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AI and you
Perceptions of Artificial
Intelligence from the EMEA
financial services industry

April 2017

首席AI观旗下有3大类40余小类3000多AI社群，现进一步邀请行业人士加入。

AI技术群	云计算与大数据　　机器学习　　自然语言处理（NLP）　　语音识别 计算机视觉（CV）　　物联网技术　　VR/AR　　AI芯片
AI应用	自动驾驶　　安防　　机器人　　智能家居　　智能音箱　　物流 新零售　　金融　　教育　　影视游戏　　医疗健康　　通信服务 智慧城市　　智慧建筑
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Executive Summary

Leaders of financial services institutions are concerned and excited about the business implications of Artificial Intelligence. Firms across the globe are becoming aware of the power of these technologies and are now starting to explore how AI could enable them to introduce new services to market, widening and empowering their offering, and to improve existing business and operational capabilities.

In this paper, based on an EMEA FSI survey conducted jointly by Efma and Deloitte, we aim at inspect the industry sentiment about Artificial Intelligence and explore the possible and current applications that may impact the industry, enhancing its productivity.

Using the insights and case studies from several firms within the industry, this paper identifies what is shaping AI thinking in Financial Institutions, the current state of the industry and the actions that will be required to understand and exploit this exponential technology.
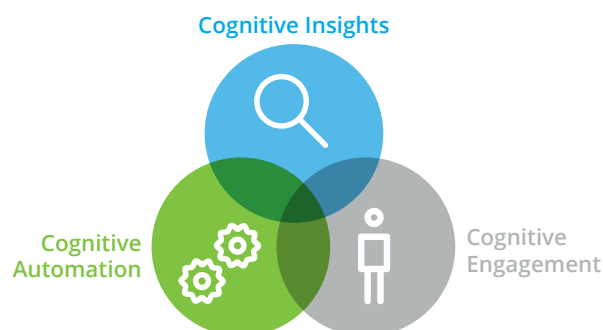
What is Artificial Intelligence?

Demystifying AI

Artificial Intelligence (AI) refers to technologies capable of performing tasks that normally require human intelligence[1]. AI applications such as video suggestions, product recommendations, spam filters and navigation systems have already become part of our day-to-day lives.

In 1950, Alan Turing envisioned AI as algorithms that are able to emulate human intelligence. The first AI technologies were commercially available in the 1980s[2], although they are only now beginning to achieve commercial relevance due to the exponential growth of data and connected devices, smarter algorithms, such as Deep Learning, and faster processing through the use of Graphics Processing Units (GPUs) and cloud computing.

AI can be described in terms of three application domains: Cognitive Automation, Cognitive Engagement, and Cognitive Insight.

Artificial Intelligence domains[3]

Cognitive Insights

Cognitive Automation

Cognitive Engagement

Focus on Cognitive Automation

In this first AI domain are machine learning, Robotics Process Automation (RPA), and other cognitive tools to develop deep domain-specific expertise (for example, by industry, function, or region) and then automate related tasks. We are already seeing AI-powered devices that automate jobs traditionally performed by highly trained human workers.

Handwriting and character recognition are best examples of intelligent automation capabilities which can enhance back/middle office operations performing high volume and rules based work helping to reduce risk and cost. For example natural language processing can be used to extract key information within documents using OCR scan.

Focus on Cognitive Engagement

At the next level of the AI value tree lies the cognitive 'agents': systems that employ cognitive technology to engage with people.

Cognitive Systems unlock power of unstructured data (industry reports / financial news) leveraging text/image/video understanding, offering a personalized engagement between banks and customers with personalised product offerings and unlocking new revenue streams.

The most common examples are the voice recognition interfaces that answer to voice commands to lower the thermostat or turn the television channel. Yet, there are business tasks and processes that could benefit from this kind of cognitive engagement, and new fields of application are emerging. They will likely be able to provide access to complex information, perform digital tasks such as admitting patients to the hospital, or recommend products and services. They may offer even greater business potential in the area of customer service, where cognitive agents could potentially replace some human agents by handling billing or account interactions, fielding tech support questions, and answering HR-related questions from employees.

Focus on Cognitive Insights

Cognitive Insights refer to the extraction of concepts and relationships from various data streams to generate personalized and relevant answers hidden within a mass of structured and unstructured data.

Observations and predictions' accuracy is improved in time with the increasing volume of processed data. AI can provide deep, actionable insights into not only what has already happened but also what is happening now and what is likely to happen next. This can help business leaders to develop prescribed actions and help workers augment their performances. For example, in call centers around the globe, the service representatives use multifunction customer support programs to answer product questions, take orders, investigate billing problems, and address other customer concerns. In many such systems, the workers must now jump back and forth between screens to access the information they need to answer specific queries.

In summary, Cognitive Insights allow to detect real time key patterns and relationships from large amount of data across multiple sources to derive deep and actionable insights.

AI capabilities

Human intellect is mimicked by computer systems that can recognise and understand, identify semantics, apply context and interact, reason and make decisions, learn and improve.

Artificial Intelligence capabilities[4]
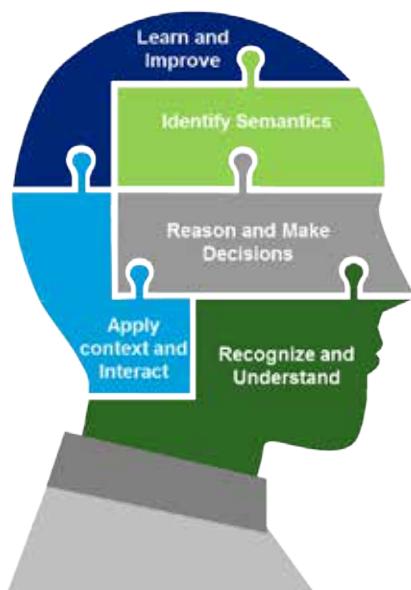
AI technologies employ technology and algorithms to automatically extract concepts and relationships from data, understand their meaning, and learn independently from data patterns and prior experience.

