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CORRUPTION EARLY PREVENTION: DECISION SUPPORT SYSTEM FOR PRESIDENT OF THE REPUBLIC OF INDONESIA

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Corruption Early Prevention: Decision Support System for President of the Republic of Indonesia (Conference Paper) (Open Access)

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Abstract

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Corruption is an extraordinary crime, and then the prevention must also be extraordinary, simultaneously (national) in the form of early warning that involves all elements; government, industry, and society. To realize it the system needs to be built which in this study is called the Corruption Early Prevention (CEP) as a Decision Support System for President of the Republic of Indonesia. This study aims to examine 1) how is the construct of the Corruption Early Prevention as a Decision Support System for President of the Republic of Indonesia?, and 2) how is the design form of the system of Corruption Early Prevention as a Decision Support System for President of Republic of Indonesia? The research method is using Neuro-Research which is the collaboration of qualitative and quantitative research methods and the model development of Information Technology (IT). The research found that: 1) the construct of CEP is theoretically feasible, valid and reliable by content to be developed in the context of the prevention of corruption in Indonesia as an early prevention system that diagnoses Indonesia simultaneously and in real time, and 2) the concept of system design and business process of CEP is predicted to be realized in the IT-based program. © Published under licence by IOP Publishing Ltd.

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Corruption Early Prevention: Decision Support System for President of the Republic of Indonesia

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Abstract. Corruption is an extraordinary crime, and then the prevention must also be extraordinary, simultaneously (national) in the form of early warning that involves all elements; government, industry, and society. To realize it the system needs to be built which in this study is called the Corruption Early Prevention (CEP) as a Decision Support System for President of the Republic of Indonesia. This study aims to examine 1) how is the construct of the Corruption Early Prevention as a Decision Support System for President of the Republic of Indonesia?, and 2) how is the design form of the system of Corruption Early Prevention as a Decision Support System for President of Republic of Indonesia? The research method is using Neuro-Research which is the collaboration of qualitative and quantitative research methods and the model development of Information Technology (IT). The research found that: 1) the construct of CEP is theoretically feasible, valid and reliable by content to be developed in the context of the prevention of corruption in Indonesia as an early prevention system that diagnoses Indonesia simultaneously and in real time, and 2) the concept of system design and business process of CEP is predicted to be realized in the IT-based program.

1. Introduction

Corruption is essentially a form of the abuse of power as the form of the inefficiency of an institution which is reflected through the weak bureaucratic system, the weak legislative and judicial systems. The increase of 1% corruption level reduces the growth rate by about 0.72% which is affected by political instability, the level of human capital and share of private investment (Mo, 2001). Corruption affects the decrease in productivity because the allocation scheme will not be optimal and the investment quality will also be decreased so that the community needs will be ignored (Andvig et al. 2000 in Ohwer, 2009; Lambsdorff, 2016).

The term corruption has emerged since 1868. Godkin discusses corruption in politics and government and social improvement efforts. In 1961, McMullan exposed the injustice practice, inefficiency, distrust of the government, the waste of public resources, political instability and violations of government regulations as a result of corruption. In 1987, appeared a model that describes opportunities for corruption (Cadot, 1987; Godkin, 1868; Lambsdorff, 2016; McMullan, 1961).

Various attempts were made to prevent and reduce corruption. The Corruption Eradication Commission as an anti-corruption agent works quite effectively (Ernstson, Sörlin, and Elmqvist, 2008). Transparency International (TI) is also an institution that actively contributes to the global



movement against corruption through the Corruption Perception Index (CPI) in which the Transparency International Indonesia (TII) is one of the chapters in TI (Transparency International Indonesia, 2016; Simanjuntak, 2008). The country that effectively tackles corruption is Brunei Darussalam, for enforcing legal supervision and non-interference of politicians in the investigation to the government official (Quah, 2016).

In the context of Indonesia, the measurement of corruption has a different paradigm and approach, i.e. the measurement must fit the context of the multi-ethnic Indonesia. The measurement is needed given that the corruption is an extraordinary crime that must be followed up since it can be a major cause of political and power fraud (Akbar & Vukan, 2014). Therefore we need an extraordinary instrument that can monitor in real time the behaviour of corruption and the early detection of corruption. So, it can assist the government in creating a clean community. This idea is in line with Hooker who explained that the difference of the triggers of corruption depends on the damage of internal control system that occurs due to the perception of the offenders towards a system component and the habit of an offender in exploiting the system. Therefore, the quality of internal investigation by an independent body has a significant effect on the reduction of corruption in the government system (Hooker, 1994).

