

THE IMPLEMENTATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN ANTI-CORRUPTION TO SUSTAIN ECONOMIC GROWTH

✉Muhammad Arfan Pratama

Corruption Eradication Commission (KPK), Indonesia

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ABSTRACT

Corruption is an extraordinary crime which gives domino effect on government systems. The impacts include low economic growth and high poverty rate. Corruption enriches certain class only so that the budget which is allocated for the development of the country cannot be fully absorbed. Public service facilities for health, education, and administration cannot operate optimally due to the stalled building construction. To increase the economic growth of a country, a structured improvement is needed by involving the role of citizen in monitoring the government system. The development of Information and Communication Technology (ICT) enhances the transparency of ongoing government systems and public services. Studies conducted by Qiang (2009) and Andersen (2009) showed that the implementation of ICT proved to be able to increase economic growth in developing and developed countries with an increase in GDP. Khan and Majeed (2019) also proved that the implementation of ICT and E-Government also increased GDP for Southeast Asian countries in the period 1980-2015. The ICT developments include e-government, big data analysis, blockchain technology, and whistleblowing systems. The implementation of ICT in government systems, such as licensing systems and procurement systems, provides increased transparency and quality so that economic growth also increases. It takes a lot of money to implement ICT in the government system, but it also becomes an opportunity for state officials to abuse their authority. An example of the use of ICT in Indonesia is the procurement of E-ID Cards. Therefore, the integrated whistleblowing system can be sought to guard the benefits of implementing ICT in increasing economic growth.

1. INTRODUCTION

Corruption is one of the problems that have not been resolved properly in developing countries, especially Indonesia. Corruptors often use various methods to secure illicit transactions with the aim of enriching themselves or their groups. Based on the research conducted by Indonesia Corruption Watch (ICW), state financial losses due to corruption in 2018 were IDR 9.29 trillion. Corruption is closely related to the level of economic growth that occurs in a country. Circulation of money taking place

in a country is expected to be absorbed for the purposes of developing and improving the quality of life of the people. Therefore, the circulation of money must be avoided from unscrupulous people or parties who take something that is not their right.

The higher the economic growth, the lower the level of corruption in a country. According to Chetwynd et al (2003), the relationship between corruption and economic growth is divided into two main theories: economic model and governance model. Economic model theory is a

✉Corresponding author :
Email : muhammad.arfan.p@gmail.com

theory which argues that corruption can adversely affect economic growth by exacerbating poverty, while governance model theory is a theory which argues that corruption adversely affects the capacity of government so that bad governance will have an impact on increasing poverty levels. On the other hand, corruption worsens government practices, causes instability of government institutions, reduces the quality of public services, reduces law enforcement, and reduces public confidence in government.

Some theories that explain that corruption can inhibit economic growth include:

- a. Corruption complicates foreign and domestic investment
- b. Corruption impedes entrepreneurship
- c. Corruption decreases the quality of public infrastructure services
- d. Corruption reduces tax revenue
- e. Corruption violates the composition of public expenditure

According to Quibria (2002), poor economic growth will have an impact on poverty in a fast time as happened in Indonesia and Thailand. In addition, the Soviet Union once changed the market system which was affected by a sharp decline in poverty levels. The increase in poverty levels was caused by a decrease in GDP of around 50% and 15% in Central and Eastern Europe.

Technology is one of the keys to economic growth. Indeed technology was created to facilitate all human needs in everyday life. One of the most rapid technological developments today is in the field of information and communication, or better known as Information and Communication Technology (ICT). According to a World Bank study (Qiang et al, 2009), a cross sectional analysis was carried out to see the impact of ICT on the increasing value of a country's GDP in the period from 1980 to 2006 for 120 developing countries and developed countries. The method used was the growth model belonged to (Barro 1991):

$$GDP_{8006} = \alpha_0 + \alpha_1 \times GDP_{80} + \alpha_2 \times (1/GDP)_{8006} + \alpha_3 \times PRIM_{80} \times BBPEN_{8006} + \alpha_5 + \alpha_6 + LAC + \mu$$

