

Study Group 'AI governance and its Evaluation'
Report on the Session #15

1. Introduction

The Japan Deep Learning Association establishes study groups as a forum for deepening knowledge and discussing domestic and international policy trends related to artificial intelligence (hereafter AI) and Deep Learning (hereafter DL). This study group, "AI Governance and its Evaluation," defines "governance" as a system of management and evaluation by various actors, and launched a study group in July 2020 to investigate what forms of governance are possible and conduct a year-long study to help build trustworthy AI systems.

In the 15th session (May 26, 2021), Mr. Seiichi Matsumoto of Deloitte Touche Tohmatsu LLC. presented topics on the theme of status of issues on AI governance in businesses. This report is a reconstruction of the topical presentations and the discussions of the study group participants.

2. AI Governance Survey

Mr. Matsumoto presented a topic titled "AI Governance Survey 2020".

Outline of AI Governance Survey

The Deloitte Tohmatsu Group conducts an annual survey titled AI Governance Survey (hereinafter referred to as the "survey") starting in fiscal year 2019 to investigate all departments in all industries based in Japan in regards to use of AI as well as their awareness of the risks involve and how they are managing those risks, and compiles the results into a report.

For FY2020 survey¹, questionnaire survey on the changes in the status of AI utilization and investment, anticipating that the situation would be dramatically altered from that of previous year due to COVID-19 pushing digitization. As a result, the following trends were observed in the use of AI and investment in AI.

- Compared to the previous year, the ratio of AI utilization increased significantly. Last year, there was a tendency to stop at Proof of Concept (PoC) stage, but this year, there was an increase in the number of cases that went beyond PoC

¹ "AI Governance Survey"
<https://www2.deloitte.com/jp/ja/pages/deloitte-analytics/articles/ai-governance-survey-2020.html> (in Japanese)
<https://www2.deloitte.com/content/dam/Deloitte/jp/Documents/deloitte-analytics/jp-ra-ai-governance-survey-2020-en.pdf> (in English)

to full-scale operation.

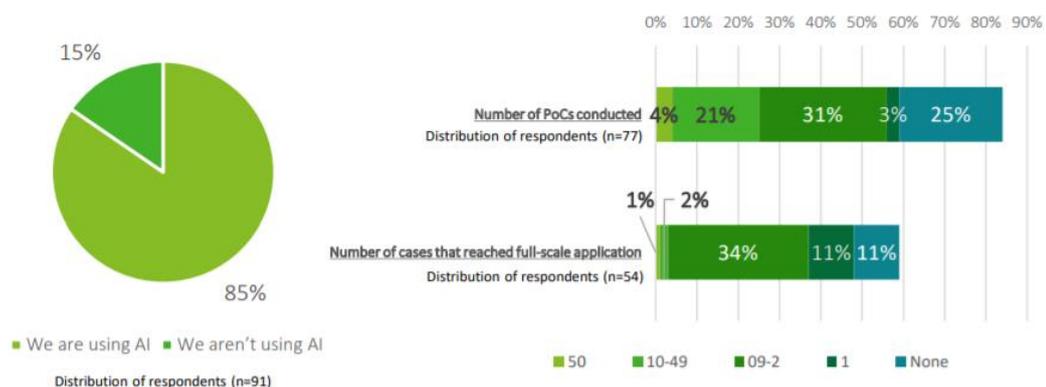
- Last year, the majority of AI investments were for cost reduction and business efficiency, but the percentage of AI investments for new business creation also increased this year.
- While progress is being made, use of AI at the organizational level is still in infancy.
- Although companies were aware of the risks involved in using AI, they tended to struggle with how to address them.

How AI is being used

85% of respondents reported that they were using AI, a significant increase compared to last year's 56% (see Figure 1). Last year, only 47% of the respondents who were using AI had reached the PoC stage, indicating the issue of not being able to progress from the use to the PoC stage, but this year, more than 70% of the respondents answered they have made it to the PoC stage. Of the respondents who conducted PoC, 81% (as opposed to 77% last year) answered that they had moved into serious adoption of AI, which has not changed significantly from last year.

From the above, it can be seen that once the PoC is conducted, the hurdle to enter the practical application stage is low.

Figure 1: Percentage of respondents who have adopted AI and the stages they are at²

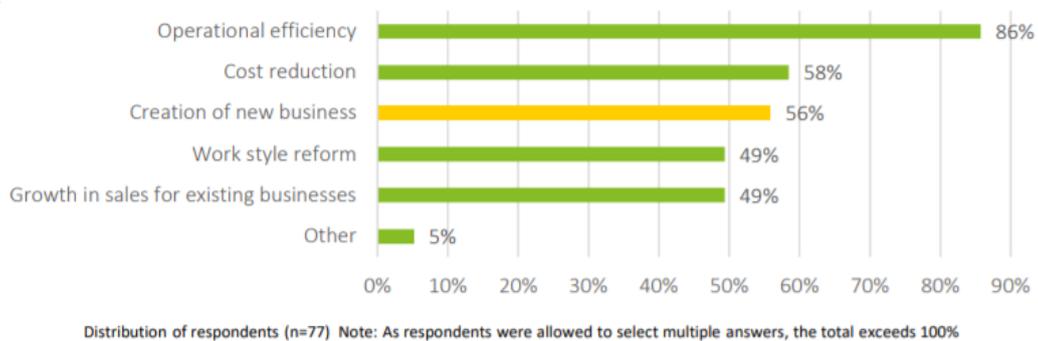


As a result of the survey, the ratio of the purpose of using AI to create new business and increase sales of existing business has increased compared to the previous year (see Figure 2).

