



**Artificial intelligence: challenges for the financial sector**  
**Responses to the public consultation**  
**on the ACPR's December 2018 discussion paper**  
**Analysis of the responses**  
**(June 2019)**

**Introduction:**

The public consultation received 36 written responses. The responses collected come from various banks, insurance, fintechs, professional associations (French and international), technological providers, consultancy firms and foreign central banks.

Five of these responses (15%) are in English and reveal differences in the understanding of the report, especially regarding the regulatory part.

The Fintech-Innovation unit of the ACPR also exchanged views on the content of the discussion paper with more than twenty stakeholders, including technology providers and researchers. All these discussions have been conducted in addition to the usual exchanges of the ACPR's Task Force AI, which continued its meetings until March 2019.

Issues related to AI give rise to a variety of interests. Some responses focused for example on customer advice, risk management and compliance, credit or investment.

However, several general remarks seem rather shared:

- It would be interesting to see more French examples or avoid mentioning company names;
- European works should always be taken into account, such as the *Ethics Guidelines for Trustworthy AI*, published by<sup>1</sup> the European Commission.

This document summarises the most significant issues identified in the responses received.

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<sup>1</sup><https://ec.europa.eu/futurium/en/ai-alliance-consultation>

## Description of artificial intelligence development in the financial sector (Parts 1 and 2 of the document)

### 1. Do you have any comments on the document's definition of artificial intelligence? (Part 1.1.1)

The responses to the public consultation confirmed the lack of consensus regarding the definition of Artificial Intelligence. We have received answers that fully agreed with the proposed definition, as well as answers that totally disagreed with it. The elements that seem to cause the most divergence are the following:

- The notion of autonomy;
- Inclusion or exclusion of more traditional RPA techniques;
- Minimum presence of automatic learning capacity.

These observed divergences support the position of the discussion paper, which emphasises that the notion of artificial intelligence is polysemous and scalable. Defining this concept is therefore a permanent and more contextual exercise. In the context of the report, and in order to identify the supervisory challenges, the learning capacity criterion is relevant.

### 2. Do you identify other contributing factors to artificial intelligence development in the financial sector than those listed in the discussion paper (Parts 1.1.2 and 1.2)? Conversely, do you identify potential brakes to this development?

Some responses are shaped by specific contexts or personal interests, and therefore present arguments that are not intrinsic to the development of AI. Moreover, the subjective nature of these arguments is not appropriate for generalisation. For example, some subjective visions tend to express to what extent a certain institution cannot develop a particular service that incidentally uses AI, rather than identify the potential development factors and brakes to its development.

However, we can notice some recurrent aspects among the responses collected:

- The *development of smartphones* makes collecting personal data easier.
- The same regulation may be experienced by some institutions as a development factor or as a brake by others, depending on whether it creates opportunities for the actor or not. Among the regulations related to the use of the data, the DSP 2 and the GDPR are among the most cited. Unfortunately, no precise references to these regulations are given and commented by respondents.
- The responses collected emphasise the paper's insistence on technological factors, unlike human and regulatory factors, which should thus be further developed. Trust is among the most discussed topics, as a positive perception of AI is seen as a development factor, and conversely, a negative perception of it as a brake.

The ACPR notes that many of the elements indicated by the answers do not apply only to AI but often also to digitalisation more generally.

### 3. Do you have any comments about the considerations of the paper on the use of cloud (Parts 1.2.3, 2.2.3 and 2.2.4)?

Most responses highlight the importance for financial institutions of developing the Cloud, while a small number insist on strengthening security considerations.

Some respondents suggest the idea of asking the countries hosting cloud servers to pay for the energy cost of using cloud.

One comment is widely shared by respondents: the necessity of a further distinction in the different uses of the Cloud: public, private and mixed. The ACPR takes note of this point for its future work on the cloud.

**4. Do you have any comments or additions to the list of uses identified in Part 2.1 of the report? Where appropriate, you can briefly describe concrete projects, specifying their progress level (note that individual information will remain strictly confidential).**

The answers are mainly in line with the uses mentioned, with details depending on the respondent's expertise. Some respondents suggested that the possible use of AI in activities other than core business activities, such as human resources, should be stressed.

**5. Do you share the analysis of the risk of algorithm bias discussed in Part 2.2.1? Which complements would you bring?**

Overall, the responses share the biases described in the ACPR report.

The most recurring points are the following:

- Bias may be due to non-representativeness of data or poor quality data;
- The algorithms and data are equally important for the question of bias.

However, there is a very small number of responses asserting that bias is not an important issue, as long as technology helps financial institutions to score better, assess risks, etc. This approach seems to us to be partial and risky over the medium term.

Finally, according to some respondents, the wording of the report would suggest that biases are not intentional, whereas biases often result in malicious acts. However, the discussion paper explicitly mentions this case (Part 2.2.2). However, it would seem equally damaging to ignore or underestimate the risk of unintentional biases in the algorithms.

