AI Manufacturing Survey Results

Survey scope: to measure the current status of artificial intelligence (AI) implementation in Pharmaceutical and Medical Devices Industry - diving into the maturity level regarding their AI usage specifically within manufacturing.

Brief description of the questionnaire: in summary, the questionnaire is focused on understanding the use of AI in manufacturing operations specifically in the Pharmaceutical and Medical Device industries. The initial questions focuses on defining AI and if it could be useful for manufacturing operations. The questions are also gaging if respondents understand these digital technologies. As respondents progress in the questionnaire, there are more questions around what the current status of their companies are using digital technologies like AI and ML in their operations. The questionnaire allowed us to measure the current status of AI implementation, the level of maturity within digital technologies, and get their opinion on if AI and digital technologies will ever be implemented in their company and if they believe it will improve their manufacturing operations.

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Summary of results: for the survey responses, there were a total of 131 and most respondents came from organizations with 1-100 employees and the second highest organization size was over 12,000 employees which gave us a great range. In regards to the years of experience, most respondents had over 17 years of experience. We learned that a majority of people believed the hurdles of implementing AI in their manufacturing processes were education, validation, lack of data, and fear of regulations. The level of digitization of respondent's organizations were also interesting as respondents from larger companies were less digitized than companies of smaller companies. The vast majority of respondents rated their AI expertise as new or in the interested stages.

Sample description: The sample is sufficiently representative for those respondents who declared working in organizations like Medical Devices (n = 34), Pharmaceuticals (n=46) and Consulting (n=30). Additionally, a fourth group was created called "Life Science Industry" through the classification based on the categories MedDev + Pharma + BioTech (n = 84). The results demonstrate that:

1. There is definitely no correlation between the size of organizations and knowledge AI - these charts are sufficient to deduce it.

