

Improving red flag instruments for public procurement

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Abstract This article explores the modes of application of red flags in public procurement by comparing widely known red flag tools that have been developed by international organisations. The main items of interest are the tools designed and used by TI, the World Bank, the OECD, and others supported by the European Commission. The objective of the research is to call attention to the fact that in the course of identifying red flags it is necessary to clarify the objectives of the related instruments and the available data, while acknowledging that the former must be realistically applicable and regularly maintained.

Keywords Public procurement · Red flags · Corruption

1 Introduction

Numerous researchers deal with public sector corruption,¹ but a discussion of red flags is not one of the basic focal areas.² It seems that the topic of the importance of the former and the risks inherent in their use are presently being discovered in the literature about corruption in public procurement.

¹ Tátrai [20].

² Williams-Elegbe [23].

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However, prior to identifying red flag tools, it is necessary to clarify what exactly we mean by red flags in public procurement.

Dorn et al.³ lays out the basic tenets by considering red flags to be specific risks identified in the phases of preparation, selection of tenders and execution of contracts.

Similarly, Ferwerda et al.⁴ say in their seminal work that red flags are widely used to minimise the risk of various forms of economic misconduct, including corruption in public procurement.

According to a study by OLAF,⁵ indicators, or red flags, signal the greater likelihood that corruption has occurred in the procurement of a product, service or other piece of work.

As the OECD understands them, red flag (or risk-) indicators raise awareness among procurement practitioners of the key items that may be verified throughout the procurement process.⁶

Based on the definition provided by the U4 Anti-Corruption Resource Centre, ‘red flag guides are useful in examining a procurement process for possible fraudulent behaviour. They should be used with caution, however, because the lists often are so extensive that all processes—whether corrupt or not—could potentially raise a few red flags. Thus, procurement staff and management, as well as donors, should use these tools in combination with other methods to gain an accurate picture of the legitimacy of a given procurement process. [...] In short, red flags are a warning of a *potential* risk and not a certain sign of corruption’.⁷

‘A wide variety of factors can increase the level of corruption risk in a given contract, including large size, complex technology, corruption-prone sector, excessive discretion, lack of financial controls, restricted access to information, links to funding schemes, time pressure, lax social controls, and conflict of interest. These should be considered “red flags”, although not all of them will be present in every case of corruption, nor does any one of them inevitably lead to corruption’.⁸

According to the approach taken by the Global Infrastructure Anti-Corruption Centre, red flags are evaluated expressly as warning signs which can alert an organisation’s employees to potentially corrupt activity.⁹

Grouping is part of the interpretation of red flags. A good example is the distinction between green flags and red flags. The former positively reinforce indicators of good practice, such as providing a sufficient amount of time for bidding, while red flags refer to signs indicative of risk, as discussed above.¹⁰

Accepting the above definitions, we interpret the red flag tools used in public procurement as structured groups of identifiable red flags that are applied in procurement and public procurement, either based on qualitative or quantitative information or a

³Dorn et al. [3], pp. 243–245.

⁴Ferwerda et al. [7], p. 245.

⁵OLAF Study [17], p. 15.

⁶OECD PP Toolbox [16], p. 1.

⁷Heggstad et al. [9], p. 18.

⁸Heggstad et al. [9], p. 13.

⁹GIACC [8].

¹⁰Fazekas et al. [6], p. 25.

combination of the former, whose purpose is preventative. They may involve *ex ante* or *ex post* audits, and be static, dynamic or tailorable.

In the following we compare red flag tools developed by international organisations or upon their assignment. We sought to analyse well-known, public instruments, which are applied in a wide range of areas. For this reason we chose to analyse the red flag tools of the World Bank, OECD, OLAF, Transparency International (TI), the Corruption Research Index, and Arachne—developed with EU support—which is also based on red flags.

Even though not selected for comparison, the U4 Anti-Corruption Resource Centre¹¹ and GAN Public Procurement Due Diligence Tools are of importance in the history of the application of red flags.

The point of departure for our study was the work of Ferwerda et al.¹² which expressly studies red flags in the literature of criminology, public procurement and corruption. Using a dataset of 192 public procurements—including 96 cases where corruption was detected, and 96 cases where corruption was not—the related paper addressed the identification of significant risk indicators of corruption. The authors found that ‘only some indicators significantly relate to corruption and that eight of them (e.g. large tenders, lack of transparency and collusion of bidders) can best predict the occurrence of corruption in public procurements’.¹³

Work by Kenny/Musatova¹⁴ who analysed potential red flags in relation to World Bank procurements is also of importance in the present analysis. The operation and relevance of identifiable red flags was also studied in an OLAF project that is later described. A powerful sensitivity study was also published about Transparency International’s red flag tool, demonstrating that individual indicators should be subjected to more in-depth study in the course of the development of such tools to avoid erroneous findings.¹⁵

From an empirical perspective, the application of red flag tools does not necessarily bring the expected results. The involvement of self-reflection, a critical attitude, and reviews of red flag instruments constitute the basic principles of use, and an increasing number of research papers emphasise the importance of the former.¹⁶

2 Methods

In what follows we compare selected red flag tools that are well known and supported by international organisations, and evaluate these tools using several criteria. We assume that red flags are designed to increase recognition of factors which may indicate corruption throughout the course of an entire procurement process and its execution; that is, they are preventive in nature, although they can also assist in iden-

¹¹Heggstad et al. [9].