- **Recognise and Understand:** AI enables machines to recognize and understand handwriting, text, voice, image and video data using natural language engines, semantic computing, predictive algorithms, and machine learning.
- **Identify Semantics:** AI enables machines to apply semantics to understand the meaning of words based on contextual information.
- **Apply context and Interact:** AI enables to provide information that is situation-aware and reflects relevant data associations based on computing results from different sources and models.
- **Reason and Make Decisions:** AI enables a standard thought-process that could be customized to reason and make decisions based on specific environments.
- **Learn and Improve:** AI enables to continuously learn and improve performance based on results and feedback received.

Focus on AI enablers and technologies

AI enablers and technologies allow machines to perform specific capabilities mentioned above. They include machine learning, deep learning, Robotics Process Automation (RPA), natural language engines, probabilistic inference, semantic computing, etc.

- **Machine learning** refers to the process of automatically discovering patterns in data. Computer systems have the ability to improve their performance through data exposure without the need to follow explicitly programmed instructions.
- **Deep learning**: Machine learning algorithms involving artificial neural networks that are inspired by the structure and function of the brain. Interconnected modules run mathematical models that are continuously tuned based on results from processing a large number of inputs.
- **Robotic Process Automation** (RPA) refers to software robots (or bots) that can perform routine business processes by mimicking the ways in which people interact with software applications.
- **Natural language engines** include Natural Language Processing (NLP) and Natural Language Generation (NLG). It enables interactions with humans in natural language, voice, and text by using natural language processing on structured and unstructured data.
- **Probabilistic inference:** AI capabilities that use graph analytics and Bayesian networks to identify conditional dependencies of random variables.
- **Semantic computing:** AI category that includes computer vision, voice recognition, and various text analytics capabilities to understand naturally expressed intention and the semantics of computational content.

Structure of the report

Despite its potential benefits, AI is still at an early stage of implementation; its potential impact and use cases are further explored in the following sections. This report aims to present a point of view about perceptions of AI from the EMEA Financial Services Industry (FSI). First of all, main challenges and implications associated with AI will be discussed. Afterwards, the results of this survey will be presented with a description of the current situation. Then, AI use cases and applications in the FSI will be described. Finally, a conclusion will present the main outputs and actionable insights.

[4]Deloitte LLC framework

Seamless AI: the true challenge to humankind

2016 was described by Microsoft CEO Satya Nadella as "the year of the bots"[5]. Advances in speech interfaces using Natural Language Processing (NLP) algorithms combined with the exponential growth of investments in AI start-ups lead to an increase of the buzz around the "rise of the robots"[6]. The buzz was fed by comments from prestigious scientists and innovators like Stephen Hawking, Bill Gates and Elon Musk[7] with stark warnings about the dangers of AI. In contrast to the more fantastical predictions and fear messages for AI in the popular press, the AI experts from Stanford concluded that there's no cause for concern that AI is an imminent threat to humankind[8].

Nevertheless, the disruptive effects of AI should not be diminished. AI has the capability not only to augment but also to replace a wide range of tasks that are usually executed by humans. Moreover, questions related to regulation, accountability and liability remain largely unanswered.

[5] Why 2016 is shaping up to be the Year of the Bot, O'Reilly, 2016
[6] Rise of the robots, Martin Ford, New York Times Bestseller, 2015
[7] Stephen Hawking, Elon Musk, and Bill Gates Warn About Artificial Intelligence, Observer, 2015
[8] Artificial Intelligence and life in 2030 – One Hundred Year Study on Artificial Intelligence, Stanford University, 2016

We already observe that AI technologies are becoming embedded in our daily lives and part of diverse business functions. Thus, economy and society in a broad sense need to face the disruptive impact of AI in a short-term. We already see doctors getting insights and assisted diagnoses from AI algorithms[9].

We are using AI algorithms to detect fraud and customer behaviour patterns to get risk advisory and to enhance cross-sell techniques[9, 10, 11] in banking and retail. Even in oil and gas production, AI algorithms are applied to locate mineral deposits and diagnose mechanical problems with drilling equipment[9]. Beyond the undoubtable benefits of cost saving created by automation and increase of efficiency in operations and complex tasks, AI solutions:

- Improve and fasten decision making by deriving deep and actionable insights (e.g. customer behaviour patterns, automated fraud detection and planning).

- Boost customer engagement by creating customized and intelligent products and services, with new features, more intuitive interactions (e.g. speech) and advisory skills (e.g. personal financial management).

- Allow greater scale, through the automation of tasks that were executed manually[9].

According to the Stanford study "Artificial Intelligence and Life in 2030"[8], the eight domains where experts predict that AI will play an even more significant role are: transportation, service robots, healthcare, education, low-resource communities, public safety and security, employment and workplace, and entertainment[7]. On the other hand, the U.S. Department of Labour reported in 2016 that "65% of the schoolchildren will be eventually employed in jobs that have yet to be created". These predictions tell us that in near future the presence of AI technology will be almost seamless in our lives influencing both actions and jobs[12].

The following question arises: "how to prepare the economy and society for a bright AI future?"

In early 2017, the European parliament reacted by proposing a set of regulations to govern the use of AI, to settle issues regarding compliance with ethical standards and liability for mistakes made by those technologies.