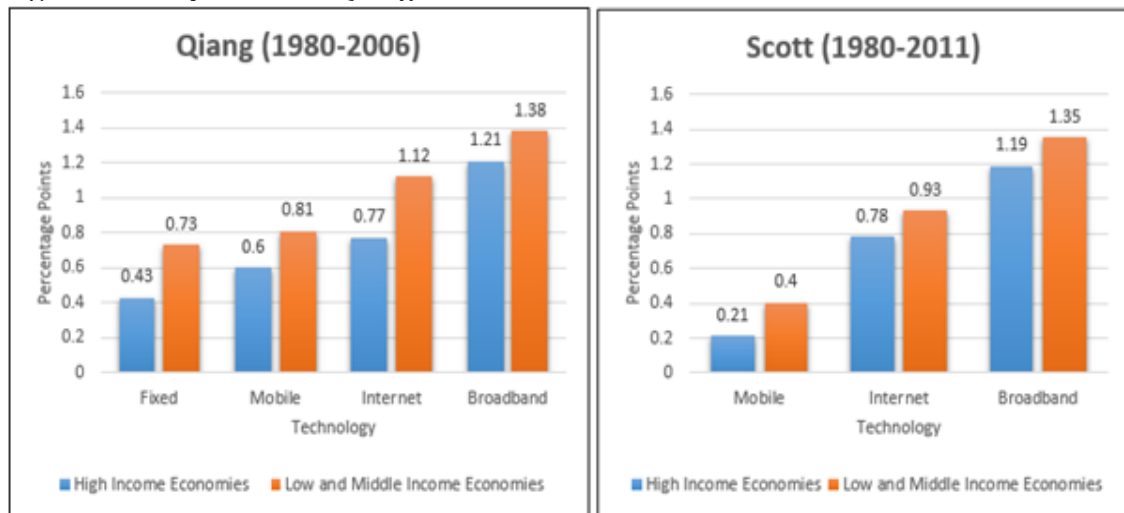
Where GDP_{8006} was the average rate of growth of original GDP per capita in USD 1980-2006. GDP_{80} is per capita GDP in 1980. I / GDP_{8006} was the average investment ratio in GDP for 1990-2006. $PRIM_{80}$ was the rate of primary school enrollment in 1980. $BBPEN_{8006}$ was the average fixed broadband penetration and SSA. And LAC was apparent variable for countries in Sub-Saharan Africa, Latin America, and the Caribbean (LAC) respectively.

Results of the research conducted by Qiang showed that a 10% increase in broadband penetration would increase GDP by around 1.21% for developed countries and 1.38% for developing countries. The research was then continued with the latest data (Scott, 2012), in which the method used was the same as that used in 86 countries in the period 1980-2011. The results obtained were also similar, in which increasing broadband penetration resulted in a 1.35% increase in GDP for developing countries and 1.19% for developed countries.

Content development and mobile networks applications require a number of workers so that employment is high. Broadband development can also increase tax revenues which are estimated to reach 480 million dollars in Africa. In addition, innovation and entrepreneurial policies are the key to the success of the development of the broadband industry. Lebanon is a country that is feeling the impact of entrepreneurship on innovation. In 2016, the Egyptian Ministry of Communication and Information Technology launched the *Next Tech Leader* program for 5000 newly graduated students.

Technology has an impact on equality of dividends by activating productive transformation and increasing economic growth in Asia. For example, the Aadhaar technology program in India has succeeded in creating an inclusive economy of 1.2 billion people in India. The development

Figure 1. Comparison of Qiang and Scott Studies



of the government system towards the digitization era is also the government's step in increasing economic growth.

The digitizing process makes it easy for public services such as education, health, and licensing to be far more efficient and effective. To support the industrial revolution 4.0, technological development of a country must be supported by the development of ICT structures in an inclusive manner. Therefore, efforts to implement ICT to the Indonesian government system also require a matching government policy.

2. METHODS

The implementation of ICT is expected to be an anti-corruption tool that can monitor the government system. The monitoring process is needed to increase economic growth that will be obtained if the government consistently implements ICT in the government system.

Some anti-corruption tools that can be implemented in the government system are.

Digital Public Services and E-Government

The e-Government process and digital public services are expected to increase the level of transparency of the management process of public service system so that the services become more effective and efficient and can be monitored by the wider community. The implementation of the

e-government system is proven to reduce the level of fraud in some developing countries.

