

THE FUTURE OF PUBLIC PROCUREMENT: INNOVATION AND BLOCKCHAIN TECHNOLOGY

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Abstract

According to the latest statistics of the OECD, the sheer size of public procurement, approximately representing 12% of GDP in OECD countries, makes it a key economic activity - it ranges from 5.1% in Mexico to 20.2% in the Netherlands.² Spending such an amount on construction, buying goods and services for education, defense and social protection and on economic affairs in general, effectiveness is crucial from the aspect of the public interest. The design and principles of governmental spending can play a role model for the business sector: if we put the focus on innovation and transparency it can make the whole supply chain more trustworthy. In the last decade governments and regional, global regulators made significant efforts towards the general application of e-procurement to make the process much cost-effective and easier for small and medium sized enterprises to join. However, it is worldwide known that the mismanagement and the corruption are still basic risks of the public procurement system, and for this reason the innovation in supply methods, such as the blockchain technology can be a solution for a better public spending in the future.

Keywords: e-procurement, blockchain, DLT, public purchase, corruption

I. Greening, e-procurement and innovation goals of the last decade

According to the European Commission's statistics, EU the Member States are spending about 14% of the GDP through public procurement contracts.³ The percentage of GDP is even higher when taking into account state-owned companies such as utilities providing, for example, water and electricity services.⁴

Public actors and anyone under the scope of any public procurement laws are being encouraged to procure sustainably, to reduce their social and environmental footprint and also in order to stimulate sustainability in the private sector.⁵ Green public procurement (GPP), i.e. public purchasing of products and services which are less environmentally damaging when taking into account their whole life cycle, is increasingly used by countries to achieve such policy objectives in the area of environmental protection.⁶ Looking back to the roots of the green and innovative public procurement, in 2002 the OECD adopted the "OECD Council Recommendation on the Environmental Performance in Public Procurement", followed by another Recommendation in 2008 and in 2012. Sustainable procurement policies have been launched in many OECD countries (USA, Japan, Canada, Australia, and South Korea) as well as in rapidly developing countries (such as

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² OECD (2017) p. 172.

³ European Commission (2017) p. 1.

⁴ OECD (2012b) p. 5.

⁵ Brammer, Stephen – Helen Walker (2011) 452. p.

⁶ OECD (2015) 5.p.

China, Thailand, and Philippines). In 2007, an OECD survey indicated that the most common barrier to successfully implementing green procurement was a lack of know-how among procurement officials on how to achieve it. As a response, by 2010 more than three quarters of the Members have introduced practical guides on green procurement.⁷

Alongside the “greening” process we can also see the emerging importance using electronic methods in public procurement process. Generally speaking e-procurement is a catch-all term for the replacement, throughout the procurement process, of paper-based procedures with communications and processing that are based on information technology.⁸ The OECD defines e-procurement the integration of digital technologies in the replacement or redesign of paper-based procedures throughout the procurement process.⁹

We can summarize the importance of e-commerce and e-procurement with the words of Jean-Claude Juncker, who said: "*Digital technologies are going into every aspect of life. All they require is access to high speed internet. We need to be connected, our economy needs it, people need it.*"¹⁰

A report from the United States examined the innovation aspects of the public procurement in the county in 2011 resulting that the extent of innovation achieved through public procurement varies a lot across government. Outside of the national defense/security area, innovation is not an end but a means towards achieving some social purpose such as environmental protection, energy conservation, assisting disadvantaged groups in the population, and so forth.¹¹ Still, the innovation was not a basic principle in the world’s biggest economy’s public purchase.

Speaking about the existing risks on overall public procurement system, we can generally summarize them in terms of insider-driven specifications, low visibility of procurement processes, and ample opportunities for renegotiation of terms¹². In the next chapter I examine how e-procurement and the possible introduction of blockchain-based procurement may result in a better functioning of public purchase.

II. E-procurement at the focus

II.1. General advantages and regulation

The joint project of OECD and the EU, SIGMA research team (or SIGMA project) collected the most important advantages of e-procurement:

- reduced administrative costs of individual procurement procedures;
- streamlined procurement procedures;
- faster procurement procedures;
- increased transparency, by providing information about individual tender opportunities, but also providing a clearer picture of tenders on a wider basis;
- better monitoring of procurement;
- encouragement of cross-border competition, by reducing barriers presented by paper-based procurement processes;

⁷ OECD (2012a) 37.p.

⁸ See the early motivations of introducing e-procurement here: Davila, Antonio – Mahendra Gupta – Richard Palmer (2003) pp. 11-23.

⁹ OECD (2015) p.6.

¹⁰ State of the Union Address, European Parliament, 14 September 2016

¹¹ Vonortas, Nicholas S – Pushmeet Bhatia – Deborah P. Mayer (2011) p. 3.