Medical Device

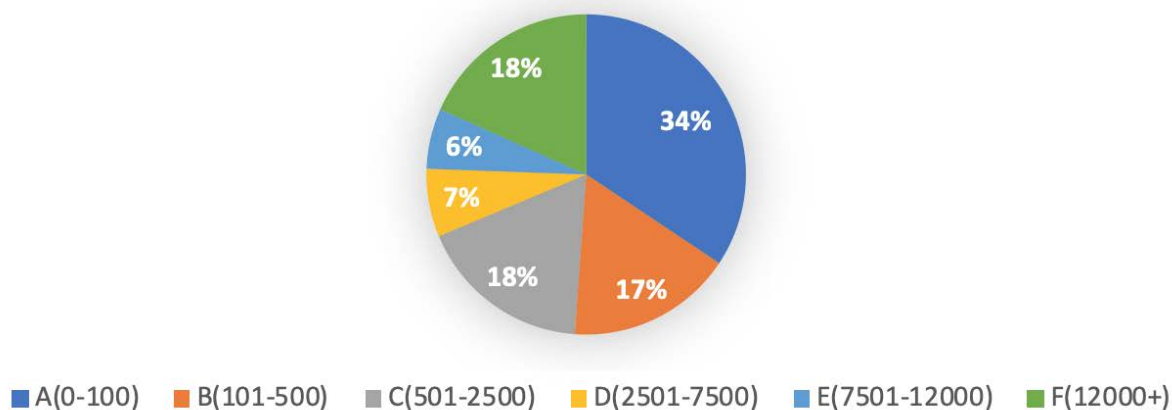Pharma

Consulting

Life Science
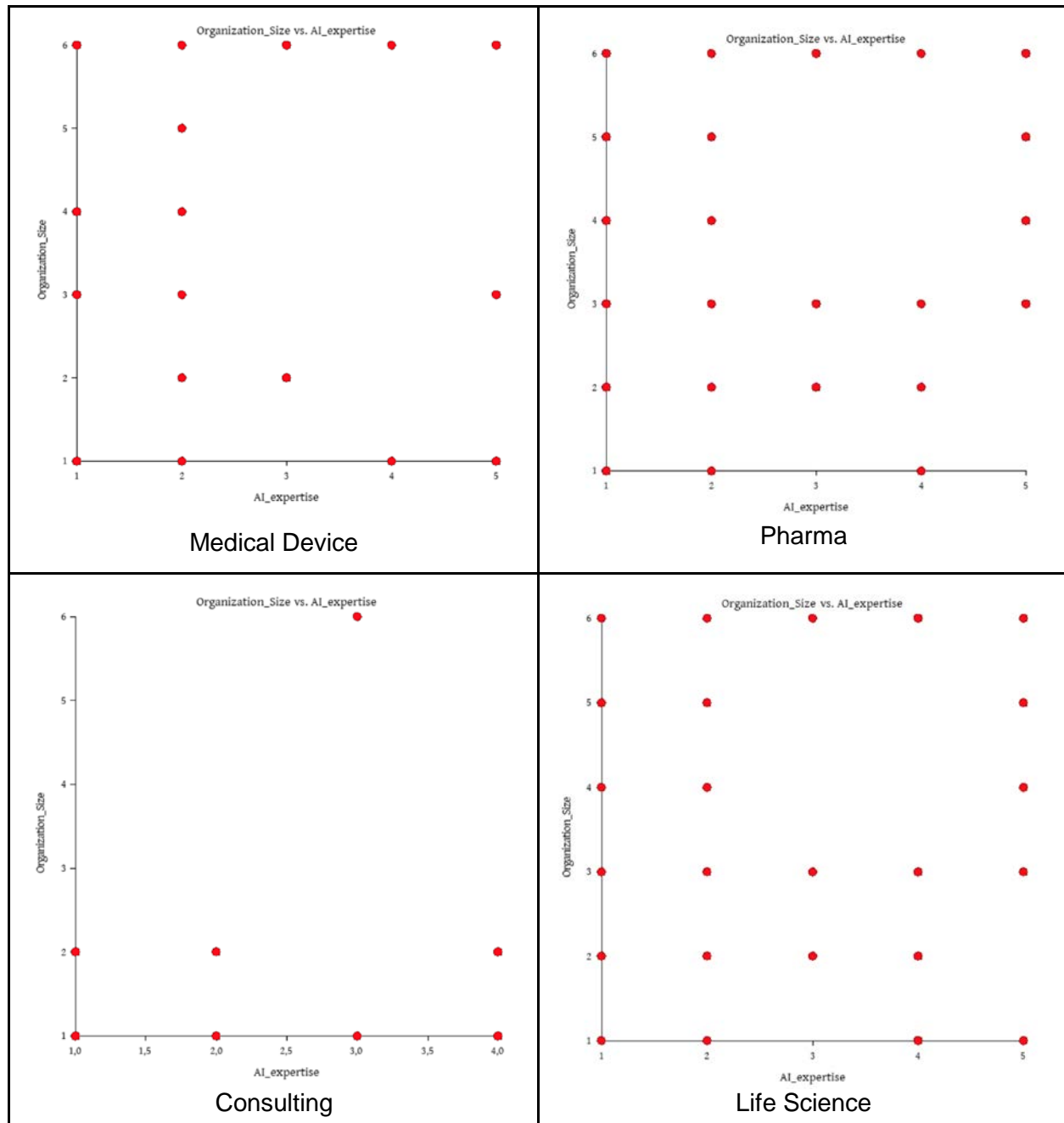
2. The Cronbach's Alpha that determines the reliability of Manufacturing, QA, Supply Chain and Other Areas items to the question "In what ways are you aware of AI being used in your organization?" Is quite consistent ($\alpha > 0.6$). On the other hand, when the question is about the knowledge of the use made of the AI in the Life Science industry in general ("In what ways are you aware of AI currently being used in the Pharma, BioPharma and / or Device industries today? ") we do not obtain any consistency (α

