эрмитаж», а раньше дворец использовался как зимняя резиденция российских императоров — здесь жили все от Екатерины Великой до Николая II.

В подсказках увидите варианты частых обращений. Выбирайте похожее на ваш вопрос.

Как получить ипотеку
И сэкономить время, деньги и нервы

27 000 ₽
в среднем потратят родители московских одиннадцатиклассников на выпускной

В эту сумму входит банкетное меню, развлекательная программа и оборудование.

источник
агентство «Москва»
Lifestyle Banking

Tinkoff Kids
Lifestyle Banking

Tinkoff Journal

- Editorial Team with 100+ writers & analysts in the Cloud

- 3+ million MAU
Lifestyle Banking

Tinkoff App

• 2,5+ million MAU
  (1,7 million EOY2017)

• 30+ million sessions per month
  (18 million sessions EOY2017)

• 0,8+ million DAU
  (0,5 million EOY 2017)

• 8 million Installs
  (6,5 million EOY2017)

• 2,5+ mins session length
  (1,5 mins session length EOY2017)
Stanislav Bliznyuk
Chief Operating Officer

Operating efficiency
## How Tinkoff.ru works

![Diagram showing various services and technologies](image)

- Quick “Time to Market“
- Efficient & Flexible operations
- Scalability
- Ecosystem approach
Off-line fullfilment: Smart courier today

Everywhere
- 93% of Russia
- 2,147 cities and towns

Everyday
- 20,000 meetings per day
- Over 70% next-day meetings

Everything
- All Tinkoff products
- Over 50 delivery scenarios

Number of meetings ('000) Cost per meeting (₽)

1H2015 2H2015 1H2016 2H2016 1H2017 2H2017 1H2018F
442 558 924 1,097 1,580 2,091 2,100

Smart courier tomorrow
Smart courier tomorrow

- Meeting in 1 hour
- Leverage cross-sell
- Smart task routing
### Telesales and service in the Cloud

<table>
<thead>
<tr>
<th>Scalability</th>
<th>Efficiency</th>
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</thead>
<tbody>
<tr>
<td>• 14,000 operators</td>
<td>• No capex</td>
</tr>
<tr>
<td>• 500k activities per day</td>
<td>• 77% of all activities</td>
</tr>
<tr>
<td></td>
<td>• ₽3bn savings in 2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social responsibility</th>
<th>Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 2,000 disabled or on maternity leave</td>
<td>• Pay-as-you-go</td>
</tr>
<tr>
<td>• Tinkoff Corporate University</td>
<td>• Career growth opportunities</td>
</tr>
</tbody>
</table>
Evolution (or Revolution?...)

- **SUPER YESTERDAY**
  - 98% office
  - 2% cloud

- **MEGA TODAY**
  - 21% office
  - 77% cloud
  - 2% bots

- **AWESOME TOMORROW**
  - 10% office
  - 40% cloud
  - 50% bots
Tinkoff Bots

Chat

Scan

Voice
Tinkoff ambition is 10% market share in 2019

IE* Market share 3%

F&C revenue from IE (w/o Sberbank) (₽ bn)

Open accounts

* IE means Individual Entrepreneurs
Source: the CBR
Unique product proposition drives high NPS

- Personal manager
- Fast payments with a long business day
- Best-in-class Mobile bank and Internet bank
- Business account for free in 5 minutes
- Attractive tariff plans
- Up to 6% on current account balances
Lending
• Overdrafts
• Short- and long term loans
• Bank guarantees
• SME-loan brokerage

Cash Management & Payments
• Internet and POS acquiring
• Payroll programmes
• Tax and Currency Control
• ATMs
• Cash-in and cash collection

Start-up your business with Tinkoff
• Registration of new entities
• University of entrepreneur
• HR agency

Accounting and State Authorities
• Self-service accounting
• Cloud accounting
• Qualified e-signature
• Legal and tax consulting

Sales Generator
• Cloud CRM
• Website construction
• Call-center services
• Targeting
• POS lending

SME ecosystem
Product penetration

- Accounting: 42%
- POS acquiring: 4%
- Payroll: 5%
- Tinkoff Black: 88%

2018 TARGET

- 50%
- 15%
- 10%
- 95%

AND MORE...
SME economics

New customers

Unit economics

CAC

Business line P&L

Revenue per customer  OPEX per customer

Interest income  Transaction income  Transaction and service costs  Operating income

Regular F&C (packages)  Transactional F&C  Interest expense  Acquisition costs
Alexander Emeshev
Director for New Product Development

Broker platform
Russian Quicken Loans + MoneySuperMarket

**Unique business model**
- The only fully on-line mortgage marketplace
- AI mortgage advisory engine
- 70% staff - by demand

**Exceptional client experience**
- 2 min on-line preapprovals
- 24/7 service
- 24/7 processing
- On-line cover for off-line banks
- All counterparties in one place
- Free rates monitoring
- Uber for insurance, appraisals, legal
Housing Ecosystem

Mortgage banks

Property developers

Tinkoff.ru

Realty agencies → CRM → Property developers

Realtors

Buyers

Classifieds
Mortgage rates decline from 12% to 9% drives market growth.