This instrument was named the Corruption Early Prevention (CEP) as a Decision Support System for President of the Republic of Indonesia, i.e. the real-time instrument that can provide early warning for the government (regional and central) on institution or official who is identified with corruption by involving public participation from all the component of good governance (government, community and industry). CEP is designed as an intelligent system that supports the president's decision. The advantages include public perception and assessment of the inspectorate that is independent towards the transparency of the government officials and the identification of corruption risks in the area of regional budget and assessment of government officials personally. This paper focuses on two issues, namely: (1) how is the construct of the Corruption Early Prevention as a Decision Support System for President of the Republic of Indonesia?, and 2) how is the design form of the system of Corruption Early Prevention as a Decision Support System for President of Republic of Indonesia?

2. Research Method

The research method used Neuro-research. It is one of mix methods which is between qualitative research (referred to as exploratory research) and quantitative research (referred to explanatory and confirmatory research). There are three stages in Neuro-research method, which are exploratory, explanatory, and confirmatory stage.

The first stage of exploratory research was conducted by reviewing theoretically of the variables Early Corruption Prevention (CEP) to find a theoretical construct of CEP in the form of CEP conceptual definition regarding Indonesia context, dimensions of CEP formation, and indicators of each CEP dimension as the early warning signs in the corruption prevention in the context of Indonesia society. The society refers to the society that has high disparity in various sectors. After theoretical context CEP has been found, and then the next stage is by organizing Focus Group Discussion (FGD) with Delphi technique.

This technique validates CEP theoretical study by using content validity from six experts, which from Computer Science, Information System, Education, Law, Science, Forensic Accounting, and Psychology. The result is in the form of valid CEP Construct for Indonesia context.

The second stage, based on the result of Delphi technique, is followed by quantitative research which is through explanatory research. In this stage, the instrument is using assessment form with semantic differential scale from 1 to 7, which are Don't Know/No Answer, Never, Seldom, Sometimes, Frequently, Mostly, Always. The explanatory research sample size is 60 respondents.

Third stage, based on analysis result of second stage, is preceded by Confirmatory research. In this stage, several moderator variables from respondent were analysed, such as gender and scientific field.

Algorithms used in this research are:

- 2.1. Determine constant linear item that consists of 5 (five) categories, Clean, Quite Clean, Quite Corrupted, Corrupted, and Very Corrupted.
- 2.2. Determine the amount of minimum and maximum data

$$\begin{cases} n : \text{the amount of maximum data} \\ m : \text{the amount of minimum data} \end{cases}$$
- 2.3. Determine the range by subtracting the maximum and the minimum

$$\text{Range} = n - m$$
- 2.4. Determine the class interval from 1-10

$$k = 10$$
- 2.5. Calculation with Sturges formula

$$f(x) = \left\lceil \frac{\text{Range}}{k} \right\rceil$$

3. Result and Analysis

3.1. CEP Construct according to Indonesia Context

Corruption is a social problem that must be eradicated, but the difficulty inherent in this issue is the difficulty of measuring the corruption activity. Becker and Stigler (1974) proposed a way to reduce corruption which is to do the right combination of monitoring and penalties to control corruption (Olken, 2007). Another alternative proposed is to increase the participation of "grass-roots" by the public as the local level observers especially related to the public services (Olken, 2007). Studies from previous research found that the instrument to measure and as a tangible manifestation of anti-corruption has been developed; one of them is the Corruption Perceptions Index (CPI). The main objective of CPI is to provide data about a perception of corruption in various countries.

In 2001, TI also developed The National Integrity System (NIS) to describe the whole law, institution and practice in a country related to the integrity and accountability of the sector (Repucci in Transparency International 2008). Another tool to measure corruption is Transparency International's Global Corruption Barometer 2007, a public opinion survey that seeks to understand how and in what ways corruption affects the lives of ordinary people. (Riano in Transparency International 2008). Global Integrity which is an independent non-profit organization trying to track governance and corruption trends by utilizing grounded research and blind peer review panel (Werve& Heller in the Transparency International 2008).

This study seeks to build construct namely Corruption Early Prevention (CEP) which is designed as a system apps (Android-based). The main philosophy of the CEP is to accommodate public participation as the real-time consideration of the government in formulating policy and set the decision so that it can become an early detection and is expected to mature the capacity of civil society. CEP seeks to consider how to measure the impact of corruption on the legitimacy of the political system as a major element in a democratic political stability. This impact is accurate, considering the elements of society that become the benchmark is the society in the region. So, CEP is the corruption early prevention within Indonesia context. It is categorized by three dimensions which are the external and internal appraisal that create index of corruption prevention, and then the third dimension is text mining dimension as cross-validation for the finding of index of corruption prevention. The result of Explanatory research was analyzed by confidence interval, which can be seen in the below table.

