

# Will e-Government Reduce Corruption in Public Tendering? The South African Case Study

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## Tendering: Necessity or Choice?

The role played by government in establishing and growing a country's economy is critical. Apart from fiscal and monetary policy-making governments are responsible for funding projects that create a better business environment and a skilled labour force. Such projects are aimed at improving infrastructure, maintaining the rule of law, and providing citizens with access to quality healthcare, education and housing. All these government services serve to grow the economy by creating employment or business opportunities. These services may be provided directly by government or outsourced to private contractors (hereafter referred to as 'procurement'). Procurement is typi-

cally achieved through a tender process, where contractors bid for the contract.

Procurement is advantageous in that it provides business growth opportunities to contractors and service providers and allows government to access skills and expertise in order to complete projects in a timely, cost-effective manner. As government projects are catalysts for a country's economy, ineffective implementation and management of such projects can have adverse effects on the economy and society. Without sufficient employment and business activity, the government cannot collect the required amount of revenue to maintain or increase household incomes and living standards. Lower household income in turn affects education and health levels – and thus the labour

**WILL E-GOVERNMENT REDUCE CORRUPTION IN PUBLIC TENDERING?**

Les prestations du gouvernement en faveur de la croissance de l'économie peuvent être fournies directement par le gouvernement ou sous-traitées à des entrepreneurs privés (ci-après "soumission"). La soumission a généralement lieu à travers un appel d'offres qui présente l'avantage de permettre aux entrepreneurs et aux prestataires de services de développer leurs activités et au gouvernement d'avoir accès à des compétences et à de l'expertise pour pouvoir mener à bien des projets de façon appropriée et rentable.

"Parmi les catégories de crimes économiques, les pots-de-vin et la corruption ont crû le plus rapidement en Afrique du sud depuis 2011. Les organisations sud-africaines subissent significativement plus de fraudes en matière de passation des marchés, en ressources humaines, de pots-de-vin et de fraudes dans les états financiers que toutes les autres organisations... Plus d'un

force becomes less efficient, and the cycle continues.

## Economic Climate: Tumbling BRICS?

South Africa has experienced accelerated economic growth since attaining democracy in 1994. Prior to this the economy was in decline due to sanctions imposed on the apartheid government (Faulkner & Loewald, 2008). In spite of this, there have been several challenges to developing the country's economy – most notably in the past decade. As a developing nation, South Africa's forecast GDP growth (2.0% in 2015) pales in comparison to other emerging markets such as Nigeria (4.2%), Turkey (3.5%), India (7.0%) and Indonesia (5.8%) (PricewaterhouseCoopers, 2015).

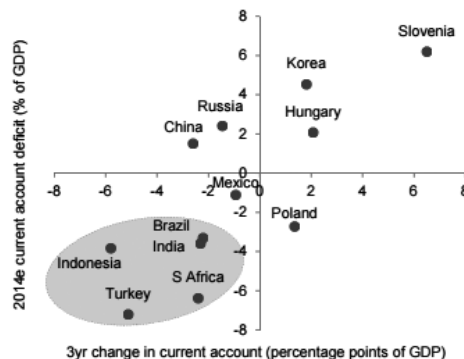
The South African economy is currently in a group known as the 'Fragile Five', which have seen widening current account deficits and depreciating exchange rates over

the last few years (Boxshall, Zimmern, & Kupelian, 2014).

Much of the blame for the lack of economic growth has been placed on the South African government's inability to accomplish its infrastructure projects and delivery of services on time – and within budget. Due to under-investment in electricity production, South Africa is also currently facing an energy crisis that threatens to derail the economy. Examples of shortcomings in service delivery include reported delays in the completion of government hospitals and power stations, and delays in delivering school books. These deficiencies may be due to a combination of skill shortages, limited access to capital, and corruption.