¹²Ferwerda et al. [7].

¹³Ferwerda et al. [7], p. 245.

¹⁴Kenny/Musatova [11].

¹⁵Németh/Tátrai [14].

¹⁶Massey/Hutton [12]; Fazekas et al. [5].

tifying suspect practice in subsequent audits (i.e. play a role *ex ante*). We incorporate in the analysis the procurement and public procurement-related content of the procurement rules of international organisations and the EU. The following criterion concerns which of the tools deal with the entire spectrum of procurement, from preparation through to contract performance, and which tools focus only on process. One of the most interesting issues is whether the databases involved in analysis incorporate data already collated in pre-existing databases, which is the next criterion incorporated in the analysis. We also analyse whether the tools under analysis are dynamic or variable; i.e., whether they can be tailored to specific persons, organisations or countries in the course of their use, and whether they are static (function within a given range of interpretations and at most are recast from time to time by their designers). Similarly, whether tools are capable of aggregating results and assessing a given procurement/public procurement in a simplified manner, perhaps in the form of an index, constitutes a further subject of study.

To help understand the analytical process we now describe the individual tools (as described above) and identify any recent changes in them. We also present any reviews, self-audits, public criticism and tests of the former, provided that such information was made publically available.

Based on this review, we draft recommendations for the designers and developers and users of new and existing red flag instruments concerning how the relevance of such tools may be maintained. The primary objective of the analysis is thus to formulate recommendations for improving the general development of red flags based on a review of well-known and widely used red flag tools.

3 Results

Below we briefly present the tools which were selected for comparison. The approaches of these widely applied red flag tools vary, thus their purpose and nature of their application also differ. The selected tools are of interest because they demonstrate what types of approaches can be used to develop and apply red flag tools in everyday practice.

3.1 Red flag tool 1—The World Bank

This tool¹⁷ consisting of thirteen red flags was developed in the course of an audit of World Bank infrastructure projects, and identifies four types of red flags.¹⁸

1. Unobservable red flags. These are red flags that may be unobservable in the course of normal supervision. For example: identification of pressures on Bid Evaluation Committee members.
2. Uncollectible red flags. These are flags that are difficult to evaluate using objective criteria and/or are difficult to detect in the course of a desk review, even though many should be observable during the course of standard supervision. For example: failure to answer requests for clarification in good time.

¹⁷See Table 1.

¹⁸Kenny/Musatova [11].

Table 1 Red Flags of the World Bank tool

Definition of warning signs		
Advertising/Bid opening		
1	Time between advertising of the contract and bid opening (weeks)	Greater than 6 weeks for ICB, greater than 4 weeks for NCB
2	Time between bid opening and bid evaluation	Less than 3 months
3	Number of submitted bids	At least 4 bids
4	Ratio of submitted bids to the number of companies that bought bidding documents (%)	Soft threshold: greater than 50% Rigid threshold: greater than 30%
Bid evaluations/Contract award		
5	Time between bid award and actual contract signing date	Less than 3 months (–92 days)
6	Ratio of non-responsive bidders to all bidders	Soft Threshold: Greater than 50% Rigid Threshold: Greater than 30%
7	Was the lowest bidder considered non-responsive?	Yes
8	For ICB contracts: did international companies bid in the auction?	Yes
9	If the winner is the lowest bidder, what is the percent gap between 1st and 2nd bid quotes?	Soft Threshold: Greater than 20% Rigid Threshold: Greater than 30%
10	Were any two bids submitted within 15 (Rigid Threshold) or 2,5% (Soft Threshold) of each other?	No
11	Difference between contract estimate and winning bid	Less than 30%
12	Difference between contract award and final contract amount	Less than 30%
13	Thresholds for procurement methods and prior review	Threshold exceeded by less than 30%

Source: *Kenny/Musatova* [11], p. 8

This tool is not dynamic; its content and value limits were developed first using empirical, and later project audit methods, for the express use of the World Bank. Due to this fact, comparability, controllability and ease of application were the main factors of interest

- Potentially irrelevant red flags or ‘red herrings’. The warning signs in this group tend to be found in a great number of contracts, but are perhaps more likely to be indicators of weak reporting or confusing Bank procurement requirements. For example: failure to include the names of the Bid Evaluation Commission in bid evaluation reports.
- Observable, collectible and relevant red flags. Researchers identified thirteen red flags which could be checked based on the audited projects. Criteria included clarity, controllability, comparability and qualitative nature.

