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Artificial Intelligence (AI) / digitization of public procurement[1]

1. Introduction

At the beginning of June 2023, the Danish lawyer Mikala Berg Dueholm (hereinafter MBD) wrote a thought-provoking Linked-in post with the interesting question: Will contracting officers and procurement lawyers become redundant because of AI? The post was written based on a Nohrcon web posting with the title "7 AI recommendations for the contracting officers of the future[2]".

Inspired by MBD's comments, I have summarized some important current contributions to the understanding of digitization of public procurement. Where do we stand, what do we know and what should we as procurement officers (as well as politicians and regulatory authorities) be aware of?

My efforts resulted in this article and is an attempt to summarize the most important conclusions of the latest research. The article's target group is public procurement freaks/nerds (and associated advisers) with an interest in digitalisation.

The article is based on several international research sources. Initially, more general issues surrounding the use of ChapGPT in the public sector are dealt with. The focus is then on digitization and public procurement, where the focus is the challenges that digitization poses within public procurement supplemented with recommendations for handling the identified problems. Finally, the article concludes with a summary.

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[1] This article is an English language version of the original text in Danish language published on www.nohrcon.dk on 12 June 2023. The English text is mainly a machine translation of the Danish text. The English version includes some modifications, supplements, and explanations not available in the original text.

[2] Peter Green Melgaard, '7 AI-anbefalinger til fremtidens udbudskonsulent' (*Nohrcon*, 31 May 2023) <https://nohrcon.dk/nyhed/7-ai-anbefalinger-til-fremtidens-udbudskonsulent/> accessed 5 June 2023. Own translation of original Danish text.

2. ChatGPT in the public sector

In April 2023, the European Council published a research paper entitled "ChatGPT in the public sector - overhyped or overlooked?"[3] The paper initially points out that ChapGPT can be expected to be implemented in the public sector for many purposes, the technology offers several advantages such as the handling of many simultaneous requests and presumably efficiency gains. It is also pointed out that ChatGPT can give imprecise, biased, or meaningless answers.

The research paper finds that the technology behind chatbots is in the hands of very few companies (primarily American), and they are becoming more and more disinclined to publish detailed information about how their chatbot products arrive at their answers. It is of course the companies' right to keep business-sensitive information for themselves, but in the public sector a lack of transparency regarding analysis and conclusions presents its challenges.

2.1 Challenges with public sector principles

The research paper points to several challenges in using language models such as ChatGPT. There are basic principles in public administration such as transparency, financial responsibility, equal treatment, and fairness. In public procurement, we can add principles such as the free movement of goods, non-discrimination and - perhaps - competition.

Combined with a lack of transparency in how the various chatbots arrive at their results, it is undeniably difficult to ensure, for example, impartiality when using chatbots. Take national Codex VII's on officials' duty to tell the truth[4] - if you, as an

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[3] Council of European Union, 'ChatGPT in the Public Sector – Overhyped or Overlooked?' (24 April 2023) <https://www.consilium.europa.eu/media/63818/art-paper-chatgpt-in-the-public-sector-overhyped-or-overlooked-24-april-2023_ext.pdf> accessed 5 June 2023.

[4] Moderniseringsstyrelsen, 'Kodex VII Syv Centrale Pligter for Embedsmænd i Centraladministration' <https://medst.dk/media/9672/kodex_vii.pdf> accessed 18 June 2023. Translation of Danish title: "Codex VII Seven central duties of officials in central administration"

official, do not know how the chatbot arrived at its result - how can you know that you are speaking the truth? What if the model has an unknown bias?

2.2.   Solution options

The research paper from the European Council points to mitigating the built-in risks when using ChatGPT through e.g., the public sector's own development of language models and increased regulation of the area. Finally, the article points out that there are currently (unsurprisingly) more questions than answers when it comes to the use of ChapGPT in the public sector.

For the interested reader the former Danish government's general plans in digitization can be read in the document Denmark's digitization strategy[5].

3. Digitization and public procurement

From the general challenges with ChatGPT to challenges with digitization including the use of chatbots in public procurement. I have not unfolded the large search for data sources around this topic, as a single researcher and a large ongoing research project jump out at me. Professor Albert Sanchez-Graells, Professor of Economic Law and Co-Director of the Centre for Global Law and Innovation, University of Bristol Law School is currently working on the research project "Digital technologies and public procurement. Gatekeeping and experimentation in digital public governance". At the time of writing, the project has produced several articles, presentations, and videos that I have allowed myself to make use of[6].