*"Bribery and corruption has been the fastest growing economic crime category in South Africa since 2011. South African organisations suffer significantly more procurement fraud, human resources fraud, bribery and*

Figure 1 . Emerging market current accounts, with the 'fragile five' depicted in the grey area



(Source: PwC Global Economy Watch (March 2014))

quart des répondants sud-africains ont dit que leurs organisations avaient dû payer un pot-de-vin dans les derniers 24 mois. De plus, un cinquième pense qu'ils ont perdu un marché car un concurrent avait payé un pot-de-vin." - PwC Global Economic Crime Survey (February 2014).

En 1994, le gouvernement sud-africain a mis en route le Black Economic Empowerment ('BEE'). Ce programme d'empowerment (montée en puissance) – qui met l'accent sur l'origine raciale et sociale – a conduit à l'échec des sanctions à l'encontre des comportements non éthiques et a mené à des niveaux croissants de corruption et de népotisme dans les processus d'appel d'offres du gouvernement. Il existe de nombreux exemples de personnes qui se sont enrichies grâce à la corruption dans les appels d'offres, basée sur les relations personnelles et les rapports avec de puissants fonctionnaires.

*financial statement fraud than organisations globally ... more than a quarter of South African respondents reported that their organisations had been asked to pay a bribe in the last 24 months. In addition, one fifth of South African respondents believe they lost a business opportunity because a competitor had paid a bribe."* PwC Global Economic Crime Survey (February 2014) || (p.4).

Corruption has become a recurring theme in daily news headlines and appears to be rampant. If left unchecked, levels of corruption will continue to rise and economic growth will continue to decline. Accordingly, this paper analyses the reasons behind unethical behaviour and suggests solutions for addressing the issue of corruption in the government tender process. The discussion proceeds as follows: sections 2 and 3 identify issues in the current tendering process; section 4 analyses reasons for unethical behaviour; section 5 proposes a solution; section 6 provides a framework for implementing the proposed solution; and section 7 presents a conclusion.

## Current State of Affairs

After attaining democracy in 1994, the South African government implemented an economic transformation programme known as Black Economic Empowerment (hereafter 'BEE') – to redress economic disparities created by the apartheid regime. BEE aims to bestow economic

privileges to previously disadvantaged racial groups through initiatives such as preferential employment and procurement. Black equity stakes have increased from just under 1% in 1994 to 7-8% in 1999 (Edigheji, 1999). A 2014 study suggests that most South African business managers, regardless of race, agree that BEE is aimed at broadening the economic base of the country; however, many disapprove of the manner in which the policies are being implemented (Rensburg & Roodt, 2005). Critics of BEE argue that the emphasis on race and social background results in trivialisation of the necessary skills, qualifications and experience required to perform competently in a job or project. In particular, government departments place great emphasis on BEE initiatives – sometimes to the detriment of progress on high-impact projects that are crucial for social progress and economic growth. In fact, the emphasis on race while downplaying other important criteria, coupled with the failure to penalise unethical behaviour, have led to increasing levels of corruption and nepotism in government tender processes.

There are numerous instances of individuals becoming wealthier through corruption of tender processes, based on personal relationships or connections with powerful government officials. Frequently, newly 'empowered' companies are created for the sole purpose of qualifying for government tenders – even though such companies have no operating

La Constitution de la république d'Afrique du Sud prévoit que lorsqu'un organe de l'État passe une soumission pour des biens et services, il doit le faire en accord avec les principes d'impartialité, d'équité, de transparence, de compétitivité et de rentabilité. Au cours de l'appel d'offres, les violations de ces principes peuvent se produire à différentes étapes.

Une défaillance dans la planification du budget peut entraîner une augmentation des coûts, une mauvaise utilisation des ressources, des produits, des services ou des compétences. En plus, des spécifications dans l'offre peuvent être biaisées dans le but d'augmenter les chances d'un des concurrents en particulier de remporter le marché.

history and no credentials. In September 2014, a statement released by the Department of Public Works revealed that over 100 fraud and corruption cases involving over ZAR34 billion were being investigated. One case involved the signing of a three-year contract to redesign a provincial government website at a cost of ZAR40 million. The website appeared to have been created using a US\$40 WordPress theme and became the most expensive website ever built in South Africa. News reports stated that even the websites of financial institutions, which need protection of sensitive data transmissions, cost much less – around ZAR12 million. The winner of the provincial website bid reportedly held tenders with a number of provincial departments, and “was awarded the tender even though two other companies submitted significantly lower bids” (Mail & Guardian, 2013).