Rapporteur Mady Delvaux stressed the importance of creating an European Agency for Robotics that would support public authorities by providing technical and ethical assistance[13]. He also suggested to draft a Code of Ethical Conduct to guide robots engineering and to determine accountability for their actions. In fact, accountability, or liability, is one of the crucial points in AI debates. The rise of self-driving cars stands out as the clearest example; it is necessary to define specific insurance schemes and determine responsibility for damages. In the next future, smart autonomous robots will be granted some sort of "legal personhood"[14], not unlike any firm. Finally, Delvaux's report highlighted that robots are likely to have long-term impacts on society as a whole. Public authorities are called to keep an eye on these trends and to start creating new employment and tax models.

We envision an economy and society that will harvest many positive and profound impacts from AI technologies. Nevertheless, researchers, developers, social scientists and policymakers play now an imperative role to drive innovation into the right direction, through the creation of AI-related policy, education and production of reliable and safe AI technology that public can trust.

[7] Stephen Hawking, Elon Musk, and Bill Gates Warn About Artificial Intelligence, Observer, 2015

[8] Artificial Intelligence and life in 2030 – One Hundred Year Study on Artificial Intelligence, Stanford University, 2016

[9] Cognitive Technologies: The real opportunities for business, Deloitte University Press, 2015

[10] There is a blind spot in AI research, Nature, 2016

[11] Watson Marketing gives banks a competitive edge, IBM White paper, 2016

[12] The future of work, U.S. Department of Labor report, 2016

[13] European Parliament News, "Robots :Legal Affair Committee calls for EU-wide rules" http://www.europarl.europa.eu/news/en/news-room/20170110IPR57613/robots-legal-affairs-committee-calls-for-eu-wide-rules

[14] The Guardian, "Give Robot Personhood Status, EU Committees argues", https://www.theguardian.com/technology/2017/jan/12/give-robots-personhood-status-eu-committee-argues
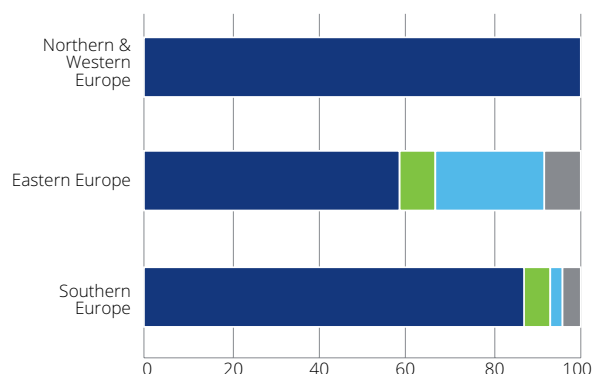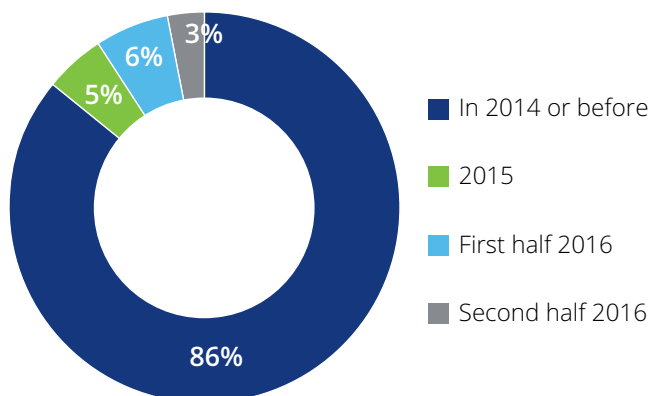
How far are we now?

In order to better understand the present sentiment and future vision of the FS Industry on Artificial Intelligence technologies, a large survey was launched in February 2017. This survey involved over 3,000 people across EMEA and was conducted jointly by Efma and Deloitte. The program focused mainly on C-level executives on both technical and business sides of Financial Services firms. The collection of the survey answers was carried out online, following a first email contact.

One of the first questions that was asked was aimed at understanding the level of knowledge of the matter and the reputed potentialities seen in it. Indeed the results show that Eastern Europe was late in receiving information on cognitive technologies, but it had a rapid development anyway. In general respondents from Eastern countries also believe in a greater industry disruption as a consequence of further cognitive implementations. On the other hand, Southern Europe exhibits fewer implementations despite early exposure to AI technologies.

When did you hear about the term Artificial Intelligence for the first time?

- In 2014 or before
- 2015
- First half 2016
- Second half 2016

How disrupted do you think your world will be by Artificial Intelligence?

- Not disrupted
- Part of our business / value chain will be disrupted
- Our whole business will be disrupted / highly threatened
- Our whole industry ecosystem is highly impacted
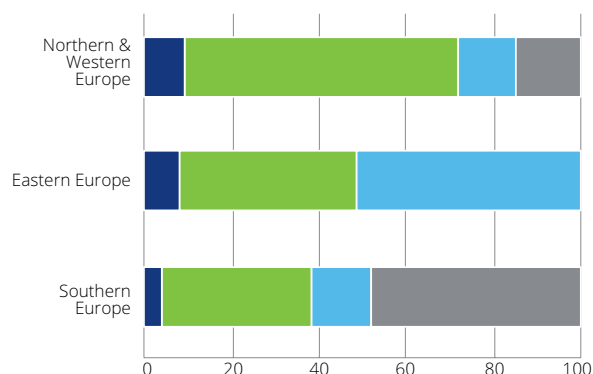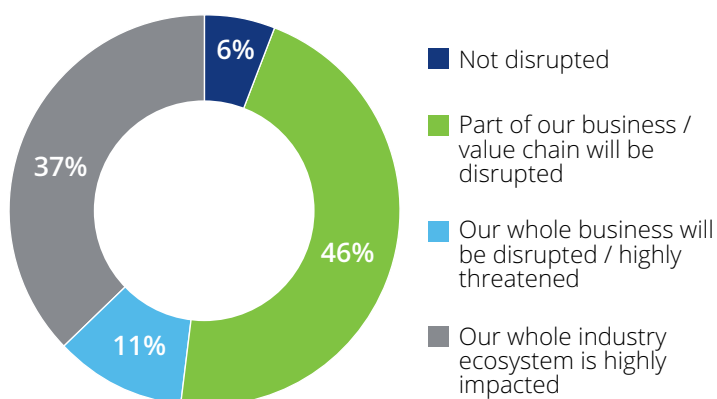
Almost half of the respondents to our survey believe that cognitive related technologies will hit the peak in 2 to 5 years.