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[5] Regeringen, 'Danmarks digitaliserings strategi - Sammen om den digitale udvikling' <https://fm.dk/nyheder/nyhedsarkiv/2022/maj/ny-digitaliseringsstrategi-saetter-retningen-for-danmarks-digitale-fremtid/> accessed 8 June 2022. English translation of Danish title: "Denmark's strategy for digitalisation – together on the digital development"

[6] Albert Sanchez-Graells, 'Successful Procurement Digitalisation Requires More Data, in-House Expertise, and Improved Governance Mechanisms' (*University of Bristol; Policy Bristol*, 2022) <https://www.bristol.ac.uk/media-library/sites/policybristol/briefings-and-reports-pdfs/2022/PolicyBristol_PolicyBriefing123_Sanchez-Graells_public-procurement-data.pdf>.

If you are interested in a quick overview of the project's preliminary results, it is suggested that you read ASG's Policy Briefing 123: December 2022 from Bristol University[7]. In the Briefing, on the one hand, the significant opportunities for increased digitization within public procurement are pointed out, for example less administrative hassle through automation (robotics?), better data to support policy development and increased efficiency in public procurement. On the other hand, several challenges are also pointed out, such as a lack of transparency in data and algorithms, technology risks such as supplier lock-in and system risks such as inadequate cyber security. The article gives several policy recommendations, e.g., development of common data standards for valid procurement data across the public sector (could one imagine a common data standard for the state, regions, and municipalities in a Danish context?), investment in competence building among public purchasers and strengthening of the public regulation of e.g., algorithm transparency.

4. Tech fixes for Procurement Problems.

Precisely for practitioners such as contracting officers, category managers, lawyers etc. the webinar "Tech fixes for Procurement Problems"[8] organized in December 2022 by the University of Bristol Law School in collaboration with The George Washington University Law School Government Procurement Law Program is of particular interest. On the webinar, ASG presented some of the results from the above-mentioned project[9]. In its presentation, ASG focuses on "preliminary findings" within four areas of digitization of public procurement.

At the outset, I would like to mention that Albert Sanchez-Graells (hereafter ASG) is referred to by some professionals as the expert with the sceptical questions and the rest of this article must be read in that context[10].

[7] Sanchez-Graells (n 5).

[8] *Tech Fixes for Procurement Problems?* (n 6).

[9] Albert Sanches-Graells, 'Tech fixes for procurement problems (UoBLS-GW, Dec 2022).pdf' (*Dropbox*) <https://www.dropbox.com/s/d4zinnt5ivjkavq/Tech%20fixes%20for%20procurement%20problems%20%28UoBLS-GW%2C%20Dec%202022%29.pdf?dl=0> accessed 5 June 2023.

[10] *Tech Fixes for Procurement Problems?* (Directed by GW Law Government Procurement Law Program, 2022) <https://www.youtube.com/watch?v=zSaSdxEQ_2Y> accessed 5 June 2023. Statement by Eliza Niewiadomska,

4.1 Tech "policy resistibility.

Firstly, ASG states that procurement is an information-based activity in terms of intensity and complexity (which cannot surprise connoisseurs). Especially regarding processing of information-intensive data (large amounts of data), the technology may appear impossible to resist for decision-makers. This can lead to too many experiments, which entails the risk of long-term consequences for public digital governance.

4.2 Potential in different technologies.

As the second point, ASG assesses the potential of different technologies.

4.2.1 Robotics

As far as the use of robotics (RPA) is concerned, this technology is considered to have great potential in the automation of processes, e.g., order confirmation check, automatic invoice processing and receipt for goods received[11]. However, the technology requires that you have detailed data, e.g., you can describe exactly what an invoice must contain, and that data can be coded (either the invoice is correct or not). In contrast, the technology is not suitable for handling data that is based on estimates or qualitative assessments.

4.2.2 Machine Learning

In relation to Machine Learning shows the results of the project that several potentially relevant applications are offered, which can e.g., divided into "recommender systems" and "chatbots (incl. ChatGPT)". "Recommender systems"

Legal Counsel, Legal Transition Programme, Office of the General Counsel, European Bank of Reconstruction and Development – 1:06:30.