Tinkoff increases number of partners so their aggregate market share will reach 18% by 2019.
Tinkoff’s share of mortgage volume origination

- Tinkoff always has 4-5 key partner banks and aims to increase its share in their origination volumes. The leap in 2017 driven by more partner banks joining the platform.

- Our partners are prepared to pay up as Tinkoff’s share in their overall volume goes up.
Mortgage economics

New customers '000

Unit economics P'000

CAC P'000

Business line P&L Pmn

- Revenue per customer
- Service per customer

- Revenue
- Costs
- Operating income
Next steps

- 1 hour mortgage deal for primary housing
- “Just bring your passport with you”
Alexander Emeshev
Director for New Product Development

Tinkoff Investments
Russian Robinhood

Now on our own platform.
100,000 accounts

Own sophisticated IT design concept

More technologically advanced and user-friendly

Featuring unique product range and service offering

• All instruments in your mobile
• Instant money bridge (same as Rakuten Securities)
• «Fixed price» execution
• Single account
• Advisory, invest ideas, invest news feed
• The simplest tariff on the market
• Eurobonds from $1,000
Tinkoff holds ~25% market share by new accounts
Sberbank is the main competitor
Retail brokerage market: new accounts opened

BCS becomes №1 due to Tinkoff partnership
Tinkoff is №6 on standalone basis
Retail investments market: assets

Deposit rates decline from 10% to 7% drives market growth

Tinkoff share increase:
- Market growth
- Increasing penetration into current accounts base
- Average portfolio growth (new customers segments)
Rakuten Securities has 40% penetration into current accounts customer base.

Key driver is instant money bridge – same as we done from the start.

Huge cross-sell potential
Investments – own solution ahead

Opened accounts
'000

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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<tr>
<td>4Q</td>
<td>15</td>
<td>29</td>
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Balances
Pbn

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<th>Quarter</th>
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Deals volume
Pbn

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Fee and commission income
Pmn

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Next steps

- Premium service for affluent customers

- Roboadvisor
Viacheslav Tsyganov
Chief Information Officer

IT new normal
Intelligent Cloud Platform

- **Partner Ecosystem**: Banks, online retailers, merchants
- **Distributed Delivery Network**: MAGENT - Smart couriers
- **Distributed Cloud Call Centre**: WEBOFFICE - At home agents
- **Mobile apps fabric**: Banking, Mono, SDK
- **Microservice architecture**: MVP, open source
- **API Gateways**: Distributed cloud call centre, distributed delivery network
- **AGILE INFRASTRUCTURE**: Commodity, Converged HW
- **AGILE INFRASTRUCTURE**: Software defined, Network & storage
- **AGILE INFRASTRUCTURE**: OPENSTACK Cloud, Docker, DEVOPS, Public Cloud

**STRAIGHT TROUGH PROCESSING**
- SINGLE SIGN ON
- PAYMENT GATE
- AUTH
- ACQUIRING
- TRADING
- CARD LINKED SYSTEM
- NOTIFICATION CENTER
- POS KUPIVKREDIT
- TARGET LOYALTY
- MESSENGER
- SUBSCRIBE SYSTEM
- INSURANCE POLICY
- MASS RECRUITING
- ONLINE ACCOUNTING
- MORTGAGE
- TRAVEL

**DATA**
- CLICK STREAM PROCESSING
- REAL TIME BIDDING
- RECOMMENDATION ENGINE
- RECONCILIATION
- SOCIAL CRM ID GRAPH
- EVENT DRIVEN MARKETING
- PFM DATA CRAWLER
- REAL TIME PREDICTIVE

**R&D**
- VOICE & FACE BIOMETRICS
- AI BOTS
- VOIP WEBRTC
- GREEN PLUM DB
- BLOCKCHAIN INITIATIVES

**AGILE INFRASTRUCTURE**
- **Commodity**
- **Converged HW**

**AGILE INFRASTRUCTURE**
- **Software defined**
- **Network & storage**

**AGILE INFRASTRUCTURE**
- **OPENSTACK Cloud**
- **Docker DEVOPS**
- **Public Cloud**
• Share of own development 100%
• Uninterrupted 24/7 functioning of all services is a priority
• Data Science function across all business units
Agility amid growth