When do you think Artificial Intelligence will be mainstream?

- 0 - 18 months
- 18 months - 2 years
- 2 - 5 years
- Later
- Never
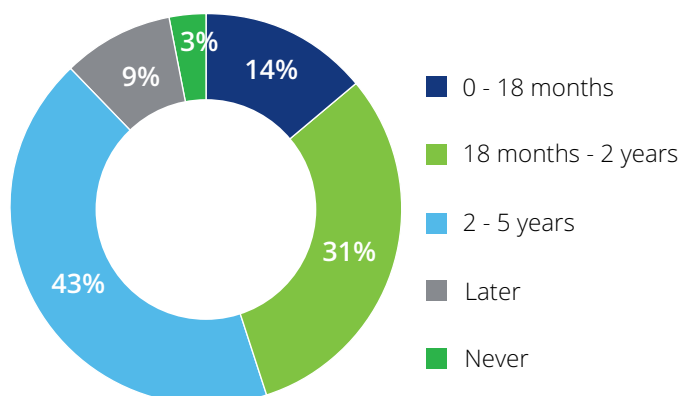
More than half of the survey respondents' firms have already identified an AI leader within their company. Whithin the firms that have appointed an AI leader, half of them have appointed the head of innovation as AI leader.

Who is the Artificial Intelligence leader in your company?

- 45% Not Appointed
- 55% Appointed

Head of innovation	26%
CIO	12%
CTO	5%
COO	3%
Other (free text)	9%
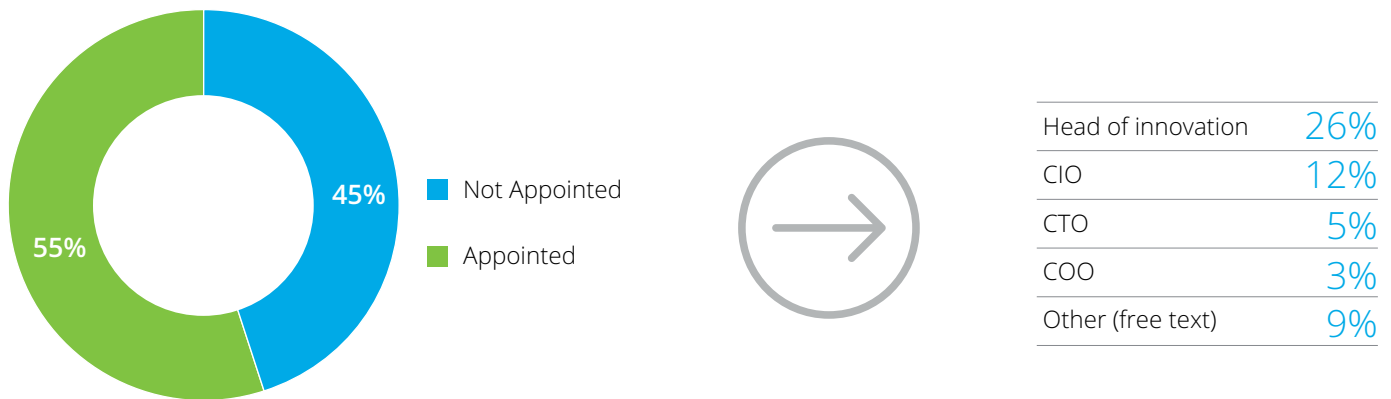
Moreover about 9 companies out of 10 have already started working with AI technologies. Eastern Europe in particular, which was late in receiving information on cognitive technologies, had a rapid development anyway. On the other hand, other EMEA areas, especially Southern Europe, seem to be mostly in a learning phase.

Where are you in the Artificial Intelligence journey?

- 11% We have not yet started
- 40% Learning
- 5% Investment in start-ups
- 12% Collaboration in group / market initiatives
- 31% Build solution
- 1% Fully functioning center of excellence

Top 6 biggest concerns about Artificial Intelligence by phase of the journey

Concern	TOTAL	NOT YET STARTED	LEARNING	MATURING (START-UP / GROUP INITITIVES)	DEVELOPING (BUILD SOLUTION / CENTRE OF EXCELLENCE)
Hacking / cybercrime	12%	19%	9%		10%
Scarcity of technical talent	12%		8%		29%
Limited understanding of data technology	12%		15%	18%	
Sustainability	9%	29%		27%	10%
Existential threat to humanity	9%		8%	18%	5%
No ownership / accountability	8%	43%	8%		10%

Multiple answers allowed

Where are you in the Artificial Intelligence journey?