## Where Things Go Wrong

### *Pre-tender Stage*

This stage involves planning, strategising, budgeting and providing a clear statement of objectives and required outcomes. Failure to do so can lead to increased costs, misuse of resources and an unsuitable product, service and/or skills. In addition, bid specifications may be biased with the goal of increasing the odds of a specific bidder winning. In 2009, a series of security upgrades for the South African

President's private homestead were approved. The total cost of the upgrades was ZAR246 million – some 8.4 times the budgeted cost. Much of the cost escalation was reported to have happened as a result of uncontrolled scope creep on the upgrade (Madonsela, 2014).

### *Tendering Stage*

The tendering stage begins with a public invitation to tender: applicants are required to submit documents to a bid committee, which will then evaluate and assign scores based on price, functionality and BEE objectives. The bid is awarded to the highest scorer. It is during this stage that ethics play an important role, if fairness and the advantages of competition are to be achieved. However, this stage is the most liable to manipulation and the abuse of political power (PricewaterhouseCoopers, 2014). Violations at this stage may include manipulation of scores, political interference, exertion of influence, and undeclared conflicts of interest – amongst other things. Such infractions have far-reaching consequences: failure to fulfil the contract, hindrance of entrepreneurial growth, and claims of bias or favouritism where a conflict of interest exists.

Media reports disclosed that an investigation by Gobodo – a forensic accounting firm – found that the construction of a mental hospital was awarded to Vista Park Developers against the Department of Roads and

L'étape de l'appel d'offres est la plus exposée à la manipulation et aux abus de la part du pouvoir politique. À ce stade, les violations peuvent inclure la manipulation des notations, l'interférence politique, l'abus d'influence et les conflits d'intérêts non déclarés. L'importance étendue de ces conflits a donné naissance au terme sud-africain d'"offrepeneur" qui désigne au sens large un individu dont les affaires prospèrent uniquement sur la base d'offres remportées grâce à l'influence politique.

Les domaines courants de non-respect pendant l'étape post appel d'offres incluent : l'adaptation des contrats de services afin de favoriser certains fournisseurs, une supervision inadéquate des mandataires et le paiement de factures fictives. À cela s'ajoute le fait que des spécifications incomplètes des résultats demandés créent des difficultés pour évaluer objectivement la performance consécutive à la réalisation.

Public Works' (hereafter 'DRPW') recommendation to award it to the highest-scoring bidder (Evans, 2012). It was also highlighted that Vista Park Developers was well connected with senior politicians. The Gobodo report asserted that Vista Park Developers did not have all the required bid documents. Moreover, the bid committee's decision could not be justified as other key documents were found to be missing. The estimated construction cost increased from ZAR290 million to ZAR1.8 billion, with a seven-year delay in completion of the hospital. Even when it became apparent that Vista Park Developers was in breach of contract in 2007, and unable to deliver on time and within budget, DRPW officials failed to act. The DRPW finally cancelled the contract in 2009.

As demonstrated in the example above, a conflict of interest arises when a bidder has a personal or business relationship with a state official who has influence over the bidding process or any other aspect of the contract. The widespread prevalence of such conflicts has given rise to the South African term 'tenderpreneur'. The word is broadly understood to describe an individual whose business thrives solely because of tenders won through political influence. South African law generally prohibits members of public bodies from performing remunerative work or holding private interests in a contract with that body – but exceptions are authorised in certain

instances. It is clear that unethical authorities may approve exceptions, even where it is obvious that personal interests supersede the public interest. For example, the Auditor General of South Africa reports that three-quarters of government tenders in the Eastern Cape are awarded to companies owned by government officials and their families (Flowerday, Rama, & Boucher, 2012). Lack of objectivity in the tender process leads to diminished faith in the fairness of the process; contractors will avoid submitting bids if they are rejected for arbitrary or unclear reasons – resulting in fewer bidders, less competition and higher prices (OECD Policy Briefs, 2008).