The document authors made it clear that ‘we cannot cover the great majority of red flags proposed by any of the publications because we do not have the necessary documentation or sources, we were not part of teams observing the projects as they rolled out, and/or red flags were not easily translated into objective measures comparable across projects.’ However, assessors had to take into account the World Bank’s own rules and compliance in the course of their work. This involved defining var-

Table 2 Integrity risks in the procurement process based on the OECD tool

Pre-tendering phase	
1. Needs assessment and market analysis	<ul style="list-style-type: none"> • Lack of adequate needs assessment • Influence of external actors on officials decisions
2. Planning and budgeting	<ul style="list-style-type: none"> • Informal agreement on contract • Poor procurement planning • Procurement not aligned with overall investment decision-making process • Failure to budget realistically or deficiency in the budget
3. Development of specifications/requirements	<ul style="list-style-type: none"> • Technical specifications are tailored for a specific company • Selection criteria is not objectively defined and not established in advance • Requesting unnecessary samples of goods and services • Buying information on the project specifications • Lack of proper justification for the use of non-competitive procedures
4. Choice of procurement procedure	<ul style="list-style-type: none"> • Abuse of non-competitive procedures on the basis of legal exceptions: contract splitting, abuse of extreme urgency, non-supported modifications
Tendering phase	
1. Request for proposal/bid	<ul style="list-style-type: none"> • Absence of public notice for the invitation to bid • Evaluation and award criteria are not announced • Procurement information is not disclosed and is not made public
2. Bid submission	<ul style="list-style-type: none"> • Lack of competition or cases of collusive bidding (cover bidding, bid suppression, bid rotation, market allocation)
3. Bid evaluation	<ul style="list-style-type: none"> • Conflict of interest and corruption in the evaluation process through: <ul style="list-style-type: none"> – Familiarity with bidders over time – Personal interests such as gifts or future/additional employment – No effective implementation of the ‘four eyes-principle’
4. Contract award	<ul style="list-style-type: none"> • Vendors fail to disclose accurate cost or pricing data in their price proposals, resulting in an increase in contract price (i.e. invoice mark-ups, channel stuffing) • Conflict of interest and corruption in the approval process (i.e. no effective separation of financial, contractual and project authorities) • Lack of access to records on the procedure
Post-award phase	
1. Contract management/performance	<ul style="list-style-type: none"> • Abuses of the supplier in performing the contract, in particular in relation to its quality, price and timing: <ul style="list-style-type: none"> – Substantial change in contract conditions to allow more time and/or higher prices for the bidder – Product substitution or sub-standard work or service not meeting contract specifications – Theft of new assets before delivery to end-user or before being recorded – Deficient supervision from public officials and/or collusion between contractors and supervising officials – Subcontractors and partners chosen in a non-transparent way or not kept accountable
2. Order and payment	<ul style="list-style-type: none"> • Deficient separation of financial duties and/or lack of supervision of public officials leading to: <ul style="list-style-type: none"> – False accounting and cost misallocation or cost migration between contracts – Late payments of invoices • False or duplicate invoicing for good and services not supplied and for interim payment in advance entitlement

Source: *OECD Guideline* [15], p. 9

The tool assists by calling to account those responsible for errors and deficiencies, and regards, for instance, the very existence of a procurement strategy as such a fundamental matter that its absence is regarded to signal risk. The tool has diverse applications, but because of the significant amount of qualitative information that it requires, it is difficult to compare it with other procedures in a quantitative manner (e.g. by using a database). The tool is static and moreover relatively sensitive. It has been reviewed once since 2009, in 2016.

ious threshold values and testing them. The tool was fine-tuned to the Bank's own practices using different thresholds for checks of robustness.¹⁹

3.2 Red flag tool 2—OECD

The OECD instrument²⁰ also takes a simpler approach. The purpose of the tool is:

- ‘1. To provide procurement agencies with a guide to detect corruption risks at every stage of the cycle.
2. To equip procurement practitioners with an understanding of the type of risks they may face throughout the procurement cycle’.²¹

The tool is therefore called on to identify good methods of procurement, extending from preparation to implementation, an appropriate set of goals, and the existence of management. During the implementation of the tool there is a need for personal presence, expert interpretation, and for defining limit values specific to individual procedures.

The goal has been, *ab ovo*, to affect every level of the procurement cycle and to provide assistance to agencies. The generic list of procurement risk indicators can be divided into those applicable to pre-tendering, tendering and post-award phases.

