Topics of today’s discussion

Perspective on the securities services industry

Automation & Robotics – what are we talking about?

Automation & Robotics in securities services
Securities services industry has been growing at low-single digit growth rates since 2010

Global securities services revenues by product
USD billions

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<tbody>
<tr>
<td>Custody and asset servicing</td>
<td>75</td>
<td>77</td>
<td>77</td>
<td>79</td>
<td>82</td>
<td>84</td>
<td>89</td>
</tr>
<tr>
<td>Fund administration</td>
<td>21%</td>
<td>21%</td>
<td>22%</td>
<td>22%</td>
<td>21%</td>
<td>21%</td>
<td>20%</td>
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<tr>
<td>Interest income</td>
<td>19%</td>
<td>20%</td>
<td>19%</td>
<td>18%</td>
<td>20%</td>
<td>19%</td>
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<tr>
<td>Additional value-added services</td>
<td>15%</td>
<td>14%</td>
<td>12%</td>
<td>13%</td>
<td>12%</td>
<td>13%</td>
<td>14%</td>
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<tr>
<td>Corporate trust</td>
<td>7%</td>
<td>7%</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
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<tr>
<td>Prime services</td>
<td>10%</td>
<td>9%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>11%</td>
<td>10%</td>
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CAGR 2010-2016

- Custody and asset servicing: 4%
- Fund administration: 2%
- Interest income: 3%
- Additional value-added services: 1%
- Corporate trust: 3%
- Prime services: 3%
Constant margin pressure impacts the securities services industry

Custody business

Revenue margin (custody revenues/AuC) basis points

-2% p.a.

1.7 1.7 1.7 1.6 1.6 1.6 1.5

2010 11 12 13 14 15 2016

AuC volumes, indexed (2010 = 100)

100 110 115 121 133 134 143

Fund administration business

Revenue margin (fund administration revenues/AuA) basis points

-1% p.a.

4.5 4.6 4.5 4.5 4.4 4.2 4.2

2010 11 12 13 14 15 2016

AuA volumes, indexed (2010 = 100)

100 100 108 111 113 117 121

Increasing pressure on top line and profitability requires constant efficiency improvements of high impact

1 Includes local and global custody

SOURCE: Globalcustody.net; expert interviews; McKinsey
Automation & Robotics as structural lever to respond to industry trends

Number and diversity of securities
Higher number of securities in the market observed in recent years resulting in more work for the securities services players (e.g., growth to ~$660bn in smart beta ETF AuM (~$160bn net inflows in 2017))

Regulatory requirements
- Increasing regulatory requirements leading to higher number and more complex reports
- Higher number of message flows

Structural usage of **Automation & Robotics at scale** as compensation to industry trends

*Focus of this document*

SOURCE: Globalcustody.net; expert interviews; McKinsey
Perspective on the securities services industry

Automation & Robotics – what are we talking about?

Automation & Robotics in securities services

Topics of today’s discussion
Automation & Robotics progressively replace or complement traditional efficiency levers like BPO and process redesign.

Redesign **customer journey** with an end-to-end perspective and rethink business model.

- **Digitize customer experience and day-to-day operations** by building digital sales and developing “seamless” customer experience.
- **Introduce Automation & Robotics** to replace human tasks.
- **Provide advanced analytics** to facilitate decisions, drive straight-through processing and improve decision automation (e.g., underwriting, retention).

Drive the next wave of **process outsourcing/offshoring** creating seamless handoffs to ensure end-to-end optimization.

SOURCE: McKinsey
Five Automation & Robotics technologies can be employed for large scale transformation of processes

1. Robotic process automation
   Automate routine tasks through existing user interfaces (e.g., data extraction and cleaning)

2. Smart workflows
   Integrate tasks performed by groups of humans and machines (e.g., month end processes)

3. Machine learning
   Identify patterns in data through supervised and unsupervised learning (e.g., decision algorithms)

4. Natural language processing
   Create seamless interactions between humans and technology (e.g., data-to-story translation)

5. Cognitive agents
   Build a virtual workforce capable of supporting employees and customers (e.g., employee service centers)

SOURCE: McKinsey
Example robotics process automation (RPA): Mimicking user behavior and automating repetitive tasks with very limited development effort.

Business user records workflow on his screen.

Team creates process flow, which can be customized afterwards.

Software executes recorded workflow as required on dedicated workstation.