¹² See in details: Dorn, Nicholas - Michael Levi - Simone White (2008) pp. 243-260.

- support to the development of centralized procurement administration, resulting in the potential reduction of costly back-office procurement functions and the good use of economies of scale in procurement administration;
- wider administrative modernization and simplification, encouraging the integration of various administrative processes as well as the diffusion of information technology solutions within and by government and society in general.¹³

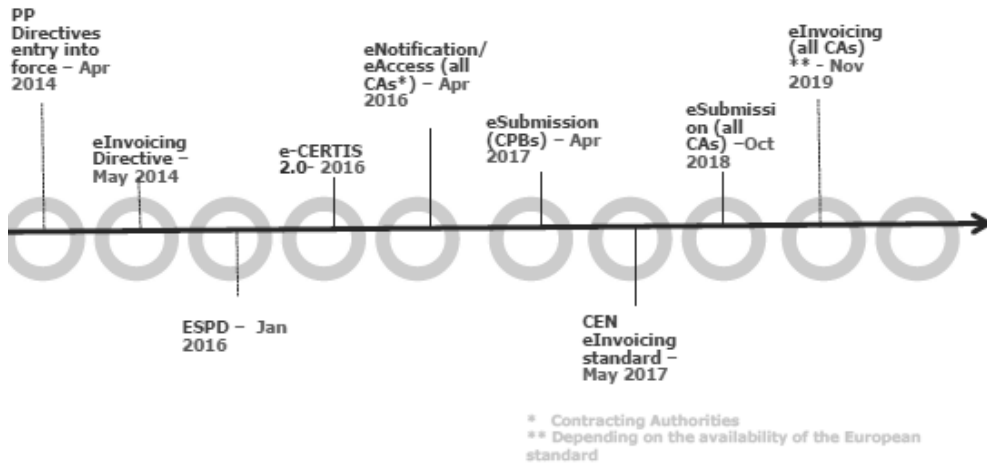
In 2014 the EU has adopted 3 new directives regulating the public procurement in the EU member states. Among these the 24/2014/EU Directive directly effects the national regulation as a whole. Preamble articles (52)-(57) are dealing with the general problem of electronic means of information and communication. As a principle, the Directive prescribes that types of e-procurement should become the standard means of communication and information exchange in procurement procedures. For that purpose, transmission of notices in electronic form, electronic availability of the procurement documents and – after a transition period of 30 months – fully electronic communication, meaning communication by electronic means at all stages of the procedure, including the transmission of requests for participation and, in particular, the transmission of the tenders (electronic submission) should be made mandatory.¹⁴ According to Article 22, Member States shall ensure that all communication and information exchange under the Directive, in particular electronic submission, are performed using electronic means of communication in accordance with the requirements of this Article. The tools and devices to be used for communicating by electronic means, as well as their technical characteristics, shall be non-discriminatory, generally available and interoperable with the ICT products in general use and shall not restrict economic operators' access to the procurement procedure. The deadline for harmonization of the national regulation was 18th October, 2018.

Table 1.

¹³ SIGMA (2016)

¹⁴ Preamble article (52) of the Directive

Rollout of e-procurement in the EU



E-procurement timeline of the EU member states

Source: European Commission

II.2. Regulation of e-procurement in Hungary

From some aspects of e-procurement, the Hungarian government had been too fast in harmonization: when the Act came into force on 1st November 2015, the European Single Procurement Document (ESPD) was not ready yet, it was only published on 5th January 2016 by the European Commission¹⁵, however the Hungarian Act prescribed its mandatory use in EU-level processes with suspending this rule's effect until the Commission is publishing the ESPD.

This was not the only field of being more dedicated than prepared: the first planned date for fully electronic procurement was 1st February 2017, than modified to 31st December 2017, but in early December 2017 it became clear that the new e-procurement system is not ready yet, so another modification in the Act postponed the date to 15th April, 2018. During 1st January- 15th April 2018 there are two parallel systems operating in public procurement: the purchaser has the right to choose to start the process electronically, or paper-based.

According to the regulation in effect today, in public procurement and concession award procedures the single electronic procurement system maintained by the Miniszterelnökség (Prime Minister's Office) shall be used [Article 40 (1) of Act CXLIII of 2015]. The Prime Minister's Office operates the Electronic Procurement System (EKR) since 1st January 2018, harmonizing the national law far earlier than the deadline in the Directive.