3.3 Red flag tool 3—OLAF

The OLAF research project, financed by the European Commission, is exemplary too. The initial objective was to quantify the costs of corruption in public procurement.

The PWC-Ecorys consortia completed this project²² through the development of methodology for estimating the direct costs of corruption and other elements in the frame of creating an EU anti-corruption evaluation mechanism. The related study is very wide-ranging, and largely based on interviews and case studies. The original goal therefore was definitely not to develop a distinct red flag tool. However, according to the authors' interpretation, ‘more red flags indicate a higher chance of corruption’.²³

A total of 27 red flags were identified based on 192 cases from eight EU Member States. From this assortment, the most important are highlighted in Table 3.

The advantages of the above approach are that it explores the characteristic forms of behaviour and conspicuous elements of corruption that are obtained in an expressly public procurement environment based on a large number of cases. It also goes beyond the environment of public procurement procedures in the strict sense by focusing on the structure of the evaluating committee and any relationships between the awarding authority and the bidder. It is important to note that the development of the red flags included their testing. The indicators are static and were expressly developed

¹⁹ Kenny/Musatova [11], pp. 6–8.

²⁰ See Table 2.

²¹ OECD PP Toolbox [16].

²² OLAF Study [17].

²³ OLAF Study [17], p. 21.

Table 3 Red flags in the OLAF Study

1.	Strong inertia in composition of evaluation team
2.	Conflict of interest for members of evaluation team
3.	Multiple contact points
4.	Contact office not subordinated to tender provider
5.	Contact person not employed by tender provider
6.	Preferred supplier indications
7.	Shortened time span for bidding process
8.	Accelerated tender
9.	Tender exceptionally large
10.	Time-to-bid not conform the law
11.	Bids after the deadline accepted
12.	Number of offers
13.	Artificial bids
14.	Complaints from non-winning bidders
15.	Award contract has new bid specifications
16.	Substantial changes in project scope/price after award
17.	Connections between bidders undermines competition
18.	All bids higher than projected overall costs
19.	Not all/no bidders informed of the award and its reasons
20.	Award contract and selection documents not public
21.	Inconsistencies in reported turnover/number of staff
22.	Winning company not listed in Chamber of Commerce
23.	% of EU funding (= 0)
24.	% of public funding from MS
25.	Awarding authority not filled in all fields in TED/CAN
26.	Audit certificates by auditor without credentials
27.	Negative media coverage

Source: *OLAF Study* [17], pp. 22–23

for European public procurements. The tool is clearly of a qualitative nature and can be used to create a database, but some human resources are needed for obtaining and evaluating some of the data (for instance, ‘yes or no’ answers to questions involving the connection between bidders, or the presence of significant inertia in the composition of the evaluation team are a matter of judgment). The tool is also static, cannot be tailored to individuals or organisations, and is based mostly on the procedural phase, thus only partly deals with issues related to performance.

3.4 Red flag tool 4—Corruption Risk Index

Originally, the Corruption Risk Index (hereinafter CRI) was an index designed around a group of red flags²⁴ based on identified signs of corruption in public procurement. It follows the ‘Big Data’ approach as it is based on existing European notice data, but has a different logic to that of the TI red flag tool (discussed later).

²⁴See Table 4.

Table 4 CRI's original red flags

1.	Single bidder contract
2.	Call for tender not published in the Official Journal
3.	Procedure type
4.	Relative length of eligibility criteria
5.	Length of submission period
6.	Relative price of tender documentation is high
7.	Call for tenders modification
8.	Exclusion of all but one bid
9.	Weight of non-price evaluation criteria
10.	Annulled procedure re-launched subsequently
11.	Length of decision period
12.	Contract modification
13.	Contract lengthening
14.	Contract value increase

Source: Fazekas *et al.* [5], p. 378

Using publicly available electronic public procurement records in Hungary, researchers identified red flags in public procurement processes and linked them to instances of restricted competition and the recurrent awarding of contracts to the same companies.²⁵ Some red flags not specified in any other red flag tools covered in this analysis were also identified—for instance, the relative depth of eligibility criteria, which choice indicates that the researchers focused very strongly on quantifiable elements, while in the case of other tools issues of this type were managed qualitatively. The tool was subsequently streamlined; it now contains no more than three indicators. Below we present the original indicators, highlighting the red flags that were retained.

Within a project supported by the European Union²⁶ researchers simplified the above red flag group and focused more on the development of the index. In 2017, when the Hungarian data were analysed, the corruption index included only two red flags from the group: the existence of only a single bidder, and procurement procedures without notice. Additional analyses related to price no longer constitute a part of the corruption index, but are part of a study into the intensity of competition and contract price distortion.²⁷ In reality, the 'red flag' nature of the CRI is relegated to the background in the course of the work. Following an examination of the data, the identification of red flags, and the generation of an index from these, it is possible to compare, for instance, the risk of corruption in EU Member States based on TED data from past years, or from the study of national databases (The DigiWhist project deals, *inter alia*, with national databases). The transformation of the original CRI index and its simplification reinforce its index-type nature and suggest the weakening of the red flag nature of the tool.