Billions per day

Card tx per sec 225

Data events

Customer activities

Taken decisions

2016 2017 2018 2019

Data events per sec

10,000

5,000

3,500

500

25

8

2

0.5

2016 2017 2018 2019

Data events

Customer activities

Taken decisions

Card tx per sec 225

Agility amid growth

0.5

2

8

25

Billions per day
IT resource allocation by business line
Re-Inventing core banking

ATM

- NFC authentication
- Quick cash with QR codes
- Modern UX based on React/Redux/TypeScript/RxJS
- Access to all products and services
- Face recognition

CRM

- Search-engine style
- Interactive routines & KB
- Chatbots instead of support
- Messengers as 1st channel
- Voice assistants
- Predictive & paperless

Avg # of clients per agent increased by 40%
Avg service time per request decreased by 20%
Future banking services

**Unique Next-level PFM**
- Digital receipts
- Fiscal data linked by card
- Spend transparency
- Cashback from manufacturers
- Price check service

**Fast payments**
- Aggregators: Sberbank, VISA, Mastercard
- Money transfer using phone number
- Money request *(coming soon)*

**Municipal services**
- Registration of personal account
- eGovernment services

**Virtual reality**
- Digital mortgage
- Training
AI at every step

- Natural Language Processing, Understanding
- Real-time operator assistant
- TCRM
- Sentiment & emotions
- Voice identification
- Voice
- Web-mining
- A/B-testing via Reinforcement Learning
- Geo analytics
- Look-alike Modeling
- Remote sensing
- Docs
- Receipts
- Photo Biometric
- Financial Voice Assistant
- Speech Analytics
- Paraphrase
- Robo-quality assurance
Successful R&D strategy

Voice biometry
• Customer authentication
• Fraud prevention
• National Unified Biometric System
• National Credit Bureau POC

Recommendation engines
• Stories
• Trading
• Target
• Best Offers

Speech analytics
• 100% of calls translated to text
• Automatic quality management

Computer vision
• Merchant solutions
• Analyzing satellite images
Software development at country scale

93% engineers

Cost saving = 25%

Multi time zone

Top tech brand

<table>
<thead>
<tr>
<th>Location</th>
<th>Dec 2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headcount</td>
<td>30</td>
<td>250</td>
<td>400 (850)</td>
<td>1,350</td>
</tr>
</tbody>
</table>
Tinkoff got talent

Fintech School

• 4 launches since 2016

• 4 areas in focus
  Machine learning
  Functional programming
  Mobile development
  Front-end development

• Only real projects

• Only acting developers as lecturers

• 100 graduates become a part of the team

Top-tier Universities

Technology Community
Tinkoff got talent

Fintech School

**Top-tier Universities**

- MIPT - Master program “Financial technologies”
- MSU - Faculty of Mathematics and Mechanics
- ITMO University
- Saint Petersburg State University
- Innopolis University
- Sochi «Sirius» Educational Center for gifted children
Tinkoff got talent

Fintech School

Top-tier Universities

Technology Community

- Case-championship with 45,000 participants
- Data Science Challenge
- Computer vision tournament
- Frontend contest
- Mathematics game
- Algorithms and data structures
- Postgres, Scala, Angular community
- Top ranking tech blog at Habr.com
- Leading tech conferences and mathematics contests
Evgeny Ivashkevich
Risk Director

Risks
Double shift of analytical paradigm

**Analysts**

1. Standard approach
   - Historical Data

2. Adaptive scoring models
   - Current & Historical Data

**AI agents**

3. Optimization of data requests
   - Historical Data

4. Adaptive strategies
Scoring Modeling

Behavior Characteristic

Statistical Models

Independent Variables

Raw Data

Historical Sample

Logistic Regression

PD

Independent Variables

X1 X2 X3 X4 X5 X6 X7 X8 X9 X10 ...