<0.024). All of this suggests that there is an unawareness of how the AI is applied to the Life Science industry beyond the respondent's organization.
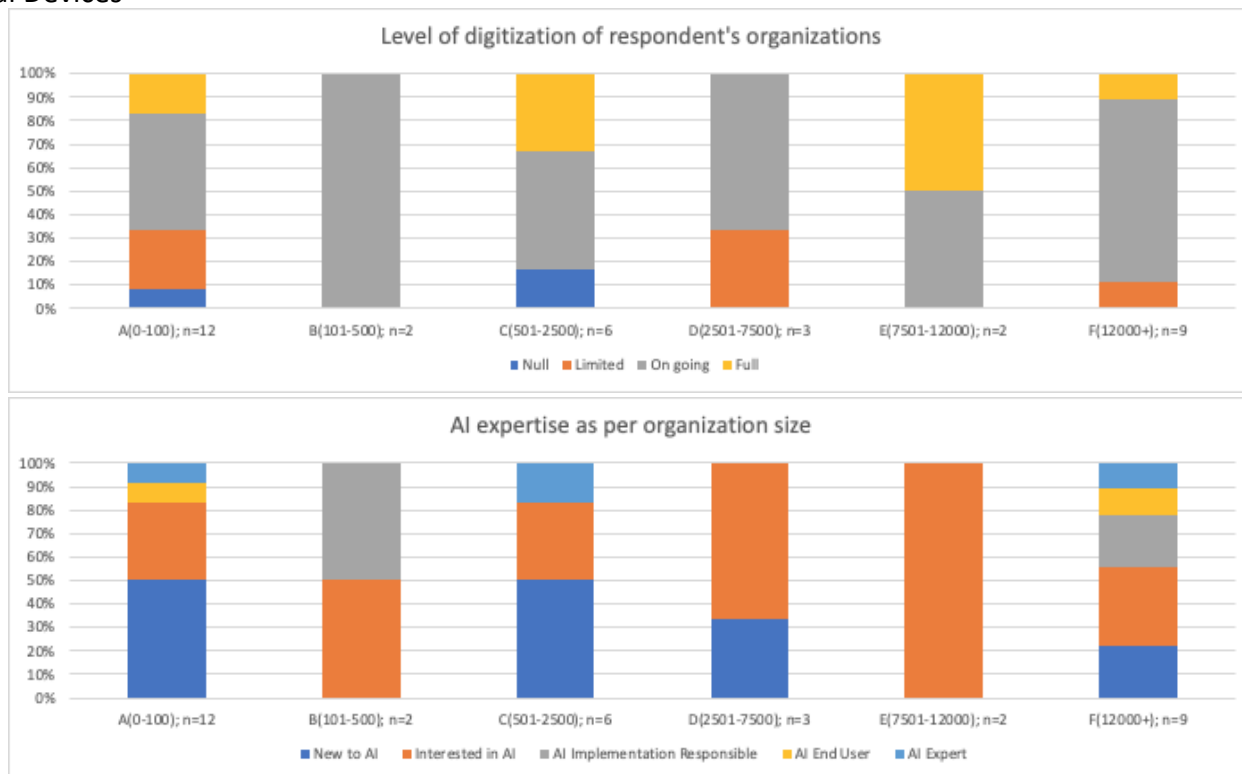
Graphics: The following graphics describe the results based on the different classifications that have been established:
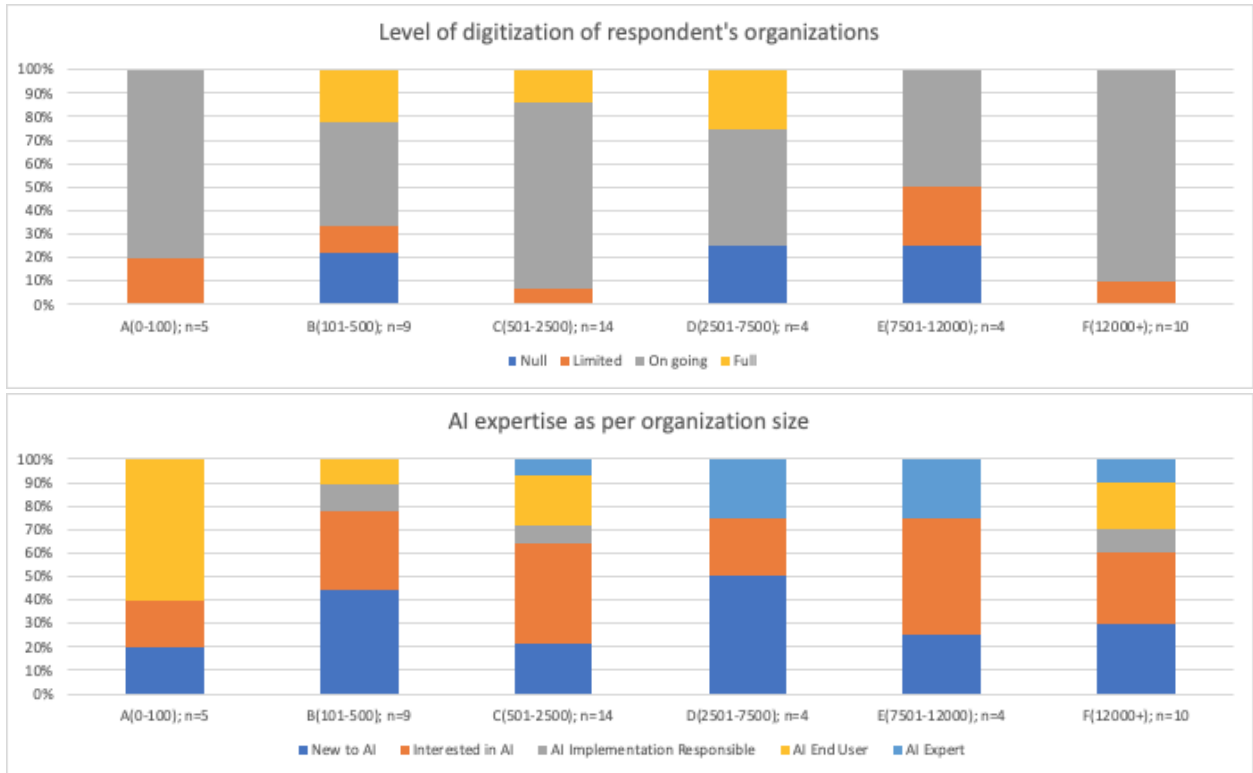