²⁵Fazekas *et al.* [5], p. 369.

²⁶EU 7th Framework Programme's ANTICORRP project.

²⁷Tóth/Hajdu [21]; Tóth [22].

Table 5 Arachne procurement indicators

Lead time between publication and contract signature
Percentage disqualified tender offers vs. received
Number of valid tenderers
Contracted amounts via negotiated, restricted procedures or via direct award/Total project cost
Number of contract addenda compared to sector average
Financial correction

Source: *Arachne Report* [2], p. 8

3.5 Red flag tool 5—Arachne

There is relatively little information available about the structure of Arachne, which is, *ab ovo*, one weakness of the tool.

ARACHNE is a risk-scoring, preventive tool developed as part of anti-fraud measures by the European Commission (2013) that primarily helps the authorities of Member States identify EU-funded projects where the risk of fraud, incompatibility or irregularity is elevated. The related database consists of data from EU Member States and other databases, meaning that the tool relies both on internal and external data.

‘The correct use of ARACHNE will be considered by the Commission as a good practice in order to identify red flags and target fraud combatting measures [...]’.²⁸

This tool does not only focus only on procurement. Several groups of indicators can be linked to the procurement phase, while others to the contract management and the performance phase. The tool automatically raises fraud warnings using data from the database, thus it clearly involves the use of quantitative information.

Currently, twenty three Member States are active in the project which is being gradually being further rolled out.²⁹

The Arachne database permits the viewing of fraud indicators³⁰ related to projects, beneficiaries and companies. The tool automatically raises anti-fraud alerts based on both Member States’ data and investigative public data. After the data are aggregated, more than 140 risk alerts are calculated with the objective of defining an overall risk score for each project, beneficiary, contract and contractor.

Risk alerts are organised in terms of procurement risks, contract management risks, eligibility risks, performance risks, concentration risks, other risks related to European Social Fund projects, as well as reputational and fraud alerts. Advanced functionalities allow users to make interactive use of the Arachne dashboards through (amongst other ways) sorting risk down to the level of individual alerts. The tool can be tailored from the viewpoint of risk alerts, but primarily works as a risk calculator. Weaknesses include the quality of the data uploaded by Member States. If neither data quality nor the high participation rate of Member States can be maintained, Arachne

²⁸*EC Fraud Risk Guidance* [4], p. 14.

²⁹*Arachne Report* [1].

³⁰See Table 5.

will have major shortcomings as a centralised tool for the detection of corruption and fraud in EU public procurement.³¹

3.6 Red flag tool 6—Transparency International

The Transparency International (TI) warning system for the identification of red flags in public procurement³² is designed to identify corruption risks in public procurement within the framework of a project funded by a European Commission grant provided to Hungary. The project's objective was to develop a risk-assessment methodology which would allow for the creation of an innovative and interactive online monitoring tool that may be used in all Member States of the EU.

The objective of the TI Red Flag Tool³³ is to signal corruption risks through analysing and evaluating the content of the notices that launch and close procedures based on the Tenders Electronic Database. The tool distinguishes between the indicators showing whether the signalled risk is based on concrete information about the specific public procurement procedure included in (or omitted from) a contract notice or whether a potential risk is signalled according to general information or is based on threats experienced earlier in the given public procurement market in relation to the data included in the given notice. In the former case, signals are considered red flags (i.e. red flag indicators) based on the specific data about the given public procurement procedure. The former may be distinguished from indicators that transmit other so-called risk signals (i.e. other risk indicators, or 'pink flags') which highlight that, based on earlier market or other database information, linking the given characteristic to the specific public procurement act definitely merits attention and may add detail to the picture (but in itself does not determine the assessment of the procedure). This latter group of indicators include information about whether the contracting authority has been convicted in a final judgment for public procurement offences, and what reputation it has on the market. The issue of potential cartel activities in relation to public procurement is another such indicator. Information and company data linked to winning economic actor(s) are also suitable for signalling risks.

The product is thus not an index, but signals the quantity of red flag indicators in a notice, which, if the former are more numerous than average, indicates the higher risk of corruption in a general sense. The tool is dynamic and can be tailored to Member State regulations and the averages. From this point of view, it is also unique because other tools, particularly those focusing on European public procurement, do not take into account national specificities, but determine the risk of all incidences of public procurement to the standards they have developed.

Naturally, not every signal can be regarded as automatically identifying a corrupt procedure; instead, these indicators signify first and foremost the risk of an illegal practice. Because of this, the tool distinguishes between individual signals (i.e. it specifies red flags at two levels so that the tool is based on the extent of the risks and their true content). This means that it does not only rely on the TED database but

³¹ *Arachne Report* [1].