Historical Sample
NPV modeling

Decision

NPV > 0

Business Models

Behavior Forecasts

Independent Variables

Historical Sample
Double shift of analytical paradigm

**Analysts**
- Statistical Modeling
- Machine Learning

**AI agents**
- Adaptive scoring models

1. Standard approach (Historical Data)
2. Optimization of data requests (Current & Historical Data)
3. Adaptive strategies
4. Historical Data

Analysts AI agents

Analysts

- Historical Data
- Standard approach

AI agents

- Current & Historical Data
- Adaptive scoring models
- Optimization of data requests
- Adaptive strategies
Case #1: Adaptive scoring models

- Historical Sample
- Customer’s Trajectory
- Model Forecast
- Absorbing Default State

Months On Books

Days Past Due

- 0
- 1-30
- 30-60
- 60-90
- 90+

Case #1: Adaptive scoring models

Bad rate

PD

Q1 Q2 Q3 Q4 Q5 Q6

1 3 5 7 9
Case #1: Adaptive scoring models

- **New customers**
- **Early delinquencies**
- **Model Forecast**
- **Absorbing Default State**

### Months On Books

<table>
<thead>
<tr>
<th>Days Past Due</th>
<th>0</th>
<th>1-30</th>
<th>30-60</th>
<th>60-90</th>
<th>90+</th>
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</thead>
<tbody>
<tr>
<td>NC</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>

### Bad rate vs. Adaptive PD

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
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<tbody>
<tr>
<td>1Q</td>
<td>8%</td>
<td>10%</td>
<td>12%</td>
<td>14%</td>
<td>16%</td>
</tr>
<tr>
<td>2Q</td>
<td>6%</td>
<td>8%</td>
<td>10%</td>
<td>12%</td>
<td>14%</td>
</tr>
<tr>
<td>3Q</td>
<td>4%</td>
<td>6%</td>
<td>8%</td>
<td>10%</td>
<td>12%</td>
</tr>
<tr>
<td>4Q</td>
<td>2%</td>
<td>4%</td>
<td>6%</td>
<td>8%</td>
<td>10%</td>
</tr>
</tbody>
</table>
Double shift of analytical paradigm

<table>
<thead>
<tr>
<th>Analysts</th>
<th>AI agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical Data</td>
<td>Current &amp; Historical Data</td>
</tr>
<tr>
<td>1 Standard approach</td>
<td>2 Adaptive scoring models</td>
</tr>
<tr>
<td>3 Optimization of data requests</td>
<td>4 Adaptive strategies</td>
</tr>
</tbody>
</table>

- Statistical Modeling
- Machine Learning
Two analytical cultures

Statistical Modeling
- Linear regression
- Logistic regression

Model
- Interpretable
- Transparent

Parameters
- Means and variances are estimated from the data

Model validation
- Goodness-of-fit tests and residual examination

Problem types
- Long forecast horizon
- Through the cycle
- High cost of model failure

Machine Learning
- Gradient boosting
- Neural networks

Model
- Noninterpretable
- Opaque

Parameters
- Means and variances are not determined

Model validation
- Measured only by model's predictive accuracy

Problem types
- Short forecast horizon
- Local trends
- Low cost of model failure
Case #2: Optimization of data acquisition

What data to buy?

1. Data Provider
2. Data Provider
3. Data Provider
4. Data Provider
5. Data Provider

Whom to call?
## Case #2: Optimization of data acquisition

<table>
<thead>
<tr>
<th>Model</th>
<th>Data usage</th>
<th>NPV per lead, ₽</th>
<th>Cut off %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call to all</td>
<td>No additional data</td>
<td>-16.1</td>
<td>100%</td>
</tr>
<tr>
<td>Logistic regression</td>
<td>Buy all available data</td>
<td>9.5</td>
<td>8%</td>
</tr>
<tr>
<td>Gradient boosting</td>
<td>Buy all available data</td>
<td>10.1</td>
<td>8%</td>
</tr>
<tr>
<td>RL agent</td>
<td>Buy only data</td>
<td>11.5</td>
<td>8%</td>
</tr>
</tbody>
</table>
Double shift of analytical paradigm

<table>
<thead>
<tr>
<th>Analysts</th>
<th>AI agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical Data</td>
<td>Current &amp; Historical Data</td>
</tr>
</tbody>
</table>

1. Standard approach
2. Adaptive scoring models
3. Optimization of data requests
4. Adaptive strategies

Statistical Modeling
Machine Learning
Case #3: A/B-testing of collection strategies

Days Past Due | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | ... |
---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
Champion | | | | | | | | | | | | | | | | | | |
Challenger A | | | | | | | | | | | | | | | | | | |
Challenger B | | | | | | | | | | | | | | | | | | |

Recovery less Cost
- Champion: 52%
- Challenger A: 53%
- Challenger B: 51%

Call ($$) SMS ($):
- Days 1-4: Yellow (Call ($$))
- Days 5-8: Blue (SMS ($))
- Days 9-12: Yellow (Call ($$))
- Days 13-16: Blue (SMS ($))

Hypothesis
Strategy adjustment
A/B test
Statistical analysis
Case #3: AI-based collection strategy