² Some excerpts from the "AI Governance Survey 2020" (page 5)

From the above, it suggests that AI is starting to be used in in new businesses more.

Figure 2: Purpose of adopting AI³



Issues preventing further use of AI

The survey was conducted on challenges in furthering the use of AI, using a framework called IDO⁴. The results revealed that from a strategy perspective, while the use of AI is progressing, a culture of continuous innovation is not embedded in the organization, and for talent, there is a lack of human resources. In terms of process, it became clear that an agile process for making use of analytics and AI does not exist or is not sufficiently established. This is thought to have been highlighted by the progress in the implementation of PoC. From the perspective of data, many companies have a sense of challenges in systematizing their organizations and developing quality control processes, such as lack of data quality control and maintenance, scattered data locations, and lack of tools and environments for data processing and aggregation. In terms of technology, it seems that there is lack of clarity on the scope that should be addressed by in-house operations.

From the above, use of AI at the organizational level is still in its infancy evidently.

Awareness of the risks in using AI and how the risks are being controlled

A survey was conducted on the status of risk identification and control during use of AI, citing the typical risks of AI (see Figure 3) that may lie ahead.

³ Some excerpts from the “AI Governance Survey 2020” (page 6)

⁴ IDO (Insight Driven Organization) is a Deloitte’s proprietary framework for maturing AI and analytics organizations. This framework shows the points to watch out for in terms of strategy, talent, process, data, and technology.

<https://www2.deloitte.com/jp/ja/pages/deloitte-analytics/solutions/insight-driven-organization-people.html>

Figure 3: Risks in Using AI⁵

| Type of risk | Risk details |
|---------------------------------------|--|
| Malicious intent | The risk of someone maliciously inputting information into the AI so that it makes errors in judgment that could lead to an incident or spark criticism from society |
| Data pollution | The risk of someone, either maliciously or not, having the AI learn on inappropriate data which then causes the AI to make errors in judgment that could lead to an incident or spark criticism from society |
| Data/model theft | The risk of intellectual property leaking from a publicly available AI, if an external party uses the AI to make a large number of decisions and analyzes the results to identify the data and decision models that constitutes the AI |
| Fairness | The risk of sparking criticism from society should the AI make unfair decisions toward specific groups based on factors such as gender and nationality |
| Safety | The risk of bodily harm or damage to property should the AI make faulty decisions |
| Precision deterioration | The risk that an AI's prediction accuracy will deteriorate over time |
| The ability to explain oneself | The risk of having to explain the rationale behind an AI's decision should a user request it |
| Contractual | The risk of potential problems arising regarding ownership of training data and models when AI development is outsourced |
| Invasion of privacy | The risk that an AI's advanced profiling of users will infer sensitive information about them, thus violating their privacy |

When respondents were asked about how they were currently addressing risks in using AI, around 20% reported that “Such risks are recognized, but we do not know how to address them” on all risk categories. Even if respondents were aware of the risks involved in using AI as PoC has progressed, they tended to struggle with how to address them.

MLOps

As the use of AI is promoted, MLOps⁶ is attracting attention for its ability to shorten the development lifecycle and improve efficiency by standardizing and automating the development, operation, and maintenance of machine learning and by strengthening the collaboration between the development and operation and maintenance departments. In recent years, MLOps platforms have been released to the public, which can simplify the entire process from development to monitoring, including accountability and monitoring of accuracy degradation. The trend toward MLOps platforms is expected to accelerate.

3. Discussion points in the question and answer session

In the 15th session, the status of issues on AI governance in businesses was discussed.

⁵ Some excerpts from the “AI Governance Survey 2020” (page 11)

⁶ MLOps is based on DevOps, a methodology that integrates the development and operation of machine learning models and manages the entire lifecycle from development to operation.

Based on the topics discussed, the following questions and answers were raised.

AI Governance Survey

- ✓ The term "AI governance" is used for the title of this survey because it focuses on the list of risks associated with the use of AI (see Figure 3). In last year's AI Governance Survey, a survey on the risks associated with the use of AI was conducted. In the first part of this year's survey, the results of the survey on the use of AI have been included, as we received many inquiries about the use of AI from corporate stakeholders.
- ✓ The industries of the companies that responded to the survey were mostly manufacturing, trading, finance, and life sciences, and many were AI user companies rather than AI development companies.

Future content of the AI Governance Survey

- ✓ The AI Governance Survey will continue to be conducted. While the risk items in the questionnaire will be fixed to some extent each time, there is a possibility that topics that are easier for companies to imagine will be added depending on social conditions.
- ✓ Overseas, discussions are occurring on how to build an organizational structure for AI governance, such as the assignment of a Chief Ethics Officer, and Deloitte would like to examine whether there is an atmosphere of fostering human resources for AI governance as a perspective for the future survey.
- ✓ The department in charge of risk in AI utilization is expected to be different between large companies and venture companies. It would be useful to conduct a survey on risk departments to determine whether they are creating new departments or promoting the use of AI in their existing organizations, and to disseminate this information overseas.
- ✓ Currently, there is no information on the status of AI utilization and AI investment in venture companies, as surveys such as the AI Governance Survey of venture companies have not been conducted. In the future, a survey comparing large companies and venture companies will be considered.

Written by Yuki Kiyomi

Translated by Michiko Shimizu

<Outline of the 15th Session of the Study Group>

Date & Time: Wednesday, May 26, 2021, 18:00-19:00 (Zoom)

Agenda:

- Topical presentations: "AI Governance Survey 2020" provided by Mr. Seiichi Matsumoto (Deloitte Touche Tohmatsu LLC.)
- Question and answer session / discussion