Size of Organization

- A(0-100)
- B(101-500)
- C(501-2500)
- D(2501-7500)
- E(7501-12000)
- F(12000+)

The measurement of digitization and AI expertise is described by each of the significant classifications:

Medical Devices

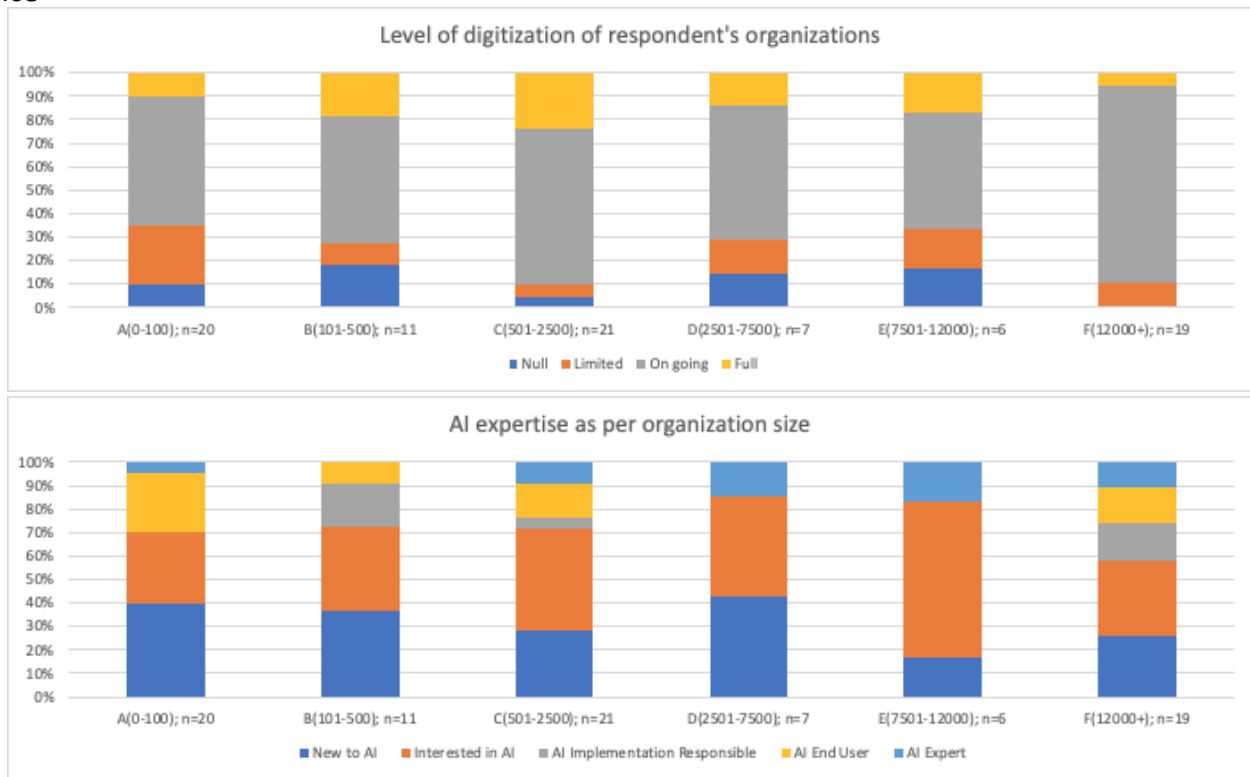Level of digitization of respondent's organizations