[11] Region Midtjylland, Indkøb & Medicoteknik, '**Robotterne kommer – for at hjælpe os** 🤖' (*Linkedin*) <https://www.linkedin.com/posts/medicoteknik-region-midtjylland_effektivisering-python-sql-activity-6990595911374512128-8xRN/?originalSubdomain=dk> accessed 8 June 2023. English translation of Danish title: "Robots arrive – to assist us".

are known from the internet's search engines - if you have searched for one product, you will automatically be suggested others like it. Public purchasers can also make use of this. However, the problem is that "recommender systems" do not know the new potential supplier who has not previously delivered to the market. This is clearly a problem in public procurement, where there must always be room for the new and innovative, yet unknown, supplier.

Chatbots present a particular challenge because no one is familiar with how answers or results emerge. It is also clearly a problem in connection with public procurement, where the procurement consultant or lawyer must be able to explain his results. According to ASG, the potential lies within closed FAQ systems or expert systems, where the public authority has control over its own data. For those interested, please refer to Ph.D. student Džeina Gaile's article on limits for ChatGPT in connection with answering questions about the procurement directive[12].

4.2.3 Distributed Ledger Systems

Distributed Ledger Systems (DLT) is a family of technologies such as Blockchain and the Internet of Things belong. These are systems that are based on a high degree of decentralization of data. You can sit from home and trade crypto currency with peace of mind about the validity of the data (almost). However, public procurement is based on highly centralized data, which is why DLT technology is not initially assessed to have great potential. ASG therefore concludes that the technologies have some clear limits. The opportunities lie primarily within information-intensive activities, but not within data with a high degree of information complexity.

4.3 Data – the big challenge

Thirdly, the research results so far show that there are special challenges in data collection (at the data source), data washing in the broadest sense (data curation)

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[12] 'Testing the Limits of ChatGPT's Procurement Knowledge (and Stubbornness) – Guest Post by Džeina Gaile' (*How to Crack a Nut*, 17 May 2023) <https://www.howtocrackanut.com/blog/2023/5/17/testing-the-limits-of-chatgpts-procurement-knowledge-and-stubbornness-guest-post-by-deina-gaile> accessed 5 June 2023.

and not least data governance. About the latter, the ASG points to strongly growing obligations on the part of public contracting authorities in connection with the use of increasing amounts of data and increasing complexity in data – can one defend what, for example, the data published in connection with a tender? Do we trust our consumption or market data?

4.4 Digital competences

Fourthly, ASG points to a lack of digital skills in the public sector. Lack of digital knowledge is a risk because it entails other risks – if you do not know the systems, it is even more difficult to see through the results of data handling (unknown unknowns). Furthermore, the system suppliers' use of different hats – one is a consultant at one time and a supplier at the next – leads to organizational challenges such as conflicts of interest or for the purchase of solutions that strengthen capabilities for data management in the short term but undermine more long-term public needs for own capabilities.

5. Technological willingness to take risks.

ASG raises questions about how much risk-willingness we have within the digitization of public procurement. This is a mostly unregulated area. There is only limited guidance from the central team and new technologies are based on the supplier's self-regulation and self-assessments. This calls for institutionalized regulation and supervision, which leads ASG to propose the establishment of a joint European regulatory authority for "artificial intelligence".

6. Recommendations

The mentioned "preliminary findings" lead to a series of recommendations on the implementation of standards for high-quality data in public procurement with different levels of access to this data, investment in in-house digital competences and less dependence on external suppliers, as well as, not least, a public regulation for

management of identifying and remedying governance risks such as data governance, algorithm transparency and cyber security.

7. Summary and perspectives

To get back to the starting point, based on ASG's presented results, one must conclude that there are currently more questions about digitalisation, AI and ChatGPT than there are answers. This is completely in line with the report in the research report from the European Council[13]. At the same time, we know that a lot can change in a short time. There are thus many matters within digitization and public procurement that should call for attention.

For the public employers who employ contracting officers and ditto lawyers, there is thus a greater task in the field of competence development, while for the public sector as digitization and procurement regulator there is a large task of establishing appropriate regulation to safeguard well-established and valued public virtues including the procurement law principles. At that time, the results from ASG's project will be available. When this is the case, it will be interesting to take a closer look at the results in relation to practice, regulation, and other research contributions. If the development also makes tenderers redundant, cf. MBD's question, I do not think that there are any qualified bids for at present, but there are indications that at least jobs where the task consists of processing large amounts of uncomplicated procurement data are in the danger zone, e.g., jobs that can be replaced by robotics.

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[13] Council of European Union (n 2).

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