#### *Post-tender Stage*

During this stage, contracts and service level agreements (hereafter 'SLAs') are signed by all parties, the scope of work is confirmed, and the purchase order (or service order) is issued. Throughout the course of the contract there should be regular supervision of work performance to ensure compliance with SLAs, and penalties or termination notices issued, if necessary. Changes to the scope of work or the budget should go through the approval process specified in the contract. Common areas of non-compliance during the post-tender stage include tailoring of SLAs to benefit suppliers, inadequate supervision of contractors, and payment of fictitious invoices. In addition, poor specification of required outcomes may cause difficulties in

Le gain personnel ou financier est le moteur irrésistible du mauvais comportement éthique. Dans une perspective utilitariste de risque et rendement, la fraude à l'appel d'offres présente un faible niveau de risque et une perspective de gain très élevé. On estime que le coût des fraudes financières en Afrique du Sud a dépassé 1 milliard de ZAR en 2012. La découverte la plus inquiétante est que ce type de comportement ne semble pas avoir de conséquences significatives.

post-implementation performance evaluation.

The diagram below, based on a 2014 PwC survey conducted in South Africa, shows the percentage of survey respondents who believed that a particular step in the procurement process is susceptible to fraud (PricewaterhouseCoopers, 2014).

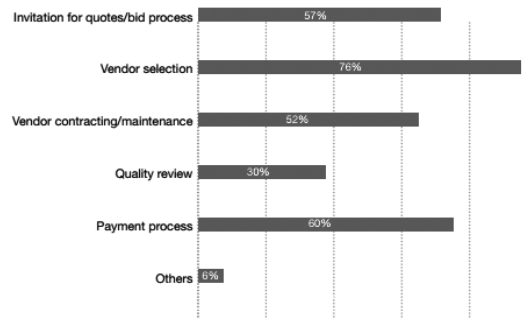
## Causes of Unethical Behaviour

It is clear that the underlying cause of procurement policy violations, throughout the tendering process, is unethical conduct. A 2010 study (Ermongkonchai, 2010) found that the single most compelling driver of ethical misconduct is personal or financial gain. Peripheral themes from the study include social norms, process loopholes, and pressure for performance. Admittedly, there are loopholes in policies governing public procurement and contracting – due to some exceptions that have been allowed for as part of the rules. However, the

sheer scale of unethical conduct and the huge financial gains associated with such conduct, are glaringly obvious. In fact, of the many cases of fraud and corruption reported, the majority of perpetrators do not suffer any consequences and are not brought to book. The lack of consequences, coupled with the potential for large gains, exacerbate unethical behaviour. A 2012 report on financial misconduct by the law firm Edward Nathan Sonnenbergs (hereafter 'ENS'), states that (Allwright):

*“The most troublesome finding is that there appeared to be no meaningful consequence to financial misconduct. Although 88% of officials were found guilty of misconduct in the cases, the most common sanction for financial misconduct was a final written warning (43%). Only 19% of officials found guilty of financial misconduct were discharged from the public service. The majority of perpetrators remain in their positions and often continue to commit financial misconduct. The losses from the finalized cases of*

Figure 2 . Prevalence of Procurement Fraud by Process Stage



(Source: PwC Global Economic Crime Survey (February 2014))

*financial misconduct totalled ZAR346 million, and only 13% of this amount was recovered from officials (ZAR44 million) whilst 87% remained lost to the public service (ZAR302 million)."* – ENS report (2012) || (p.3).

From a risk and reward utility perspective, there appears to be low risk – but very high return associated with tender fraud. The ENS report further states that financial misconduct was estimated to exceed ZAR1 billion in 2012. This is comparable to playing the lottery in which a small risk is taken, with the possibility of large gains. The difference, however, is that the probability of a large gain from playing the lottery is almost zero – whereas the chance of a high gain from committing tender fraud is almost surely certain.