³² See Table 6.

³³ www.redflags.eu.

Table 6 Red flags in the TI Red Flag Tool**Contract notice**

1. Contracting authority has been convicted in a final judgment, or has a bad reputation
2. Framework agreement with one tenderer
3. Framework agreement with several tenderers (fewer than three tenderers participating)
4. Term of the framework agreement (long)
5. Total estimated value of framework agreement (high)
6. Object of public procurement (cartel risk)
7. High estimated value (contract of outstanding value)
8. Amounts overly uncertain (great difference allowed)
9. Contract can be renewed (several times, or for a longer time, or without any information)
10. Term of the contract (long or indefinite)
11. Omission of the definition of compulsory grounds of exclusion
12. Economic and financial ability—no minimum requirements
13. Economic and financial ability—conditions for capital (levels)
14. Economic and financial ability—required sales revenues > estimated value
15. Economic and financial ability—statement of sales revenues (period)
16. Technical capacity—no minimum requirement defined
17. Technical capacity—reference value > estimated value
18. Technical capacity—period of reference requirement
19. Technical capacity—requirement of a reference performance under one contract
20. Technical capacity—requirement for references co-financed by the EU
21. Technical capacity—setting geographical requirements
22. Technical capacity—experience of experts involved (number of years)
23. Accelerated procedure (use, and/or without statement of reasons)
24. Competitive (negotiated) procedure as legal grounds
25. The actual or predefined number of candidates is low
26. No criteria specified for the limitation of participant numbers
27. Award criterion—definition is incomplete (no constituent factor or at least two constituent factors; basically no method defined)
28. Award criterion—payment deadline
29. Time limit for tendering/participation is short
30. Opening date of tenders (differs from the time limit for tendering/participation)
31. Tender guarantee (amount)

Contract award notice

1. Procedures without prior publication
2. Number of tenders received (low)
3. Winning economic actor(s)—related information
4. Ratio of the total final value and the estimated value
5. Unsuccessful procedure for risky reasons
6. Unsuccessful procedure without statement of reason
7. Successful procedure without contracting
8. Duration of evaluation (long)
9. Final value of the contract is too high

Source: Németh/Tátrai [13].

it is possible to assess risks based on other information and other databases as well. For instance, if the reputation of the contracting authority is poor, and if the related database is integrated within this tool, the additional information will be incorporated into the signalling system, influencing the assessment of the procedures initiated by the contracting authority.

The TI Red Flag Tool has also been adopted by and is being tested by other Member States. Initially, the list of indicators was developed based on samples of EU notices, but within the environment of Hungarian public procurement law. Another version took as its point of departure the regulation provided in the EU Directives, and thus was not Member-State specific. Meanwhile, in line with the changes in directives, TI Hungary reviewed the tool and it is now up to date. It follows from its dynamic nature that anyone can tailor it and check procedures automatically. www.redflags.eu is a service which directly serves the needs of testers and signals the magnitude of risk. Its advantages are also its constraints, because to develop the tool it is not enough to identify red flags—the use of specific software is needed for its application. A key issue is, however, what content about notices in a procedure is accessible, as data content can be analysed only on that basis. From this perspective, the tool operates using the principles of data mining.

4 Comparison of red flag tools

The tools presented above were classified using five criteria. First, tools developed expressly for the purposes of public procurement were identified; these obviously did not include those developed by the World Bank and partly by OECD, as these organisations have created tools for establishing compliance with their own rules with a view to auditing regulated procurement processes.

The next criterion involved seeing which of the tools deal with the entire spectrum of procurement (from preparation through to contract performance) and which tools focus only on the process of the procedure, *stricto sensu*. Accordingly, the entire procurement process points beyond the announcement of the procurement and the conclusion of the contract.

The basis for the data analysis is composed partly of data from existing databases and that generated in the course of procedures, and partly of qualitative data whose processing and interpretation require additional resources. Another criterion is whether the tool is structured to have a dynamic approach; i.e. whether it can be tailored, altered and its parameters defined, or whether it can only be applied with the established content and threshold values.

It is difficult to identify which tools are intended to produce a uniform picture of a procedure, for instance by counting the quantity of red flags per procedure. Arachne endeavours to create aggregated results that sound an alarm according to the settings. The TI red flag tool aggregates the magnitude of risk and alerts the user following the checking of the notice. CRI is an index made out of a red flag tool. Accordingly, its purpose is much more to communicate the details of the index. Thus, taking an aggregated approach appears to be unrelated to the kind of data that the given tool works with, or to whether it can be dynamically tailored. In principle, red flag tools

can be used to assess a procedure in a uniform manner, resulting in an index based on the final criterion. However, this is not a precondition of the development or use of a tool.