The research conducted by Shim and Eom (2008) tested the correlation between 127 countries with measurements of three e-government systems (including West's (2006) E-government, Maturity Index, UN E-Participation index and level of internet penetration) and levels corruption indicated by the Transparency International Corruption Perception Index (CPI) 2004. The results of the study showed a more effective reduction compared to conventional anti-corruption factors including bureaucratic professionalism of bureaucrats, bureaucrat quality, and law enforcement. In addition, Andersen (2009) also conducted an empirical study by applying multiple regression analysis to analyze West's (2006) E-Government Index on the World Bank's Control of the Corruption Index. Andersen analyzed panel data of 149 countries with two observation periods, 1996 and 2006. The results of the study showed that in non-OECD countries, increasing e-government maturity resulted in a reduction in the level of corruption in the period 1996-2006. Even Gross Domestic Product (GDP) per capita and press freedom also decreased by around 13% with an increase in e-government from 10% to 90%.

On December 1, 2016, the Indonesia's Corruption Eradication Commission (KPK) launched JAGA.app with the aim to improve the quality of public services in health, education, and supervision of village funds. JAGA's way of fighting corruption is to involve the community to check for inconsistencies in the government system and collect data from various government ministries on the public services provided. The data that have been collected then become a record of improvement for the relevant ministries and institutions. Another challenge faced by JAGA is to ensure that the available data are reliable data that attract attention and impact on the application users.

The results of research conducted by Khan and Majeed (2019) showed that the implementation of ICT in the form of E-Government was proven to increase GDP per capita in Southeast Asian countries in 1980-2015. The mobile phone subscription coefficient indicated a 1% increase in mobile phone usage resulted in a 0.13% increase in the country's GDP. The use of mobile phones could overcome misinformation in market transactions so that the expansion and access of the public to the market also increased. Khan and Majeed examined the correlation of economic growth with several parameters such as internet use, telephone subscriptions, broadband subscriptions, online services, telecommunications infrastructure, and E-Government.

Big Data Analysis

Big data is a collection of very large and complex amounts of data that is difficult to handle if only using traditional analysis techniques. The existence of big data analysis makes it easy for investigators to analyze indications of criminal acts of corruption from various available data sources. Big data software can detect possible irregularities, conflicts of interest, corrupt habits, and tax evasion. The obstacle in this analysis is that it requires open source data that is connected to the

network so that countries that do not have infrastructure like Indonesia has not been able to implement it.

Blockchain Technology

Blockchain technology is a high security technology that uses several servers to confirm transactions that occur by storing information in a digital ledger with a block form. Blockchain files are stored on many decentralized servers on a peer to peer network, so that those who are suspected of hacking the information system network need at least 51% control of the server. This technology application is also implemented in *bitcoin* and *cryptocurrency*. The advantage of Blockchain technology is that it can increase the transparency and accountability in the public sector. So, the security system becomes more secure and can be used to find sources of money flow for a criminal act of corruption. In addition, the blockchain technology can be used in managing supply chain information that accommodates data transparency. The blockchain technology can also be used in public transactions and documents such as tracking expenses, land lending records, company registration, and contract renewal. Blockchain can mitigate some of the risks associated with a centralized government database. Therefore, the use of blockchain technology can increase transparency and accountability, prevent fraud, and reduce errors.

Considering that blockchain technology requires supporting infrastructure, it cannot be implemented in the very near future.

The German Development Bank (KfW) is applying blockchain technology to increase transparency in budget allocations in Africa. The application is called TruBudget. The aim is to provide a platform where international donors can check the spending conclusions that the government ministry has made by using the permanence of blockchain technology as a way to build trust that money is truly used in accordance with its designation. The legislature determines the budget,

while the executive body determines the workflow, but donors can also check several stages before being executed.

Another application of blockchain technology is for land registration. Bitfury is a company that specializes in developing blockchain software that is currently implementing a blockchain-based land registry system in Georgia. According to the Senior Project Manager of Bitfury, the blockchain system stores land ownership certificates in the blockchain. The existence of certificates in Blockchain technology can increase trust for land-based transactions and reduce opportunities for fraudulent transactions when someone deliberately recognizes land ownership. All data stored in blockchain technology is eternal and recorded. Therefore, the original data listed in the blockchain technology must be accurate. The application of blockchain technology must be followed by further studies regarding its potential as an anti-corruption tool. For example, this technology can help contract digitizing processes and help secure money transactions and increase transparency of government payments.

Whistle Blower System

The Whistle Blower System is intended to identify reports of unlawful acts carried out by a number of persons in the private sector and government. With the Whistle Blower System, it can provide detailed reports on large corruption cases and can be followed up by law enforcement authorities. However, a good security system for reporters related to identity must be protected from several threats from certain elements.