TOTAL	NOT YET STARTED	LEARNING	MATURING (START-UP / GROUP INITITIVES)	DEVELOPING (BUILD SOLUTION / CENTRE OF EXCELLENCE)
100%	11%	40%	17%	32%
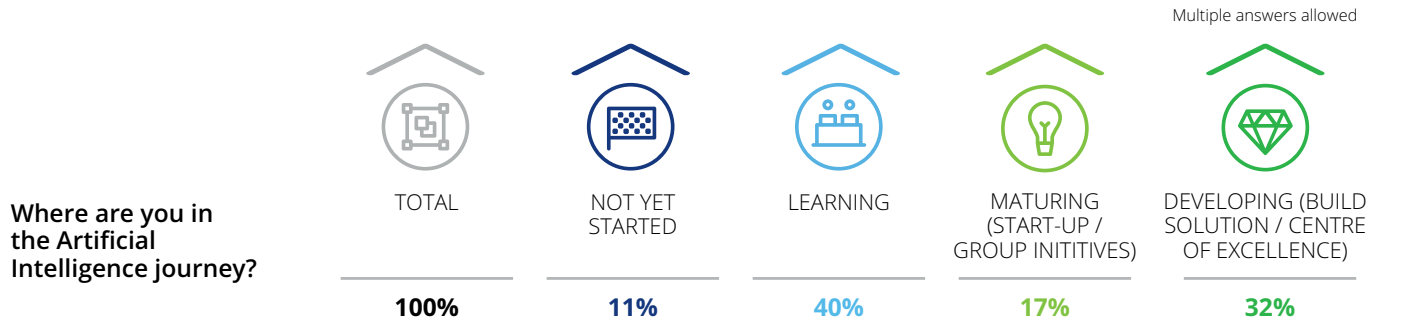
This may due to some concerns that come out when thinking about AI, going from data security (cybercrime), organizational impacts (need for talent and necessity to re-allocate people), technology implementation, loss of control and sustainability.
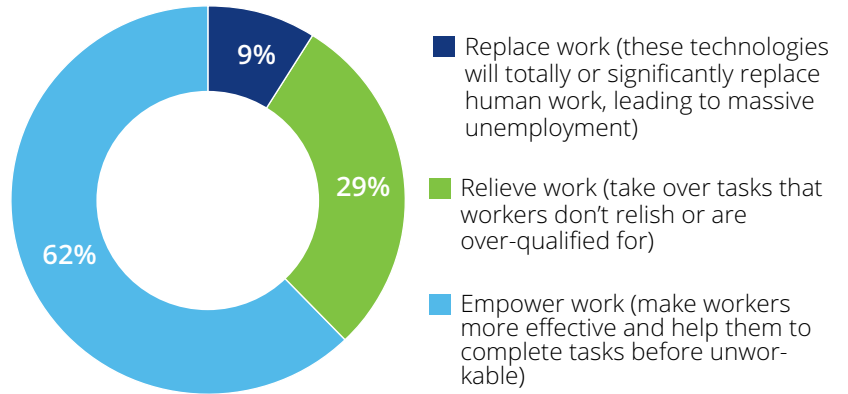
Data highlighted that the more a firm is in an advanced phase of cognitive technology implementation, the more difficult it is to find the right talents. This probably because in a more mature phase, there is a stronger need for highly trained specialists, with specific skills, while, during the initial stages, a general knowledge is enough.

Another important fact is that, in the initial phase, the main obstacle to the implementation of Cognitive technologies identified is a lack on the organizational side.

This links to another important topic related to AI. Many people worry that intelligent software may steal jobs away from human operators.

However, 91% of the survey respondents believe that the new Cognitive technology will either empower or support employees, rather than replace them.

Which of the following types of influences do you think AI will have on human work?

- Replace work (these technologies will totally or significantly replace human work, leading to massive unemployment) **9%**
- Relieve work (take over tasks that workers don't relish or are over-qualified for) **29%**
- Empower work (make workers more effective and help them to complete tasks before unworkable) **62%**
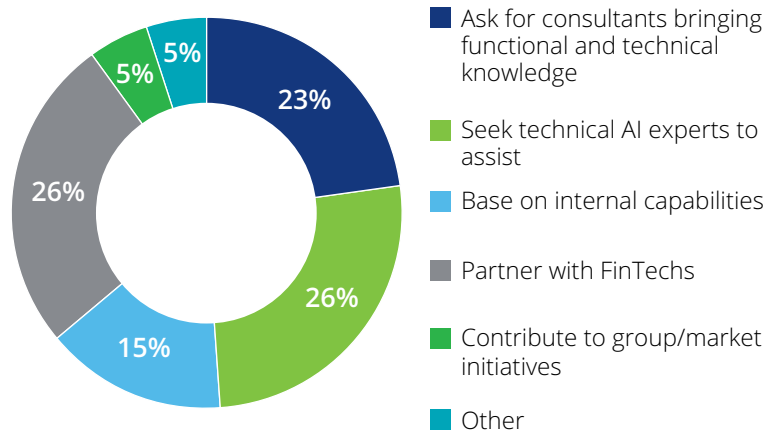
Most organizations need to make external hires to fill the AI skill gap. However, most of them have hard times hunting the right talents. Therefore, there are great investment opportunities in the field of the future workforce education.

Especially in Southern Europe, consultancy firms are more well-disposed to broaden their commercial scope by collaborating with innovative FinTech players.