Comparison of the individual tools suggests that the following items distinguish them and are components of their specific features:

	1. Public procurement specific	2. Focuses on the entire procurement process	3. Based on existing data (qualitative)	4. Based on interviews and additional data queries (quantitative)	5. Dynamic	6. Aggregated result—index
World Bank tool			x	x		
OECD tool	Partly	x	x	x		
OLAF	x		x	x		
CRI	x		x			x
Arachne			x		x	x
TI Red Flag tool	x		x		x	x

The comparison shows that the different tools require different kinds of qualitative input. When developing individual tools, attention needs to be paid to the requirements and objectives of the original developers and users, and the specific features of the available data. The related issues are discussed below.

5 Discussion

The comparison shows that the individual institutions were guided by different objectives when developing their red flag instruments. The Corruption Risk Index is a clear exception as its express objective was to create a corruption risk index using red flags. For this reason, it is important to clarify a few misunderstandings.

1. Red flag tools are unable to identify distinct incidents of corruption; they are designed for much more sophisticated analyses. With their use we face with the same limits as stated by the World Bank, as follows:

‘Red flags of the type we could monitor do not, by any means, necessarily signal corruption. Indeed, the red flags we could evaluate can all be explained in terms of problems completely unrelated to corruption—lack of capacity, technical complexity or chance, for example. Given the lack of inter-relationships between the red flags we examined that we might expect to see if particular forms of corrupt relationships were occurring, and the overall ubiquity of red flags, these innocent explanations are probably the dominant drivers of red flag occurrence’.³⁴

³⁴ *Kenny* [10], p. 19.

It is thus necessary to call attention to the limited nature of the signalling systems to avoid a situation in which, if the tool is excessively used, the public procurement market automatically regards a procedure full of red flags as a corrupt procedure.

2. Not all red flag tools give an accurate picture of procedures. Interview-based tools are characteristically able to offer only a general overview of the events that occur in the procedure. Some tools operate exclusively through data analyses, there are those that rely on human resources, and there are methods that combine the two approaches. None of the types should be seen as better or worse; they represent different types of tool.
3. Not all red flag instruments have a wide scope. If a tool examines notices, such as the TI Red Flag Tool, there will naturally be constraints on its ability to provide information about any content linked to performance, as there are no official European notices about performance.
4. Not all tools are of universal application. The widespread use of these tools by all actors is not realistic because regulations and public procurement cultures are different; accordingly, individual red flag tools will not operate everywhere in the same way. Arachne, whose database is contributed to by individual Member States, is a typical example of this. Simpler tools can be adapted to different environments. However, no matter what universal tools are available, the same or similar red flag tools in different environments can only be effectively used when the interpretative environments are similar and well understood.
5. The same data do not convey the same information in all areas. This fact is indicated by the research described below which investigated projects that were (were not) supported by the EU. ‘Using public procurement data on Bulgaria from the EU’s TED database we find that single bidding, the foremost corruption risk red flag in public procurement, is more prevalent in public procurement involving national than EU funds’.³⁵ Only studying average market data and failing to engage with the selection and querying of EU-supported procedures would lead to the loss of the above information. Accordingly, the users of such tools should consider the EU-funded characteristics of procurement procedures when analysing the data.
6. Not all market events are suspicious. For example, just because the length of eligibility is extended (a CRI indicator), it is not certain that risk is heightened. The development of red flag tools should be governed by research results, according to which ‘effective anti-corruption practices depend upon an understanding and analysis of the practices and politics of visibility, and the effective “luminous arrangements” have the potential to discourage corrupt practices and influence ethics within organisations’.³⁶
7. Problems are not the same everywhere, even within a given public procurement market. As the majority of the tools described above are, *ab ovo*, based on prevention, understanding the given organisation, regulation and culture is a priority from the viewpoint of what types of tools and red flags can be realistically designed. It is enough to simply consider the specificity of the utility sector in terms

³⁵Stefanov et al. [19], p. 35.

³⁶Neu et al. [14], p. 49.

of the development of red flag tools in public procurement. Kenny's question 'Is there an anticorruption agenda for utilities?'³⁷ is legitimate. The specific features of utilities in public procurement which affect non-state public service providers in the European market mean that general red flags associated with strong governmental control will not be effective in this sector. The situation is similar in the cultural sphere. 'Looking at the Italian case, some examples of empirical investigation on [sic] the performance of these contracts are provided and a discussion of the existing rules is offered. Cost overruns and delays, characterising most public works contracts [...] are "red flags" of poor performance and suggest that more attention should be given to the execution phase'.³⁸