Some examples of the use of ICT-based Whistle Blower System include GlobaLeaks (open-source software that can be adopted in several conditions), BKMS compliance system (mostly as an internal Whistleblowing that reports to internal auditors), and KPK Whistle Blower System (KWBS). The main consideration of this platform is that it can be a follow-up communication between law enforcement

officers and whistleblowers. Considering that several law enforcement officers often persuade reporters to show their real identities to be witnesses in court.

The Whistleblowing tool can provide extraordinary information about corruption cases that are still confidential. Although there are Whistleblowing applications in every institution that can report all forms of criminal acts of corruption, the confidentiality and security level of the reporter is not always guaranteed. One application that guarantees confidentiality and security of whistleblowers is the KPK Whistle Blower System (KWBS). Content of complaints on the KPK Whistle Blower System (KWBS) contains information including the provisions of parties that can be handled, getting attention that unsettles the community, details of acts against the law (who, what was done, when it was done, where it happened, why it was done, and how the perpetrators commit their actions), preliminary evidence, and clear sources of information.

The next challenge for whistleblowing is to find a balance of the number of reports of alleged criminal acts of corruption with a limit on the number of reports that can be received as well as maintaining a good quality of study reports. In 2018, the Corruption Eradication Commission (KPK) received 6,468 reports of corruption, but only 2,257 reports that could be followed up by law enforcement officers. The inability of the community in constructing cases is also an obstacle that causes ineffective efforts to eradicate corruption in Indonesia. Therefore, an initiation of internal auditors from institutions and ministries is needed to actively participate in supporting the eradication of corruption by synergizing with the KPK.

3. RESULT AND DISCUSSION

The benefits of technological development are to increase the effectiveness and efficiency of work in industry, business, community service, and law enforcement. Digitalization is a solution to drive productivity and economic growth of

a country that impacts on the social, cultural, political and economic sectors. The digitalization process can simplify the government system in a country. With a digital-based government system, it will cut down the complicated processes associated with policy formulation. Some important sectors in Indonesia that can be improved by implementing ICT are the Licensing System and the Government Goods and Services Procurement System.

Licensing System

Investment sector is the factor that drives the regional economy because it will trigger the circulation of money in the region. The investment can be in the form of land development for residential needs and management of natural resources (coal, oil and gas, nickel, tin, etc.). But until now, the licensing system in Indonesia is still complicated by bureaucracy and has not yet fully applied the technology base. Based on information from the World Bank, Indonesia still has the ease of doing business or investment ranked 6th in ASEAN in 2019 and lags behind several other ASEAN countries such as Singapore (2nd), Malaysia (15th), Thailand (27th), Brunei (55th)) and Vietnam (69th).

The state officials, who are supposed to be the party responsible for policies related to licensing one of which is a Regional Spatial Planning Permit, in fact often misuse their authority. Licensing-related decisions taken by officials are in fact likely to favor certain groups of both the private or government sector. Even the private sector has already done a massive promotion of residential projects but has not had permission related to development. In order to save company expenses, the private sector bribed the local government to obtain permission for development. These bribes generally come from the value of the project budgeted by the private sector from 10% to 20%. Then, it has an impact on the decline in the quality of development projects so that the

projects that were originally intended to develop the economy of a region cannot be achieved.

The implementation of ICT in the form of big data analysis technology and blockchain in the licensing system can cut the convoluted process in the bureaucracy due to the transparency process applied. Stages of the licensing process can be monitored by the wider community without any interference from parties who can take advantage. Therefore, the private sector that bribes the government can also be reduced compared to before. With ICT, the quality of development is compatible without any reduction in the quality of the development carried out. The purpose of the ICT-based licensing system is to realize an increase in the regional economy. Nearby residents can get job as laborers so they can improve the local economic process. Business that takes place in the area becomes wider. For example, an investor will build a residential apartment in an area. If the investment process goes smoothly, it will open supporting business opportunities such as access to entertainment, education, and health services which will ultimately improve the regional economy to be better.