**6. Same issue for cyber security risk analysis (Part 2.2.2)**

Overall, the responses confirm the report's analysis.

Nevertheless, while some responses would have desired more developments on AI to combat cyber threats, few others remain dubious about using AI to detect risks related to the use of AI.

Cyber security is, in all cases, viewed as a technological and HR issue. According to some respondents, it would deserve an effort to better share information: the organisation of workshops between financial institutions and supervisors is sometimes suggested.

## **Issues for supervisors (Part 3 of the document)**

**7. Do you think there are business models using AI that cannot grow because of financial sector regulations? If so, can you clarify why and specify the relevant regulatory provisions?**

There have been very few comments on this issue. The few comments suggest that this issue is not a primary concern because technology is not mature enough for current developments to face precise regulations.

The GDPR (which is not within ACPR's remit) was the only regulation mentioned, but without any precisions on use cases and problems encountered.

**8. Beyond the requirements of the GDPR, are you aware of “governance of algorithms” processes that would be developed in line with the general governance requirements for the financial sector? If so, for which activity? (Part 3.1.1)**

Very few answers relate to implemented processes. However, academic initiatives, studies or algorithms that could be used for this purpose were cited:

- The IEEE Global Initiative on Ethics of Separate and Intelligent Systems<sup>2</sup>;
- A governance framework for algorithmic accountability and transparency: Report financed by the European Parliament in 2018 under the Horizon H 2020<sup>3</sup> programme;
- A Layered Model for AI Governance: a model proposed by Harvard University researchers<sup>4</sup>
- ISACA: The Machine Learning Audit— CRISP-DM Framework: ISACA proposes adapting its CRISP-DM audit methodology to the specificities of machine learning and integrating approaches to explainability of algorithms such as LIME and FAIRML in a more comprehensive audit and governance environment<sup>5</sup>
- Shapley Additive exPlanations<sup>6</sup>

**9. What would be the most useful definition of “explainability” of algorithms for the implementation of governance and control of algorithms in the financial sector? (Part 3.1.2) Do you know practical methods already operational to ensure this “explainability”?**

The main point of divergence relates to the technical capacity to explain. For the same use of the same family of algorithms, some responses consider that these algorithms can be explained, while others argue that they can never be fully explained.

Accordingly, two different approaches are expressed in the responses:

- We must develop solutions that will enable the explanation of AI algorithms;
- We must resign ourselves to conceiving the impossibility of explaining algorithms with natural language. Instead, we need to educate players and try to prove them that

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<sup>2</sup>[Link](#)

<sup>3</sup>[Link](#)

<sup>4</sup>[Link](#)

<sup>5</sup>[Link](#)

<sup>6</sup>[A Unified Approach to Interpretable Forecasting](#), Su-In LEE, Scott M. LUNDBERG, University of Washington

the results are better in statistical terms than those got with other tools that existed until then.

However, it should be noted that there has been no attempt to define the explainability of AI algorithms. In fact, this is a challenging task because explainability can be understood in statistical sense or in the sense of everyday language. This work is complicated, especially since the degrees of requirement and form vary from case to case.

The *use of data visualization tools* is considered as a means to improve the understanding of algorithms. These responses cited initiatives that contribute to the explainability of *algorithms* (but *data visualisation* is not considered as the main lever of this process).

- The FAIR-ML approach proposed by researchers of the Massachusetts Institute of Technology<sup>7</sup>
- The Explainable AI (XAI) approach intended by the US Department of Defense Research Laboratory (DARPA<sup>8</sup>).
- The local approach to a prediction (LIME) following the method described by Ribeiro & al in 2016<sup>9</sup> or the Local Interpretable Mode Agnostic Explanations model<sup>10</sup>
- The Turing box developed by Dr Iyad Rahwan of the Media Lab at MIT<sup>11</sup>

#### **10. According to you, what are the most promising methods for ensuring the reliability of algorithms? (Part 3.1.2)**

There have been very few answers to this question.

The methods suggested can be summarised as follows:

- The use of standard dataset;
- The transparency of algorithms;
- Backtesting and validation,
- The establishment of robust governance.

#### **11. Have you taken into consideration the specificities of the interactions between human and intelligent algorithms in defining operational or control processes? (Part 3.1.2)**

Intelligent man-algorithm interaction is a new topic in most responses and does not seem to be much explored.

The wording of the question was certainly unclear and therefore not always well understood. The objective was to allow for the emergence of situations where, in a given process, humans anticipate, adapt and ultimately modify their behaviour because of the presence of algorithmic treatment (known as «smart»). For example, individuals interpreting the results of an algorithm might tend to systematically follow the instructions of the algorithm. Indeed, it

<sup>7</sup>[FairML : ToolBox for diagnosing bias in predictive modeling](#), Adeayo, Julius A, 2016.

<sup>8</sup>[Explainable AI, DARPA](#)

<sup>9</sup>["Why Should I Trust You?": Explaining the Predictions of Any Classifier](#), Ribeiro & al, 2016.