The innovation partnership, as a brand new type of procedures can be an indicator of the spreading of innovative public procurements. This new procedure allows for the combination of development and purchase elements tailored to public requirements, with specific rules in place to ensure equal treatment and transparency.¹⁶ According the preamble Article (49) of the EU Directive

¹⁵ Commission Implementing Regulation (EU) 2016/7 of 5 January 2016 establishing the standard form for the European Single Procurement Document

¹⁶ European Commission (2016)

this procedure “*should allow contracting authorities to establish a long-term innovation partnership for the development and subsequent purchase of a new, innovative product, service or works provided that such innovative product or service or innovative works can be delivered to agreed performance levels and costs, without the need for a separate procurement procedure for the purchase. The innovation partnership should be based on the procedural rules that apply to the competitive procedure with negotiation and contracts should be awarded on the sole basis of the best price-quality ratio, which is most suitable for comparing tenders for innovative solutions.*” The innovation partnership process takes place in three phases: (1) *the competitive phase* takes place at the very beginning of the procedure, when the most suitable partner(s) are selected on the basis of their skills and abilities. The contracts establishing the innovation partnership are awarded using the criteria of the best price-quality ratio proposed. (2) during *the development phase*, the partner(s) will develop the new solution in collaboration with the contracting authority. This research and development phase can be divided into several stages during which the number of partners may be gradually reduced, depending on whether they meet predetermined criteria. (3) Finally in *the commercial phase*, the partner(s) provide the final results. In the Hungarian regulation this means only two phase in practice: first one is the procedural phase, when the contracting party is choosing one or more partners from the applicants, and the second phase is contracting, when the deal is finished with the partnership agreement.¹⁷

As this is a completely new type of procurement, we might think that some time should pass to see this procedure in action after the new Regulation on public procurement is in force. However, until 31st December 2018 not a single procedure has been made under the new rules in Hungary. Examining whether the failure of the Hungarian practice is unique in the EU, we can see the UK, where the Crown Commercial Service issued a guidance on the application of innovation partnerships,¹⁸ and since the enactment on the new regulation we can find 28 procedure on the TED database containing innovation partnership (until 31st December 2018). In case of Norway (which country is not an EU-member state...), where we can detect 8 procedures, but Germany is also very active with 28 procedures.

If we summarize that there are about 300 procedures finished or still in process until 31st December 2018, we can say that this kind of process is getting into the practice quite slowly, but certainly. However, we have to take into consideration that in some countries the EU-harmonized regulation is only in effect since two years.

III. Blockchain and public procurement: a possible future trend?

As the number of contracting public authority who are committed to sustainable and innovative public procurement grows, the practitioners will find the optimal ways to reach the GPP goals. This way the main task for regulators is to promote GPP and innovation-driven procurement, and create a regulatory background (flexible enough). Education and specialized training programs are crucial for labor force and specialists working on the field of public procurement.

In the case of e-procurement time is obviously crucial: with the growing knowledge on the possible advantages of blockchain technology, there will be a need for even a more transparent and corruption-fighting system.

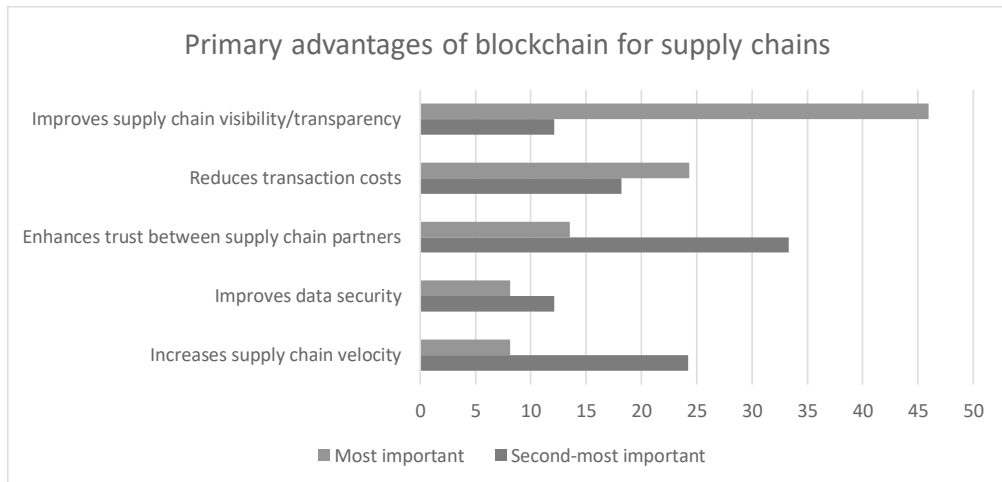
¹⁷ Kbt. 95. § (2)

¹⁸ See: Crown Commercial Service (2016)

III.1. Possible advantages of blockchain system on supply chains

Blockchain is a class of software technology that is composed of other technologies including data storage, distribution and synchronization, cryptography and identity.¹⁹ It enables large and complex communities of trading and contracting partners to fulfill transactions securely in real time, this way it can have a key role to play in the future of management of global supply chains. As national and local governments and state-owned companies are one of the greatest actors on the demand-side, it is obvious to seek for positive connections between the technology and the user.