From a behavioural perspective, any of the following behavioural biases may be applicable to individuals involved with tender fraud:

- *optimism bias and illusion of control*: individuals may feel that financial gain is guaranteed and that there will be no consequences;
- *regret aversion*: individuals may observe their colleagues benefitting from unethical behaviour and attempt to benefit themselves before the status quo changes;
- *role fulfilment*: conforming to the expectations of other decision makers; and
- *framing bias*: altering the representation of the risks or rewards so

as to make the decision appear to be beneficial.

Such biases reflect the psychology of the decision-maker and affect the ability to make rational decisions. They often lead to suboptimal decision-making through satisficing – that is, accepting a solution that only just meets the objectives and is considered to be good enough. Combining behavioural biases with the expected gain from misconduct, it is easy to see that an unethical individual will weigh up personal financial gain against the universe of possible suboptimal decisions. Where the risk of consequence is low, an unethical decision-maker will satisfice, while attempting to maximise personal gain.

## A Game Theory Explanation

Game theory models of corruption give us some insights into the economics of corruption. A paper by John MacRae (McRae, 1982) shows that when firms are competing for a tender in the presence of a corrupt official, the dominant strategy, regardless of whether the other firms are also bribing or innocent, might be for the firm to bribe. The same paper also shows that when a prisoner's dilemma exists, it is propitious for firms and officials to cooperate by excluding other firms from competing altogether.

Reference is made to MacRae's paper and inspiration taken from its mathematical notations in order

La théorie des jeux appliquée aux situations de corruption montre que lorsqu'une firme concourt pour un appel d'offres en présence de fonctionnaires corrompus, la stratégie dominante, indépendamment du fait que l'autre entreprise soit corrompue ou innocente, serait qu'elle verse des pots-de-vin. Quand il existe un dilemme du prisonnier, les entreprises et les fonctionnaires ont intérêt à coopérer en excluant de la compétition les autres entreprises.

to better understand what initiates corrupt strategies. The theory is applied below to the simplified case of two competing firms bidding for a tender and faced with the decision to bribe or not to bribe.

The following is assumed :

- Firms A and B have the same probability,  $p$ , of winning the tender,  $p=50\%$ ;

- The price for the winning firm is  $P$ , for instance  $P=\$100$ ;

- $p'$  is the probability of winning the contract, if firm A (respectively B) is bribing and firm B (respectively A) is innocent;

- $p'$  is defined as  $p'=p+a(1-p)$ ;

- $a$  reflects the ability and propensity of the corrupt official to influence the decision, and  $0 \leq a \leq 1$ ;

- $p''$  is the probability of the innocent firm winning the contract, if the other firm is bribing, and is given by  $p''=1-p'$ .

- There is a fine,  $F$ , if a firm gets caught bribing. For instance  $F=\$200$ ;

- There is a probability  $p^1$  of getting caught if both firms are corrupt, and  $p^2$  if the other firm is innocent. For simplicity, it is assumed that  $p^1=p^2=p^F$ , and thus  $p^F=5\%$ .

Here we take  $a=0.5$ , meaning that the official can ensure a corrupt firm gets the project with 75% confidence ( $p'=0.75$ ), but cannot guarantee it completely. Putting it all together yields the following possible outcomes:

Le dilemme du prisonnier se pose si le gain attendu est plus important que le montant de l'amende que l'entreprise devrait payer si elle était sanctionnée pour autant qu'elle ait effectivement payé des pots-de vin. Les leviers disponibles pour freiner la corruption sont les suivants : réduire la capacité d'un fonctionnaire corrompu à influencer la décision, augmenter les amendes et la probabilité d'être attrapé.