8. Not all instruments permit the substantiation of accusations of corruption. The most important risks of signalling systems are also their potential benefits. If excessive expectations are formulated and tools are used for automatic corruption detection, they will not have achieved their objectives. A signalling system calls attention to the fact that—for example—there may only one bidder for a procedure, a procedure has been rapidly launched and rapidly administered, or a contract is concluded for an excessive time period, so the contracting authority should pay attention. In other words, such instruments provide recommendations to contracting authorities as to what to avoid to support a state of fair competition.
9. Use of an index is not absolutely necessary. Furthermore, there is a theoretical possibility that a red flag index could be created which, by weighing red flags and taking into account their interrelations, could signal the extent of any corruption. This, however, would require a much longer testing period and a more accurate analysis of the roles of the variables that are involved. The approach has real potential, although the key would not be to create a measuring tool but to monitor and check the mode of the enforcement of competition. The TI Red Flag Tool provides an opportunity to take the totality of red flag signals as its basis, and to test the extent of the average quantity of red flags that characterise notices in a given reference period using a large quantity of notices. The result is therefore not be an index, but a signal of the quantity of red flag indicators, which, if worse than average, indicates that the given notice may be regarded as having a higher risk of corruption in a general sense. The application of corruption risk indicators in public procurement is a new area for research³⁹ which goes far beyond the original purpose of red flag signalling systems.

In conclusion, one cannot expect miracles from such tools, but the above comparison and analysis shows that only those tools should be used whose approach is consistent with the objectives of the user, not vice versa (i.e. avoiding the development of objectives that correspond to knowledge about existing tools).

³⁷ Kenny [10], p. 19.

³⁸ Rizzo [18], p. 111.

³⁹ Fazekas/Kocsis [6].

6 Conclusion

In the course of this study we have endeavoured to present, explore, and compare the specific features of specific red flag tools that are applied over a wide range of areas. The objective of our analysis was to help extend the life cycle of existing tools and those currently at the design stage, and to call attention to problems which will certainly affect the market agents that are developing tailored red flag tools.

The red flag tools under review clearly had one feature in common; namely, that their designers had tested and reviewed them and interpreted the results. This stage of collecting feedback and maintaining the tools is at least as important as the stage of development. The periodic review and testing of tools must *ab ovo* be a part of the process of designing a red flag tool. It may happen that a red flag tool is excessively sensitive and finds corruption risks in every situation. Alternatively, it may ‘under-signal’; that is, fail to identify fundamental interrelations and problems because of the designers wish to create a tool that is as user friendly and simple as possible. It may also happen that tools must be simplified because they are too complicated and hence underutilised. Feedback helps not only in the development of tools, but also in enabling and motivating more people to use them. The World Bank has reviewed its own tool and underlined the more important red flags,⁴⁰ the OECD has renewed its red flags,⁴¹ while OLAF reduced the number of identifiable red flags following a period of testing, and then relaunched the tool.⁴² The logic behind the TI Red Flag Tool is that individual red flags must be tailored and retested when, for example, regulations change. The tool itself was designed to signal compliance with the current situation. The CRI list of indicators has been changed since it was first published,⁴³ meaning that work on it is ongoing.

Consequently, red flags should be ‘redesigned’ in an ongoing process such as the following:

- Red flag identification,
- Red flag testing,
- Drawing up and training in the use of the tool,
- Tool use,
- Collection of feedback, tool maintenance.

With regard to red flag tools, the stages of maintenance and testing and taking feedback into account are characteristically omitted. Consequently, numerous tools fail to create a realistic picture of potential problems or to take into account regulatory and cultural variability. Decisions about how to access data involve consideration of what data and human resources are available. The more structures and public data can be accessed, the more accurate the picture of the real processes will be, through making use of data mining and human intelligence.

It is important to periodically reinterpret red flags in the course of maintenance. For example, it became necessary to delete one of the indicators from the TI Red

⁴⁰ Kenny/Musatova [11].

⁴¹ OECD Guideline [15].

⁴² OLAF Study [17].

⁴³ Fazekas et al. [5].

Flag Tool when European notices were modified. Retesting is also needed: the World Bank, following a review, also indicated which of its red flags arise most frequently and are thus most relevant. It is clearly necessary to design and improve the guidelines for such tools: it was no accident, for example, that OECD itself reviewed its own red flag tool and formulated criticisms.

The present research was primarily designed to compare red flag tools, and led us to the conclusion that the time has come in public procurement to critically examine the red flag instruments that already exist. The few examples of research that have compared the content of individual red flags could illustrate how new tools should be designed. Practitioners and proponents of the use of red flags can learn from such research about the need for the ongoing improvement of existing tools. The requirement for the maintenance of such instruments does not necessarily indicate faults inherent to red flag tools; it is much more a direct consequence of the need for testing and feedback that fosters their improvement. The modification of tools, greater involvement of human intelligence, and the redesign of red flag instruments are required to create tools that provide better, up-to-the-minute information that supports the identification of corruption.

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