■ Null   ■ Limited   ■ On going   ■ Full

AI expertise as per organization size

■ New to AI   ■ Interested in AI   ■ AI Implementation Responsible   ■ AI End User   ■ AI Expert

Pharmaceuticals

Level of digitization of respondent's organizations

AI expertise as per organization size

Consulting

Level of digitization of respondent's organizations

AI expertise as per organization size

Life Science

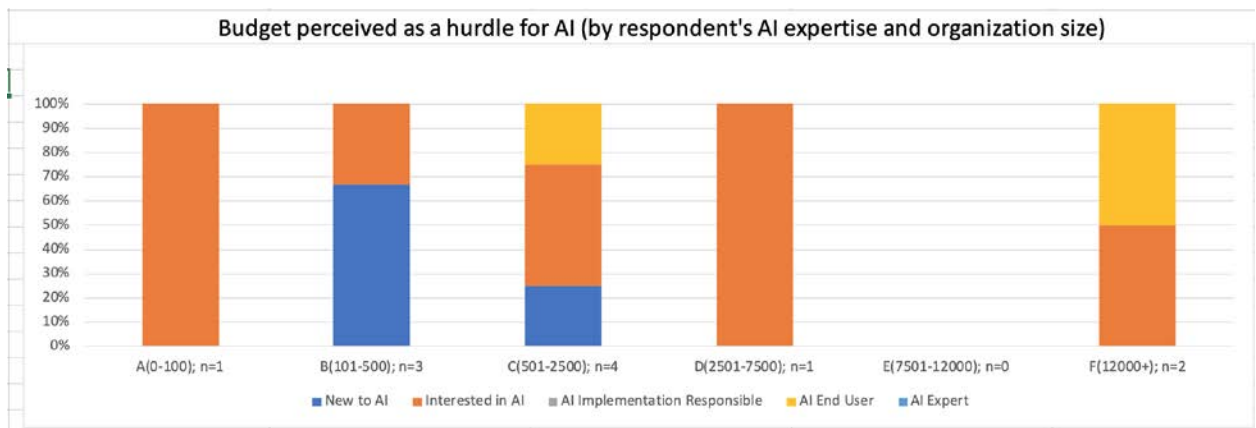Level of digitization of respondent's organizations
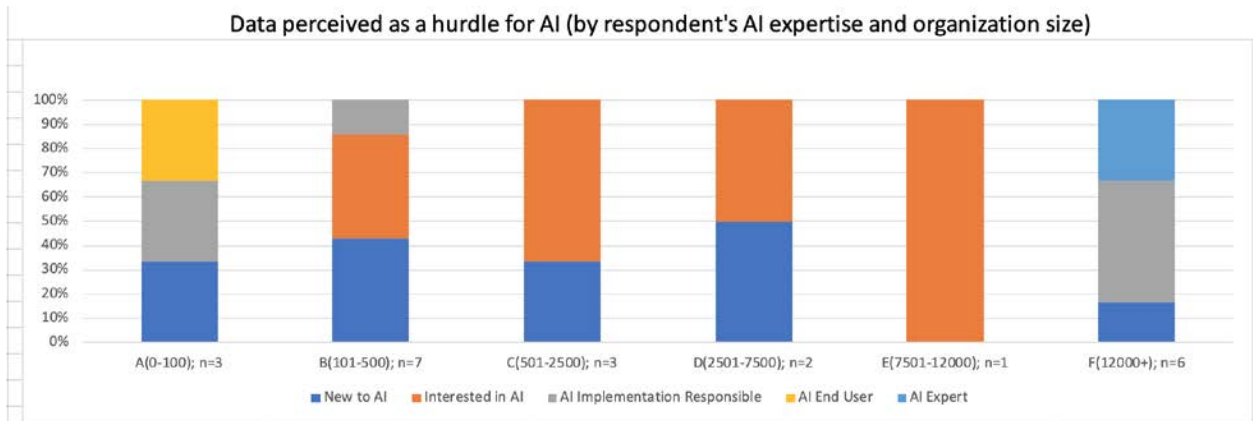