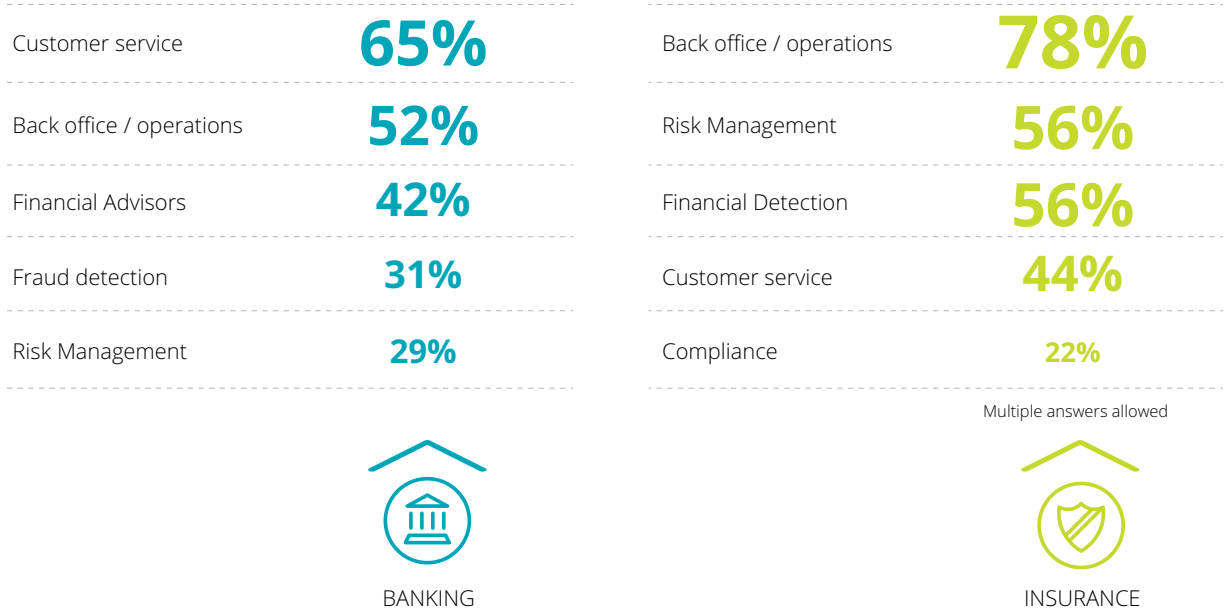Further advantage may come from employing highly qualified professionals.

How will you develop your Artificial Intelligence use case?

- Ask for consultants bringing functional and technical knowledge **23%**
- Seek technical AI experts to assist **26%**
- Base on internal capabilities **15%**
- Partner with FinTechs **26%**
- Contribute to group/market initiatives **5%**
- Other **5%**

As for the application interests, it seems that different industries are looking for different technological solutions. Therefore, it is necessary to diversify the technological offer in order to expand the market shares and reach out more consumers' needs.

In which part of the value chain do you see the Artificial Intelligence use case you developed apply with the greatest impact?

Banking		Insurance	
Customer service	**65%**	Back office / operations	**78%**
Back office / operations	**52%**	Risk Management	**56%**
Financial Advisors	**42%**	Financial Detection	**56%**
Fraud detection	**31%**	Customer service	**44%**
Risk Management	**29%**	Compliance	**22%**

Multiple answers allowed

BANKING

INSURANCE

"Some cognitive technology vendors and customers are moving past the "science project" phase and using artificial intelligence (AI) to transform business processes. Now is the time for businesses to consider the areas suitable for AI and how they can help transform key processes."

Tom Davenport[15]

This is how Professor Tom Davenport, Senior Advisor at Deloitte US, described cognitive technology evolution in late 2015. Since then, the wave of cognitive innovation has left the American shore and landed overseas. As our analysis shows, 86% of the respondents had heard about Cognitive technologies by 2014. This fact points out that AI is shifting from a garage-built nerdy idea to an actually applicable business application.

Some may worry that intelligent software may steal jobs away from human operators. However, as already pointed out by data, most of the survey respondents believe that the new Cognitive technology will empower and relieve work, rather than replace human workforce. In fact, for example, the so-called Cognitive assistants will be able to benefit not only customers, but also employees who will get rid of repetitive tasks.

Despite the quick rise to popularity, cultural and organizational obstacles still stand in the way of AI implementation. In order to gain companies' trust, AI leader must understand that there is no one-size-fits-all solution. Some players may be on the lookout for massive opportunities only, while others favor gradual activations. As an example, from our survey it stands out that a broad set of possible use cases exists. It is possible to aim for ground-breaking AI-powered customer services or settle for less risky solutions such as automated back-end processes.

Needless to say, there is no such thing as a correct approach. Many might wish for a mixed portfolio, embarking on both bold journeys and mild promenades.

"Some companies are aiming at dramatic results such as finding a cure for cancer using cognitive applications, while others are focusing on more prosaic areas such as billing. What's the correct approach? "

Tom Davenport[17]

"Cognitive assistants already set your sleep alarm, turn down your thermostat at night, and tell you what movies are playing at the mall. And, as a new generation of personal, social robots is introduced to consumers in the next few years, they are likely to play a larger role in customer support as well."

Tom Davenport, Rajeev Ronanki[16]

[15] Deloitte University Press, "Cognitive technologies all set to transform business processes", https://dupress.deloitte.com/dup-us-en/focus/cognitive-technologies/artificial-intelligence-and-business-processes.html

[16] Deloitte University Press, "The rise of cognitive agents", https://dupress.deloitte.com/dup-us-en/focus/cognitive-technologies/rise-of-cognitive-agents-artificial-intelligence-applications.html