- AI uses reinforcement learning algorithm based on neural network
- AI creates and tests new strategies by design
- On-line action choice for each client based on individual behavior
- On-line strategy adjustment

Hypothesis

Strategy adjustment

Statistical analysis

A/B test

AI
Credit portfolio: growth

![Graph showing credit portfolio growth over time with annotations for adjusted growth earlier than market, preserved capital, and reemerged earlier than market.](Image)

- **Loans and advances to retail customers**
- **LTM Tinkoff portfolio growth**, rs
- **LTM market growth**, rs

**Bottom of the credit cycle**
Credit portfolio: cost of risk

- Peaked at 20.5%
- Bottomed at 6.7%
- Bottomed at 2.7%

Average through the cycle: 8.6%
Credit portfolio: composition

Credit cards 89.5%  
Cash & POS loans 10.5%

Currently we test two types of collateral loans:

**Car loans:**
- Average size: ₽620k
- Term: 1-5 years
- Rate: 16-23%

**Home equity loans:**
- Size: up to ₽10mn
- Term: up to 10 years
- Rate: 10-15%

**Cash loans**
- Average size: ₽220k
- Term: up to 3 years
- Rate: 12-23.9%

**POS loans**
- Average size: ₽26k
- Term: up to 2 years
- Rate: 6.7-25%

![Diagram showing gross interest yield and cost of risk for different quarters from 1Q'16 to 1Q'18.](image)
Insurance

Gross written premiums

<table>
<thead>
<tr>
<th>Quarter</th>
<th>1Q'16</th>
<th>2Q'16</th>
<th>3Q'16</th>
<th>4Q'16</th>
<th>1Q'17</th>
<th>2Q'17</th>
<th>3Q'17</th>
<th>4Q'17</th>
<th>1Q'18</th>
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</thead>
<tbody>
<tr>
<td>Pmn</td>
<td>300</td>
<td>400</td>
<td>500</td>
<td>600</td>
<td>700</td>
<td>800</td>
<td>900</td>
<td>1000</td>
<td>1100</td>
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</table>

Segment result

<table>
<thead>
<tr>
<th>Quarter</th>
<th>1Q'16</th>
<th>2Q'16</th>
<th>3Q'16</th>
<th>4Q'16</th>
<th>1Q'17</th>
<th>2Q'17</th>
<th>3Q'17</th>
<th>4Q'17</th>
<th>1Q'18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pmn</td>
<td>-200</td>
<td>-100</td>
<td>0</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>500</td>
<td>600</td>
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</table>
On-line acquiring

**Turnover**

<table>
<thead>
<tr>
<th>Period</th>
<th>Turnover (€mn)</th>
</tr>
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<tbody>
<tr>
<td>1Q’16</td>
<td>15</td>
</tr>
<tr>
<td>2Q’16</td>
<td>20</td>
</tr>
<tr>
<td>3Q’16</td>
<td>25</td>
</tr>
<tr>
<td>4Q’16</td>
<td>30</td>
</tr>
<tr>
<td>1Q’17</td>
<td>35</td>
</tr>
<tr>
<td>2Q’17</td>
<td>40</td>
</tr>
<tr>
<td>3Q’17</td>
<td>45</td>
</tr>
<tr>
<td>4Q’17</td>
<td>50</td>
</tr>
<tr>
<td>1Q’18</td>
<td>55</td>
</tr>
</tbody>
</table>

**Fee and commission income**

<table>
<thead>
<tr>
<th>Period</th>
<th>Fee and Commission Income (€mn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1Q’16</td>
<td>10</td>
</tr>
<tr>
<td>2Q’16</td>
<td>15</td>
</tr>
<tr>
<td>3Q’16</td>
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<td>2Q’17</td>
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<td>3Q’17</td>
<td>40</td>
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<tr>
<td>4Q’17</td>
<td>45</td>
</tr>
<tr>
<td>1Q’18</td>
<td>50</td>
</tr>
</tbody>
</table>
FY2018 GUIDANCE

- Net loan portfolio growth: 25%+
- Cost of risk: 7% area
- Cost of borrowing: 6-7%
- Net income: ₽24bn+

2018–2019 AMBITIONS

- We believe that our Net Income has growth potential of 20-40% per year for the next two years.
- We see a contribution from new (non-credit card) Business Lines of ₽ 6-10 bn by end of 2019.
- This would account for around 30% of the Group’s Net Income by end of 2019.
- These non-credit revenue generating businesses should help us to reduce earnings volatility through the credit cycle.
We welcome feedback on the non-financial, CSR and diversity information we publish.
Please use this address to contact us on this:

stakeholderengagement@tcsgh.com.cy