AI expertise as per organization size

Finally, regarding the elements that are being perceived as potential hurdles for the AI implementation, these are the most representative results organized by company size and AI expertise:
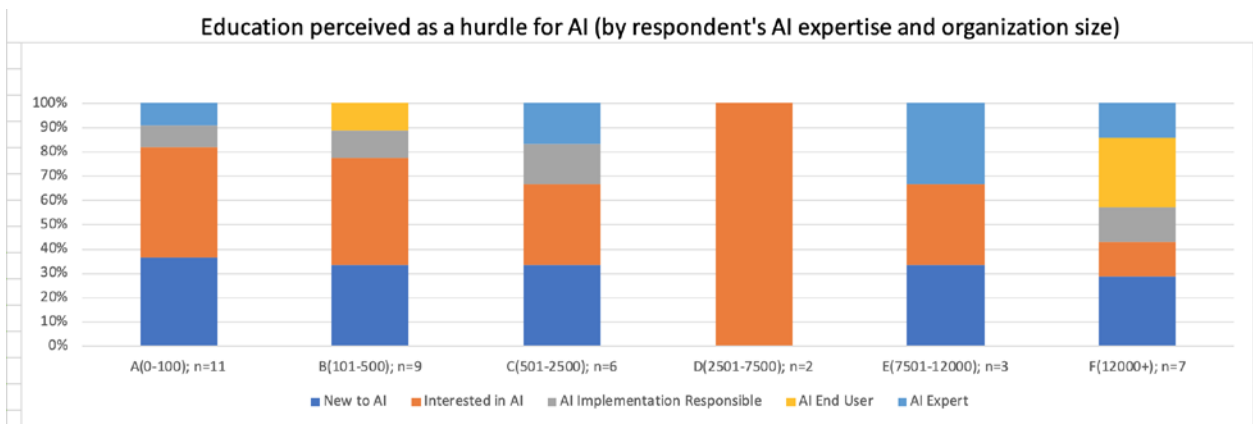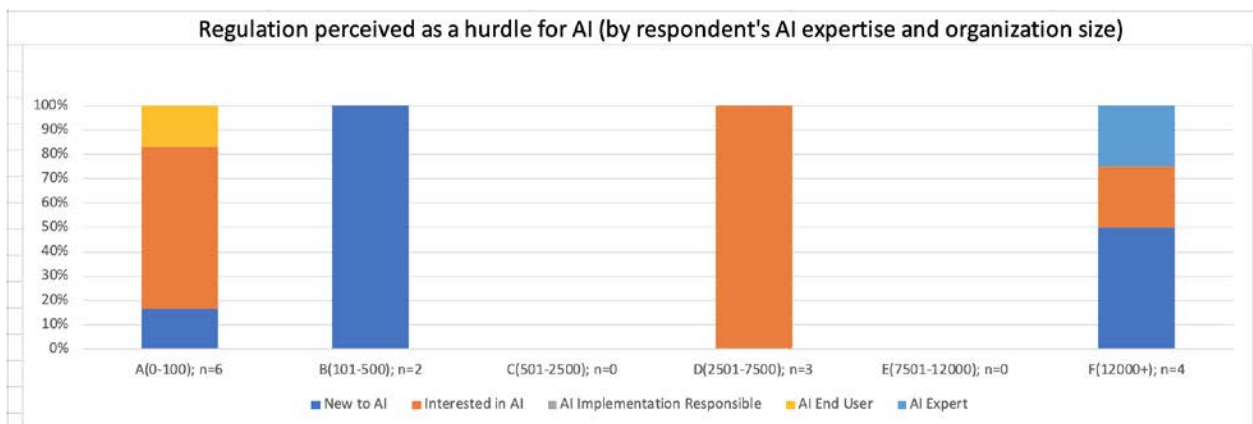
Budget

Budget perceived as a hurdle for AI (by respondent's AI expertise and organization size)

Problems with data (e.g. absence or quality)

Education

Regulation

Resources

Resources perceived as a hurdle for AI (by respondent's AI expertise and organization size)

Don't know

Distribution of respondents who don't know about AI hurdles (as per their AI expertise and organization size)