Government Goods/Services Procurement System

Regional governments use the source of funds from the Regional Revenue and Expenditure Budget (APBD) to build infrastructure and facilities. Given the large value of the contract for the procurement of goods and services, it causes certain parties to exploit loopholes to commit corruption by enriching certain groups. Indications of the occurrence of corruption in the procurement of goods and services can be known from the planning (auction), contract implementation, to the handover of goods and services. A criminal act of corruption is generally revealed at the initial stage, namely auctions, such as the preparation of a feasibility study, the creation of a

Terms of Reference, post bidding (changes in bid documents after the deadline for submission of bids), evaluation of bids in the form of discriminatory technical and administrative specifications, and unfair competition. In addition, in several cases a contract is signed during the appeal objection, as happened in the E-ID Cards Case.

Feasibility study is an important parameter in determining the existence of indications of fraud in the form of corruption. If the feasibility study is not in accordance with the needs of the company, it can be said that the procurement of goods / services is used to enrich certain parties or groups. The feasibility study is then used as a basis for the preparation of the Terms of Reference (ToR), so that if there is manipulation of the ToR, the feasibility study undertaken is also manipulated. In addition, the Commitment-Making Official (PPK) has the authority to be responsible for the entire procurement process. The Commitment-Making Official often develops a Terms of Reference (ToR) which contains one of the discriminatory technical specifications, meaning that certain requirements refer to a particular product or vendor. Therefore, the auction process can only be followed by certain groups and reduce indications of fair business competition.

Another loophole in the procurement of goods and services is the post bidding conducted by the Procurement Services Unit Working Group or Provider and Procurement Committee. Changes to these criteria include addition and subtraction of criteria after the bid entry limit by the Provider and Procurement Committee which indicates partiality in one of the conditions of a particular Contractor or Provider of Goods and Services. Provisional Estimated Prices (Owner Estimate) are also a domain that is often mocked by the Commitment-Making Official (PPK), resulting in markups or price markups in the procurement of goods and services auctions. The Commitment-Making Official (PPK) stipulates Provisional Estimated

Price (HPS) that exceeds the market price of the product being auctioned. The Commitment-Making Official (PPK) even compiles it based on information from the tender winner or distributor of the tender participants. Just like the licensing system, in the process of procurement of goods and services, the private sector also generally takes bribes from projects carried out by the private sector. This has an impact on state financial losses arising from the non-functioning and / or under-functioning of the auctioned goods.

Since 2018, Indonesia has implemented ICT in all procurement systems that have been integrated with Electronic Procurement Services (LPSE). The purpose of the electronic auction management is to minimize the occurrence of criminal acts of corruption committed by the regional government and private parties. In addition, the intensity of meetings between the procurement committee and the contractor can be minimized so that the procurement of goods and services is less. With Electronic Procurement Services (LPSE), auction transparency is very good because the monitoring process of the procurement phase can be known to the wider community through the website.

However, the use of the Electronic Procurement Services (LPSE) application is not yet completely safe from corruption. The loopholes of corruption that are still open in the application of Electronic Procurement Services (LPSE) are the alleged markup or price markup, discriminatory specifications, intervention of the regional head to the procurement committee or procurement service unit, as well as internet bandwidth regulation so that other providers cannot be involved. Private parties generally conspire to arrange the results of development project auctions through meetings. In addition, the private sector is also familiar with the use of the flag-borrowing system and zoning arrangements for the jurisdiction. The technology applied in Electronic Procurement Services (LPSE) needs to be improved in the future to close the loopholes

of corruption such as background checking of companies participating in auctions. Indications of corruption can be known if there are several affiliated companies participating in the same auction.

Misuse of the Implementation of Information and Communication Technology (ICT)

Realization of ICT implementation in a country requires a lot of costs. Certain individuals take advantage of this opportunity to enrich their groups through corruption. As a result of these unscrupulous acts, the procurement of ICT facilities does not provide maximum benefits for the country.

Corruption Case in the Procurement of E-ID Card

One implementation of ICT system in the form of Big Data Analytics in Indonesia is the provision of E-ID Card with the concept of Single Identity Number (SIN). At first the Indonesian government proposed innovation in forming a Single Identity Number (SIN) integration system. Initially the system was intended to provide easy access for Indonesian citizens in managing all population administration and public services, such as health, education, passports, etc. In achieving the creation of the SIN, the government through the Ministry of Home Affairs approved by the House of Representatives (DPR) issued a policy to produce E-ID Cards with a total cost of IDR5.84 trillion.