SOURCE: McKinsey
Example natural language processing (NLP): Helping to improve efficiency, engagement, compliance and innovation

**Increase Operational Efficiency** by automating manual tasks
- Focus on higher-value tasks
- Tailored information at scale
- Deliver the most interesting and important information

**Enhance Engagement at Scale** by writing custom content
- Personalized narratives for your audience to increase loyalty
- Unlimited reach
- Power conversational interfaces and bots

**Achieve Regulatory Compliance** by generating compliance reports
- Automate writing for accuracy and time savings
- Traceable back to the record of system
- Narratives automatically update as data changes

SOURCE: McKinsey
Example cognitive agents: Cognitive agent Amelia can play the role of any customer service agent and when she does not know what to answers, she involves a human colleague and learns by listening.
Perspective on the securities services industry

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Automation & Robotics in securities services
Applying Automation & Robotics in securities services – examples

## Benefits

- **Robotic process automation**
  - Efficiency gains
  - Quality improvement
  - Lead time reduction

- **Smart workflows**
  - Efficiency gains
  - Flexibility and agility
  - Lead time reduction

- **Machine learning**
  - Analytics driving new service offering/ pricing
  - Cost mgmt.

- **Natural language processing**
  - Engagement at scale by driving custom content
  - Achieve Regulatory Compliance

- **Cognitive agents**
  - Client satisfaction
  - Efficiency gains
  - Development of new services

## Examples

- **Robotic process automation**
  - Automated reconciliation
  - Automated first level of investigation
  - Corporate action information processing

- **Smart workflows**
  - Investigation case handling
  - Project team work allocation and follow-up

- **Machine learning**
  - Advanced analytics applied to client data to drive pricing on client queries

- **Natural language processing**
  - Personalized narratives
  - Unlimited reach
  - Power chat interfaces and bots
  - Very traceable
  - Automatic updates as data changes

- **Cognitive agents**
  - First and second level information handling on client services teams
The long tail of Automation & Robotics potential – Robotization can be a game changer as it enables automation support for resources focusing on what is not STP

**Typical scope of traditional automation and digitalisation**
- Managed by *Operations teams* with light IT governance
- STP Settlement engine, custody platform, …
- Enterprise Applications ERP and custom build solutions including digital module

**Typical scope of Rapid Process Transformation (Lean + Robotics)**
- Core business processes
- Specialised Software and applications (CRM, BPMS, custom build)
- Evolutive maintenance/ small change requests
- Field “untouched” by IT: too small to justify an IT development (no business case), no specific package existing or low on the priority list

Number of FTE impacted by automation

**Type of business processes**

SOURCE: McKinsey
The complexity of securities services organizations requires a specific approach to Automation & Robotics to achieve full impact of automation.

Characteristics of many securities services organizations:

- Fragmented teams leading to fragmented automation potential
- Processes spread among people
- Complex process re-engineering (IT system modification)
- Experts based teams and managers
- Static work allocation
- Limited performance management
- Importance of IT with long cycle time and big roadmaps

Full impact of Automation & Robotics:

1. Take a business perspective to reduce or simplify demand
2. Drive End to end process standardization to avoid unnecessary automation
3. Ensure technology is ready to deploy robots at scale
4. Apply capacity management at team level to ensure granular resources
5. Manage “Bots” and “Bob” together and capture impact
6. Initiate cultural change to automation including training managers to their new roles

SOURCE: McKinsey
The big picture: How can the operating model of an advanced securities services player look like – leveraging Automation & Robotics at scale

### Channels (e.g., dealers, brokers)
- Cognitive agents with specifically designed products that enable high share of self-service and automation
- Natural language processing tools that automates repeatable interactions with dealers and brokers

### Product development, marketing, sales
- Machine learning used across all channels (e.g., product configuration/engines, social media analytics, channel productivity analytics)
- Extensive use of deep learning and AI analytics platforms for transaction management and trade processing
- Cognitive agents to drive high levels of self-service and automation, remaining with significantly automated processes
- High level of standard software and cloud components
- Strong IT-demand and management function in-house, with IT build outsourced, in particular in non-differentiating areas
- Significant automation of development and delivery functions

### Operations
- IT security
- Applications
- Infrastructure
- Finance and HR
- Procurement
- Investments
- Automation of 70%+ of tasks; 75% of all remaining FTEs engaged in analytical and value added tasks
- Machine learning for legal discovery and investments
- Preparation of Investor communications and MD&A leveraging NLP (Figures to Prose)
- 100% electronic communication, in- and externally
- Performance tracking for effective demand management

SOURCE: McKinsey