Table 1: Possible payoffs for firms A and B

Payoff to A, Payoff to B	Firm B corrupt	Firm B non-corrupt
Firm A corrupt	$pP-p^F$ , $pP-p^FF$	$p'P-p^FF$ , $(1-p')P$
Firm A non-corrupt	$(1-p')P$ , $p'P-p^FF$	$pP$ , $pP$

Applying the assumptions on the values gives:

Table 2: Example payoffs for firms A and B

Payoff to A, Payoff to B	Firm B corrupt	Firm B non-corrupt
Firm A corrupt	40, 40	65, 25
Firm A non-corrupt	25, 65	50, 50

## The Prisoner's Dilemma

The payoff matrix above shows that being corrupt is a dominant strategy for both firms – resulting in a prisoner's dilemma. Bribing is the best strategy for both firms, whatever the other firm does. If firm B decides to be innocent, A would do well to bribe – gaining an expected \$65 instead of \$50. If B decided to be corrupt, A could stand to win only an expected \$25, while it could improve the payoff \$40 by also deciding to bribe.



Les systèmes technologiques d'information et de communication concernant les services proposés par l'État ont réduit avec succès le contact entre les fonctionnaires corrompus et les citoyens et ont augmenté la transparence et la responsabilité. Les avancées de l'e-gouvernement ont beaucoup d'avantages tels que la gestion efficace des fonds publics, la diminution de la corruption des fonctionnaires et une confiance croissante dans le gouvernement. De nombreux pays ont confirmé avoir réalisé des progrès après la mise en œuvre des mesures d'e-gouvernement.

Going back to the first payoff matrix, we can see that bribing is a dominant strategy when the following conditions are met:

$$pP - p_F F > (1 - p^A)P \quad (1)$$

$$p^A P - p_F F > pP \quad (2)$$

The first condition implies that it is more profitable to be corrupt when the competing firm is not, while the second condition implies that it is more profitable for both firms to be corrupt, than not.

Condition (2) is more constraining here and suggests that there exists a prisoners' dilemma, when:

$$aP > p_F F (1 - p) \quad (3)$$

That is, the expected payoff given that a firm succeeds in bribing the official and winning the contract, should be greater than the expected fine given that the violating firm is caught.

Equation (3) shows that the levers that can be used to curb corruption, as a dominant strategy, are:

- Reducing  $a$ , the propensity of the official to individually award tendering decisions. This could be achieved by, *inter alia*, better recruitment, improved working conditions, better scrutiny, and better salaries, as was the case in Singapore (Quah, 2001);
- Increasing the fine,  $F$ ; and/or
- Increasing the probability of getting caught,  $p^F$ .

The tendency of the official to influence a decision is linked to

the moral principles that govern a person's behaviour – that is, his/her ethical code. Morals can be in direct conflict with the rational choice of dominant strategy, thus leading to cognitive dissonance. Cognitive dissonance is defined as the mental stress or discomfort experienced by an individual who holds two or more conflicting ideas. In some cases, cognitive dissonance can overcome rational behaviour, and vice versa.

Due to the unpredictable outcomes associated with cognitive dissonance, it is difficult to design a solution that curbs corruption by influencing a person's moral code. A more efficient approach would be to consider a solution that centres on increasing penalties, increasing the probability of being caught, and decreasing the individual's ability to influence decisions. The use of information and communication technology systems for delivering government services has successfully achieved these objectives. Such systems, referred to as e-governance, have been deployed across many countries..

## The Case for e-Governments

The emergence of e-governance in the last few years has had a positive impact on corruption in many countries – albeit with varying levels of success. The mechanisms through which e-government works are straightforward: e-governments

Même si la mise en œuvre actuelle de soumission publique en ligne a favorisé la transparence dans le processus d'appel d'offres, cette transparence ne va pas forcément déboucher sur la responsabilité ou sur l'objectivité. Il en résulte que les applications de l'e-gouvernement ne réussissent pas forcément à limiter les comportements non éthiques. La thèse soutenue dans ce papier est que les applications de l'e-gouvernement devraient conduire à des prises de décision automatiques au niveau de l'administration publique. Nous proposons un système adaptatif qui analyse les offres et facilite la sélection du soumissionnaire le plus approprié.