<sup>10</sup>[Local Interpretable Mode Agnostic](#)- Marco Tulio Ribeiro, University of Washington

<sup>11</sup>[Turing Box](#), Dr. Iyad Rahwan of the Media Lab of MIT

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might seem preferable to them, in terms of accountability, to follow a mistake in the algorithm - which is not attributable to them - than to contradict it.

This issue is obviously linked to the one of «explainability»: In order for a human to retain control or responsibility for the algorithm, it is necessary for him to understand the main parts of the algorithmic decision. By doing so, he would be able to reject the algorithmic decision and where appropriate, proposed an alternative one, sufficiently informed.

The answers collected typically focus on the impact of algorithms on jobs.

**12. What specific internal control measures do you consider necessary for AI? (Depending on the area in which AI is used, customer sale, pricing, management, AML-CFT, internal models for the calculation of regulatory requirements, etc.)**

The question was understood in two ways: Some have understood “which internal control measures could use AI”, while others have understood “which control measures need to be monitored by AI”.

In both cases, a wide range of measures were mentioned, covering more or less all of the existing activities. Pricing was the most cited activity by the responses.

**13. Do you think it possible in the financial sector to entrust “Level 1”, “Level 2” or even “Level 3” controls - to smart algorithms?**

This is a question misunderstood by foreign responses, probably because of the vocabulary used.

The remaining responses diverge. Some argue that everything can be supported by algorithms; others believe that this will never be the case, while others suggest that only Level 1 and 2 controls can be supported by AI, excluding Level 3.

Overall, many responses consider that humans are still indispensable. Most design algorithms aim at slowing the recruitment needs and improving the tools with which agents perform their supervisory work.

**14. Do you think it useful to clarify or illustrate some regulatory principles due to the emergence of artificial intelligence technologies? If so, which ones?**

Apart from a few responses that believe that the introduction of AI regulations would be indispensable, most responses believe that it is absolutely necessary to work on a continuous regulatory basis. Nevertheless, respondents are open to the idea of a text of recommendations<sup>12</sup>, or even specification of regulatory texts, if they have an impact on the use of AI.

By contrast, the answers have remained very vague on issues that call for clarification, according to them.

**15. Do you have comments on possible market developments described in Parts 3.2.1 and 3.2.2?**

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<sup>12</sup>In the current sense of the term. Respondents do not refer to the ACPR's «recommendation» power.

Few comments. The few received suggest that an oligopoly scenario represents an enormous and even “never observed” systemic risk potential. Comments also suggest that the mutualisation of data and collaboration between large and small players are potential alternatives.

**16. Do you believe that the phenomena of mutualisation of technological resources should be better recognised, or even encouraged by supervisors? If so, in which areas? How?**

Mutualisation seems a good idea to some respondents: it would avoid penalising entities that cannot afford to expand autonomously concerning AI. Unfortunately, these respondents do not specify the practical possibilities for mutualisation.

Others suggest that these ideas are “premature”. It appears to them that “it is unlikely to have an agreement between the institutions for the sharing described in the document”.

**17. What approaches should be preferred by the supervisor to support the development of AI in the financial sector and to address the issues discussed in Part 3?**

Most of the answers opposed the introduction of new regulations.

The most fruitful and frequently cited avenues are:

- collaboration with the academic world;
- the listening to the market in order to monitor the impact;
- the recruitment or training of talents in AI;
- the establishment of audit tests.

These proposals confirm the first avenues outlined in the discussion paper. The work of the fintech-innovation unit of the ACPR is intended to give shape to these suggestions.

**18. Do you have any comments on the lines of action mentioned in Part 3.3 of the document?**

Most of the answers are in line with the policy avenues outlined in the document.

Some responses also suggest the establishment of a *sandbox*. This proposal largely goes beyond the scope of the discussion paper, which focused on AI. The ACPR has repeatedly identified the inaccuracy of this term, which has been inaccurately defined because linked to radically different realities in countries that have implemented *sandboxes*. It considers that the proportional approach adopted by France responds, at this stage, to the problems posed by the increasing arrival of new players in the financial market. However, the ACPR does not preclude developing experimental and innovative approaches that would not require regulatory derogations. An example is the “exploratory workshops” launched on AI.

An idea expressed by a small number of responses is also worth noting: national supervisors should network. This suggestion will be integrated into the work streams of the fintech-innovation division, drawing on initiatives emerging at the European and international levels.

**19. What do you consider priority areas where the supervisor should provide guidance to the market on its expectations in order to reduce possible regulatory uncertainty for AI projects?**

Surprisingly, there have been very few precise answers on this topic. Nevertheless, some items have steadily returned:

- Customer advice,
- Risk management and compliance,
- Combating financial crime,
- Marketing.

These [areas largely cover the topics of the workshops](#) currently conducted by the fintech-innovation division with financial institutions on concrete usage cases.