Table 2.



Source: DeConvy, 2017²⁰

As an overall expectation, experts predict, that in the following years the role of blockchain technology will exponentially growing in areas like banking, medical records, elections, government services like pension disbursement or benefit disbursement, land ownership and tax payments²¹. All these areas are governed by the states, as an actor of the demand side, so the question arise: why not applying blockchain technology for public spending?

III.2. Blockchains's possible role in public procurement regulation

While blockchain technology is not typically used as a specific anticorruption tool, yet, its attributes can make it's applications more resilient to corruption because of the following specifications collected by Transparency International²²:

1. Transparency: blockchain-based data systems record all changes to stored data. Everyone with access to a blockchain can verify the data stored in this context. Transactions can thus be made more transparent.

¹⁹ The definition of blockchain and/or distributed ledger technology (DLT) is problematic for legal professions. See in details: Glavanits, Judit – Király Péter Bálint (2018)

²⁰ DeConvy, Sherree (2017) p. 6.

²¹ Bashir, Imran (2018) p. 612.

²² Kossow, Niklas – Victoria Dykes (2018) p. 9.

2. Immutability: once data is stored on the blockchain, it cannot be altered. It is thus safe from manipulation and illegitimate changes.
3. Security: as data is stored on distributed ledgers, it is secured against fraud and against attacks on a single server.
4. Inclusiveness: public blockchains are open source and accessible to everyone. DLT systems can thus be opened to all citizens, democratizing data storage.
5. Disintermediation: distributed ledger technology-based systems cut out a third party needed to verify transactions. This reduces transactions costs and makes them potentially less vulnerable to corruption.

There are self-understanding areas in which public procurement and blockchain can successfully straighten cooperate: public procurement financials and smart contracts.²³ However, the European Parliament has recently published a study, which is analyzing the possible connections between cryptocurrencies and financial crime, money laundering and tax evasion.²⁴ As long as these financial instruments (cryptocurrencies) will not get a legal definition and without being categorized, their official application in governmental actions within the EU Member states is questionable. Transferring “traditional” money through blockchains might be legally problematic because of the regulation on money markets which are based on the traditional banking industry actors, which blockchain system is by definition want to exclude from the transactions. Smart contracting might be easier to incorporate to the existing e-procurement platforms, while the missing piece here is the programming and developing of the IT-systems. With the possibility of automatized execution of the contracts the fulfillment of contractual obligation and possible fraud or misconduct could be transparently seen for the public. Even there could be less dispute on the remedies. However, the European Commission released a Commission notice called “Guidance on Innovation Procurement” in 2018 which is not even mentioning smart contracts or blockchain technology at all²⁵ – after 10 years of Bitcoin has born.

There are possible negative aspects of the technology as well of course, which should be taken into consideration when applying a new technology in public spending. In the short history of the blockchain world, we have faced some breaches on the security. One of the most known is the “The DAO hack”, where on June 17, 2016, a hacker found a loophole in the coding that allowed him to drain funds from “The DAO” (running on one of the most trusted blockchain, the Ethereum). In the first few hours of the attack, 3.6 million ETH were stolen, the equivalent of \$70 million at the time. Once the hacker had done the damage he intended, he withdrew the attack.

In the last decade the users and examiners of this new technology agree on that one potentially destructive feature of blockchain is that it’s possible for bad actors to control a network by sheer virtue of computing power. If more than half of the processing power on a blockchain fell into the hands of a single malicious entity²⁶ — which could be one person controlling a number of nodes, or a group of hackers working together, or even possible for a foreign country-driven group — it could prove very destructive for the other, well-intentioned members of the network.

²³ See also: Nicoletti, Bernardo (2018) pp. 189-230.

²⁴ Houben, Robby – Alexander Snyers (2018)

²⁵ European Commission (2018)

²⁶ See some technical details here: Liehuang Zhu - Yulu Wu - Keke Gai - Kim-Kwang - Raymond Choo (2019) pp. 527-535.

There are some privacy issues of the technology that still remain unregulated or unsolved so far.²⁷

Overall, it is only a matter of time for public entities to start thinking about a better and more transparent purchasing system, possibly based on blockchain or distributed ledger technology. Not only could it save taxpayer's money and build more trust in public spending, but the amount spent on the innovation and development of this technology may positively affect the whole financial and retail industry.

²⁷ See more here: Axon, Louise - Michael Goldsmith - Sadie Creese (2018) pp. 229-278.

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