reduce contact between corrupt officials and citizens and increase transparency and accountability (Anderesen, 2008). E-government reforms have many benefits such as effective management of public funds, reduction in bribery of government officials, and increased confidence in government. Many countries have reported realising such benefits – post-implementation of an e-government application:

- In Chile, the ChileCompra e-procurement system has been used to allow government officials and citizens to compare the costs of bids to and services purchased by the government. The prices of more than 500 outsourced services from over 6,000 providers are included in the system (Shim & Eom, 2008). The system saves approximately US\$150 million annually by preventing price fixing or inflation by corrupt officials and contractors (Bertot, Jaeger, & Grimes, 2010).

- The Bhoomi electronic land record system in Karnataka, India, was estimated to have saved 7 million farmers 1.32 million working days in waiting time and Rs806 million in bribes to local officials in its first few years of operation. The Bhoomi system was designed to maintain records of rights, tenancy and cultivation – which are crucial for transferring or inheriting land and obtaining loans. By computerising these records, farmers were able to bypass officials who often demanded bribes in exchange for any services related to the access and updating of these

records. Before the system, the average land transfer required Rs100 in bribes, while the electronic system only requires a fee of Rs2 (Bertot, Jaeger, & Grimes, 2010).

- An impressive and well-known example of the potential of e-governments is the Seoul Metropolitan Government's Online Procedures Enhancement for civil applications (OPEN) system – which was launched in 1999, with multiple distinct anti-corruption measures embedded into the functions of the system. The OPEN system was implemented to reduce the number of places that government officials and citizens interacted directly. It effectively reduced channels through which citizens were forced by government officials, who processed applications, to pay “express fees” in order for their applications to be processed. The project was lauded as a success by the public, with 68% of the residents of Seoul crediting OPEN with noticeably reducing government corruption in its first five years of operation (Bertot, Jaeger, & Grimes, 2010).

## Improving e-Governance

As with any tool, the user and outcomes required should dictate who should use the application, how it should be used, and the extent to which any current process will be altered as a result of deploying the tool. While anecdotal evidence has shown that current e-procurement implementations have promoted transparency in the tendering process, this

Une plate-forme Internet accessible au public comprenant les formulaires d'appel d'offres améliorerait la transparence et la responsabilité. Un module automatisé de notation permettrait de créer une liste restreinte des candidats avec le meilleur score, garantissant l'objectivité. Un comité pour les appels d'offres constitué de simples citoyens tirés au hasard se réunirait pour se prononcer sur la liste restreinte et choisir le gagnant, évitant ainsi l'abus d'influence et de pouvoir.

Le succès d'une économie dépend de la capacité du gouvernement à créer un environnement propice aux entreprises et à l'emploi. La croissance économique dans les pays en développement est souvent biaisée à cause de la corruption. Ainsi, les faibles risques et le grand potentiel de gains associés à la corruption

is not enough as it does not address the potential abuse of power later on in the process. In some countries, increased transparency may not necessarily lead to accountability or objectivity. The reasons for this may be threefold. Firstly, e-governments may have web-based platforms that are not accessible to all members of the public due to poor broadband infrastructure – thus impacting on the level of transparency that can be achieved. Secondly, citizens may not have the capacity to act on available information which impacts on their ability to hold government accountable. Thirdly, while some e-government systems offer a complete set of alternative actions, there are insufficient controls to ensure that the best alternative is selected. Given these possible shortcomings, data-driven e-government applications may not have the desired effect on unethical conduct.

The thesis of this paper is that e-government applications should be extended to automated decision-making in public administration. Sheridan established a scale of stages of automation of e-government implementation (Sheridan, 1992).

1. The computer offers no assistance, the human must do it all.
2. The computer offers a complete set of action alternatives, and
3. narrows the selection down to a few, or
4. suggests one, and
5. executes that suggestion if the human approves, or

6. allows the human a restricted time to veto before automatic execution, or

7. executes automatically, then necessarily informs the human, or

8. informs him/her after execution only if he/she asks, or

9. informs him/her after execution, if it, the computer, decides to do so.