This corruption case involved the synergy of the government from the legislative side (the House of Representatives of the Republic of Indonesia) and the executive side (the Ministry of Home Affairs) to commit criminal acts of corruption. The private sector (Andi Agustinus) conducted negotiations with the government so that the E-ID Cards project could be carried out. As a result of the negotiations, the private sector would give money to the government (the House of Representatives of the Republic of Indonesia) on condition that the government approved the

implementation of the E-ID Cards project. Setya Novanto (Chair of the Indonesian Parliament), as the defendant, together with Andi Agustinus alias Andi Narogong met with Ministry of Home Affairs officials (Irman, Sugiharto, and Diah Anggreini) at the Gran Melia Hotel. Setya Novanto ordered to keep together the sustainability of the E-ID Cards project. Then, located in Ruko Fatmawati, Andi Agustinus manipulated the E-ID cards project auction so that the project was only followed by a partner provider company in the form of three consortia. In addition, the result of the meeting was the determination of Provisional Estimated Price (HPS) which consisted of Standard Operating Procedure (SOP), The organizational structure of the work executor, and technical specifications. The Provisional Estimated Price (HPS) was formed without the basis of a market price survey, resulting in a markup or price overage of IDR 18,000 per chip. The excess difference was used by Andi Agustinus to give money to members of the DPR (Legislature) and the Ministry of Home Affairs Officials (Executive).

Considering the large value of the E-ID Cards project, several officials, including Setya Novanto (chairman of the legislative assembly), Irman (Director General of Dukcapil Kemendagri), Sugiharto (Ministry of Home Affairs Official) et al abused their authorities so that the E-ID cards procurement process was not running optimally. There was a mutual agreement between the private sector and the state organizer since the E-ID Card auction process. The auction process was manipulated by forming three consortia that directed the auction to one winner, namely the PNRI consortium (Perum Peruri, PT LEN Industri, PT Quadra Solution, PT Sucofindo, and PT Sandipala Artha Putra). Two other consortia are Astragraphia Consortium and Murakabi Consortium. The two consortia were formed as a companion company for the PNRI Consortium in participating in the E-ID Cards auction. Through joint actions by state administrators and private parties,

the process of procurement of government goods / services for the application of E-ID Card caused state financial losses of IDR 2.3 trillion or almost half the value of contracts valued at IDR 5.84 trillion.

SOLUTION

Integrated Whistleblowing System

The development of a country's economic growth is strongly influenced by a good government system. The government system certainly needs a support system that is clean and free from corruption. In realizing this system, the government must be able to apply Integrated Whistleblowing System. Integrated Whistleblowing System is a whistleblowing system that is integrated from several government and private agencies with law enforcement authorities in a country. Therefore, the integrated Whistleblowing System requires coordination between law enforcement parties (the Police, Prosecutors' Office and the Corruption Eradication Commission) and the Government Inspectorates and Auditors (Financial Audit Board and Financial and Development Supervisory Agency). The security of the whistleblower's identity must also be prioritized in the integrated Whistleblowing systems so that the success of the case can be improved. Generally the reporter is a colleague of the private sector and the government who does not participate in the circle of criminal acts of corruption and he often gets threats from the main actors. The integrated Whistleblowing system also needs to be improved with other ICT developments, such as big data analysis and blockchain. Many of the corruption report data can be integrated with the integrated Whistleblowing system so as to facilitate the analysis of categorizing reports that come to law enforcement officials. Data security is more secure if using blockchain technology so that data is only stored in a network owned by law enforcement officials and the information is not spread to the wider community.

Corruption is an extraordinary crime that requires special treatment from law enforcement officers. When there is a major case of corruption that cannot be resolved by the Police and Prosecutors' Office, the handling of the case can involve KPK through the Integrated Whistle Blower System. Conversely, if there are criminal acts that do not constitute corruption, the handling of the criminal case can involve other enforcement officials such as the Police and Attorney General's Office. In addition, the coordination of law enforcement officials with Government Auditors such as BPK and BPKP will be better if the integrated Whistleblowing system is implemented so that the settlement of cases related to state financial losses is quickly resolved. Based on information from Internet World Stats, Indonesia is the 5th largest internet user in the world with around 143 million users so that it has a large potential for supervision in efforts to eradicate corruption. The development of the world of technology can have a devastating effect if the ICT system is misused by certain individuals. Another important factor is the integrity problem of state administrators and the private sector because no matter how sophisticated the guarding system for the eradication of corruption will not be optimal as long as the integrity they have is still poor.

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