[17] Deloitte University Press , "Cognitive applications: Home runs versus base hits" https://dupress.deloitte.com/dup-us-en/focus/cognitive-technologies/cognitive-applications-homeruns-or-base-hits.html?id=us:2el:3dc:dup3174:awa:dup:essay:dcpromo
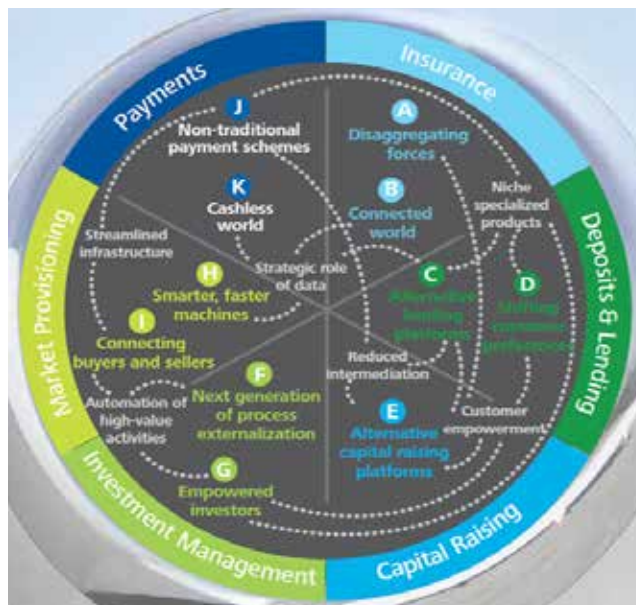
What's new in FS world?

The FSI industry future trends can be summarised below[18]:

Introduction and major trends in FSI

The Financial Services Industry (FSI) evolves rapidly and is profoundly affected by major trends such as the Digital transformation, the exponential growth of data volume, new players entering the market place and increasing regulatory pressures. The Digital transformation revolutionizes customer experience with the use of the mobile channel throughout customer journeys.

Large amount of structured and unstructured data is continuously generated by multiple systems internally or externally. New players such as FinTechs and Start-ups are entering the market place with innovative solutions to solve complex issues. Increasing regulatory pressures bring new challenges, such as GDPR (General Data Protection Regulation) will limit usage of personal customer information and significantly change privacy rules by strengthening the rights that individuals have to control their own data.

A Sharing Economy
Autonomous Vehicles
Digital Distribution
Securitization & Hedge Funds

B Internet of Things
Advanced Sensors
Wearable Computer

C P2P Lending
Alternative adjudication

D Virtual Technologies
Mobile 3.0
Third party API

E Virtual Exchanges
Crowdfunding
Alternative due diligence

F Advanced Algorithms
Cloud computing
Capability Sharing
Open Source IT

G Automated Advice & management
Social Trading
Retail algorithmic trading

H **Artificial Intelligence / Machine Learning**
Machine readable news
Social Sentiment
Big Data

I Market Automation Platforms
Automated data collection & analysis

J Crypto Currency
Mobile Money

K P2P FX
Integrated Billing
Mobile Payments
Streamlined payments

[18] World Economic Forum Report: "The Future of Financial Services: How disruptive innovations are reshaping the way financial services are structured, provisioned and consumed", in collaboration with Deloitte Touche Tohmatsu Limited

Overview of AI applications in the FSI

Artificial Intelligence (AI) influences almost all industries and especially the FSI that encompasses Investment Management, Banking and Insurance. Advances in AI open new horizons for the FSI, numerous AI-based applications are already implemented and new innovative solutions have the potential to change business activities from operations, risk, finance, to compliance. AI-based applications in the FSI encompass robo-advisors, pattern recognition, virtual agents and intelligent automation.

We divide the AI applications into three main pillars:

Cognitive Engagement: cognitive agents use cognitive technology in order to interact with users in natural language, understand the meaning of the data they receive and conduct actions on behalf of the users'. Usually those kind of applications are various types of chatbots.

Cognitive Insights: Artificial Intelligence algorithms that perform data analysis. Algorithms can provide cognitive insights out of huge amount of data sets. Cognitive insights agents can help enterprises with deep, actionable visibility into not only what has already happened but what is happening now and what is likely to happen next.

Cognitive Automation: Cognitive automation enables machines to replicate human actions and judgment with robotics and cognitive technologies.

Focus on the Investment Management sector

In the Investment Management sector, companies already implemented AI solutions and some niche players developed robust AI capabilities. In the Hedge Fund sector, companies deployed latest advances in data science and machine learning to develop complex quantitative investment strategies based on mathematical and statistical methods to produce outstanding results in the financial markets.

AI advances bring new opportunities for the Investment Management sector:

- Robo-advisors enable to build automated real-time portfolio allocation and investment recommendations tailored to individual clients by leveraging on client information and algorithms. The digital investment start-up Betterment, specialised in robo-advisor, announced more than 195,000 customers and surpassed $6 Billion in assets under management[19]. The proprietary trading platform allows to automate transactions and portfolio allocation including fractional share trading, automatic rebalancing, and smart dividend reinvestment in order to optimize transactional activities.

- Intelligent algorithmic trading (algo-trading) enables high-frequency trading through adaptive pattern recognition and real time processing of large amount of information (e.g. index prices, sentiment indicators, social media, news). The AI-specialized start-up Sentient raised $103 Million in funding[20] and developed quantitative trading and investment strategies based on a combination of AI technics including deep learning and evolutionary

Overview of AI applications in the FSI

	AI APPLICATIONS		
FSI SECTORS	Cognitive Engagement	Cognitive Insights	Cognitive Automation
Investment Management	🧠	📈	⚙️
Banking	🧠	📈	⚙️
Insurance	🧠	📈	⚙️

Legend: ● Emergence ● Growth ● Maturity

[19] Betterment: https://www.betterment.com/resources/personal-finance/goals-and-advice/what-is-a-roboadvisor/

[20] Bloomberg - AI Startup Sentient Raises $103.5 Million in Funding, https://www.bloomberg.com/news/articles/2014-11-24/ai-startup-sentient-raises-103-5-million-in-funding

[21] Sentient: http://www.sentient.ai/

Focus on the Banking sector

In the Banking sector, companies started adopting AI by investing in this technology, developing specific applications and creating partnerships with FinTechs and Start-ups. AI allows to analyse unstructured data such as unstructured text, images, video and audio and reveal patterns not previously perceptible to make more accurate forecast of future events. For instance, it is used to perform advanced financial analysis and to control financial exposure.