10. The computer decides everything and acts autonomously, ignoring the human.

We propose that the current level of automation should be advanced from stage two to stage five automation. This would entail the design of an adaptive system that scores bids according to a pre-defined set of criteria, examines the bidders' previous performance (if applicable), and creates a shortlist of the best candidates. All decision-making data would be stored and made publicly available to ensure transparency and to improve accountability.

The idea of placing trust in a computer to make the right decisions may be unnerving. However, automation has been successfully implemented in many other areas of business. One example is that of American banks which make use of the automated Fair Isaac Corporation ("FICO") credit score in conjunction with automated underwriting systems to approve or decline credit applications (Herron, 2013). With many countries around the world now implementing e-government systems, it is certainly plausible

favorisent le comportement non éthique. Si l'on veut assurer la transparence, l'objectivité et l'efficacité, il est indispensable de limiter l'influence humaine dans le processus de prise de décision. L'e-gouvernement trace le chemin que certains gouvernements choisissent de suivre. Une plus grande automatisation est une solution qui évite qu'un seul individu ou organisme puisse exercer une influence absolue sur le processus d'adjudication. La corruption pourrait donc être traitée avec efficacité et les bénéfices socio-économiques être maximisés.

ble that these kinds of systems will be advanced to make decisions in the near future.

## Ensuring Objectivity through Automation and the Use of Technology

The use of technology can eliminate the strategic incentives and behavioural biases that lead to unethical decision making. There are three factors which technology can improve:

- Transparency and accountability.
- Objective scoring of applications.
- Inappropriate influence and the abuse of power.

We propose:

1. A web-based platform on which tender applications can be lodged and reviewed. The platform will provide users and the public with the following information:

- All live tenders.
- Details of all applications received – *i.e.* bid documents, legal statements and disclosures.
- Any conflicts of interest identified.
- Score criteria.
- Previous tenders awarded and performance and delivery reports.

While a high level of transparency will be a feature of the system, applicants will only be identified by bidder numbers. By keeping the identities of the applicants confi-

dential the likelihood of bid-rigging through price fixing will be reduced.

2. An automated scoring module that scores tender applications based on, but not limited to, the following criteria:

- Applicant's credentials, performance on previous projects, alignment to current transformation policies, and competitiveness of pricing.
- Additional benefit to society that the applicant may provide that could justify extra cost, *e.g.* environmentally friendly initiatives, share schemes, job creation, and community service initiatives.
- The scoring module will be designed to create a shortlist of applicants who achieved high scores. In the event that an applicant has outscored others by a significant margin, the system will propose that the applicant be awarded the tender. If the scores are close, the system will compile a shortlist for adjudication.

• In order to promote competition and distribution of wealth, the system should highlight instances in which the bidder has won multiple tenders.

• Random selection of bid committee. The system will have a database of preselected adjudicators who can be called upon to form a committee. The committee will be made up of a random selection of a combination of private- and public-sector stakeholders with the necessary expertise. The committee will be tasked with approving the winning bidder or will need to assess

the shortlist of applicants and then award the tender. Committee members will be informed via email that they have been appointed, but will have no knowledge of the identity of other committee members. Committee members will not be required to deliberate with one another and in most instances will be required to make an independent decision. All decisions will be logged through the system, and several iterations of adjudication may be necessary to reach a final decision.

## Conclusion

The success of an economy hinges on a government's ability to create an environment that is conducive to business and employment.

Economic growth in developing countries is often derailed because of corruption. More specifically, the low risks and large potential rewards associated with corruption precipitate unethical conduct. In order to ensure transparency, objectivity and efficiency, it is necessary to limit human influence in the decision-making process. The emergence of e-governance demonstrates that this is the path that some governments are choosing to follow. Further automation is proposed such that no single individual or body can exert absolute influence over the procurement process. In this way, corruption can be dealt with effectively and socio-economic benefits can be maximised.

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