AI advances bring new opportunities for the Banking sector:

- Some companies leverage on Natural Language Processing (NLP) to improve customer experience with the use of chatbot. For instance the start-up Cleo provides an AI-powered chatbot based on machine learning algorithms[22] that acts as an intelligent interrogator of financial status, assessing spending, identifying potential savings and ensuring best value for money with subscriptions, savings rates, and financial services in general.

- A bank can provide biometric voice recognition to verify customer identities of phone activities[23]. By abandoning traditional security questions and PIN codes, the bank aims to reduce fraud and streamline phone banking process. The technology recognises a customer's unique "voice print" which is made up of more than one hundred characteristics based on physical configuration of speaker's mouth and throat. The system captures data during phone calls and further calls can be matched against this information.

- A bank can use a social media sentiment monitoring tool to track and understand what consumers are saying about the bank and its competitors. The tool, which incorporates natural language processing technology, automatically identifies salient topics of consumer chatter and the sentiments surrounding those topics. These insights influence the bank's decisions on setting fees and offering consumer perks, and how customer service representatives should respond to certain customer inquiries about services and fees[24].

- Financial Crime detection has hugely benefited from advancement in AI. Using location intelligence to augment AI can identify transaction anomalies, verify customer place of business and flag sensitive cross border conditions and proximity risk. Additionally for regulatory compliance automated metadata extraction on large volumes of unstructured data can help us understand , identify products , topics and parts of organisation likely to be affected by regulatory compliance. Also NLP is used to analyze legal documents and thus provide a context around regulations to determine the actors affected as well as products and processes.

[22] Cleo: https://betalist.com/startups/cleo

[23] Barclays: https://wealth.barclays.com/en_gb/home/international-banking/insight-research/manage-your-money/banking-on-the-power-of-speech.html

[24] Deloitte: https://dupress.deloitte.com/dup-us-en/deloitte-review/issue-20/augmented-intelligence-human-computer-collaboration.html

Focus on the Insurance sector

computation[21].

The Insurance sector is currently at the early stage of AI adoption despite the opportunities it would bring. Some specific domains, such as wealth management in life insurance, deployed Robotic Process Automation (RPA) and robo-advisors in order to improve back-office functions thanks to an increase of the level of automation. Claim processing could be dramatically reduced thanks to automation with limited human interventions.

AI advances bring new opportunities for the Insurance sector:

- Insurance companies can use cognitive algorithms in collecting all the supplemental information such as a patient's repeat hospital stays to inform possible care plans or targeted intervention, as well as applying intelligence to flag any potential problems with the claim. By the time the claims representative receives the case, she has the information necessary for a comprehensive assessment.

- AI can demonstrate additional benefits when combined with other technologies such as Internet of Things (IoT). An insurance company partnered with Human Condition Safety to deploy wearable technologies and AI to provide real time insights that can help prevent accidents and injuries from occurring[25]. The solution is designed to reduce workplace injuries and deaths, improve operational efficiencies and generate real-time data that can be used to predict and reduce risk. The technology deployed learns from past events and can identify safety issues in real-time as well as predicting future events[26]. Telematics have now become the foundation by which Insurers can calculate premiums for customers based on their driving styles. Additionally telematics data is being used to predict events like FNOL across customers based on driving patterns and identifying the impact on reserves or

Impacts, Benefits and Challenges for the FSI

liability that the insurer might incur in the near future. AI will profoundly reshape the FSI by increasing the level of automation and deriving deep and actionable insights to support decision management. AI will reduce costs with enhanced operational efficiency and process optimisation, reinforce risk management with real time pattern identification and adaptive forecasting models and improve customer experience through the use of virtual agents. However, some challenges limit AI implementation in the FSI such as a lack of expertise and awareness regarding the technology, significant volumes of data hosted on legacy systems, data management capabilities across the firm and low support from accountable stakeholders and poor level of data quality controls.

Additionally current organisational structure within FSI have made it increasingly difficult to migrate towards a insight driven organisation. Lack of agility in deploying digital projects have left traditional FSI far behind smaller FinTechs for example Moneybox, Nutmeg, eToro etc.

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[25] AIG: https://www.aig.com/content/dam/aig/america-canada/us/documents/brochure/aig-and-human-condition-safety-brochure.pdf
[26] Human Condition Safety: http://www.hcsafety.com/

Wrap up

AI is spreading and the impact of these technologies across industries is undoubtable. This report had the goal to understand how EMEA FSI firms were reacting to this fast evolution and how they are preparing the AI future.

The results are clear: firms are aware of the disruptive potentialities of AI in their whole business, however, most of the companies are still learning how AI can be implemented inside their ecosystems. This uncertainty is traduced by the lack of AI leaders' nomination and the explicit need and search for AI professionals' recruitment and consultancy. The efforts made until now in the majority of the companies mirror some skepticism, since they focus mainly in customer

engagement use cases to empower humans, rather than to replace them. Beyond the early stage of the FSI-AI relationship, companies are already aware of the influence of high data's quality/quantity and the negative impacts that may arise from both lack of expertise (accountability) and hacking/cybercrime.

By the end, this paper made possible to pinpoint the real stage of AI inside FSI companies leveraging key headlines regarding the applications, impact and success use cases. We truly believe that the highlighted evidence will positively contribute for the FSI learning journey unlocking the next generation of FSI-AI developments.

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