Table 1. The Calculation of Confidence Interval Respond on CEP

Confidence Interval Respond on CEP				
Description			Statistic	Std. Error
CEP	Mean		66.3667	.88649
	95% Confidence Interval for Mean	Lower Bound	64.5928	
		Upper Bound	68.1405	
	5% Trimmed Mean		66.8519	
	Median		67.0000	
	Variance		47.151	
	Std. Deviation		6.86669	
	Minimum		45.00	
	Maximum		75.00	
	Range		30.00	
	Interquartile Range		11.00	
	Skewness		-.828	.309
	Kurtosis		.927	.608

Based on the above table, the lower bound is 64. 5928 and upper bound is 68. 1045 that showed the respondent tends to respond very agree to construct CEP within Indonesia context, significantly at $\alpha < 0.5$.

3.2. CEP Design

One of the most effective methods for the detection of fraud is through a tip given by employees of the relevant organization that is commonly called "whistleblower" (Crosby, Devaney, & Law, 2008). The existence of the whistleblower is very helpful for the work of management inspector in the detection and prevention of fraud (Bastin & Townsend, 2006). By using the flexibility of GRC approach (Governance, Risk Assessment & Compliance), the whistleblower can be used in the risk assessment elements that could include all stakeholders directly or indirectly in the prevention of corruption (Alexander, 2006). In the context of governance at the national scale, the whistleblower is not only located in the area of intra-organization of the government itself because the parties outside the government organization can provide objective information related to the performance of the government apparatus. The consideration of the validity of the evidence of a case is a must. In the realm of law, the verification of case can be done with two types of evidence, namely direct evidence and circumstantial evidence (Crosby, Devaney, & Law, 2008), so that, corruption as the crime behaviour shall be proven directly (confirmatory evidence) (Field, 1926).

Table 2. Whistleblower and available information (internal assessment)

Whistleblower	Type of Information	Role in Measurement (the obtained information)
Industry/Retail	Direct Information (A)	<ul style="list-style-type: none"> • Conflict of interest • Company tender • Bribes to Government
Civil Society	Supporting Information (B)	<ul style="list-style-type: none"> • The independent opinions about the development of infrastructure • Perception about the service quality of the government officials. • Bribes
Independent Service Provider	Confirmation Information (C)	1. Opinion of external auditor, namely: <ul style="list-style-type: none"> • Financial statements (accounts indicated in bribes) • Indications of entertainment cost, gift, etc.

- Individual in Government and the project winner company.
2. Independent survey notice about public dissatisfaction over:
- The quality of Government service
 - Completion of infrastructure for the region.
 - Additional cost
 - Delays and nominal mismatch of direct cash assistance.

CEP Phase I is called "External Appraisal" which is formed by inserting a perception index of parties that is considered can give an independent view on the performance of government officers.

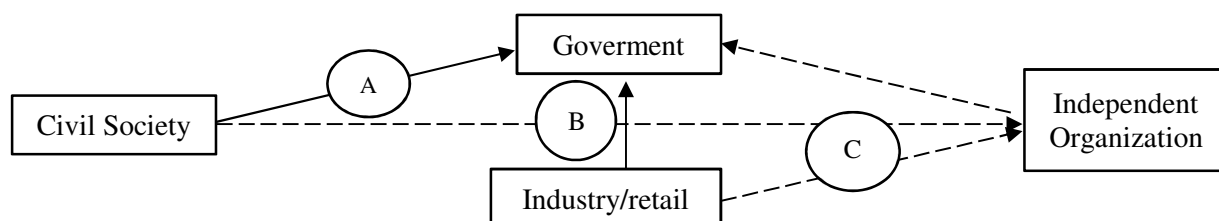


Diagram 1. The process of assessing the performance of government officials externally

Peer review is the process of investigation between departments to ensure the procedure goes according to regulations to be effective in determining the code of professional conduct for accountants in the association (example: ACFE, AICPA and IIA) (Vanasco, 1998). The effectiveness of the process of "peer review" is expected to prevent corruption. In the UK, the peer review process between the health departments has managed to reduce the level of ineffectiveness of the health personnel in the delivery of information and community services (Mangan, Pietroni, & Porter, 2016). With the similar concept and verification of information, the CEP phase II combines parties of governmental departments which are independent and have the authority to make an assessment of government performance called "Internal Appraisal".

Table 3. Whistleblower and available information (internal appraisal)

Whistleblower	Type of Information	Role in Measurement (the obtained information)
Corruption Eradication Commission	Direct Information (A)	Financial statements Internal control system Conformity of financial report by Government Reports on the results of monitoring follow-up actions The reports of review results of fiscal transparency
Government Employees	Supporting Information (B)	Culture and values application in the government offices Process and the period of community service Internal control over government operational activities Government and private employees relation
Inspectorate	Confirmation Information (C)	Conformity of activity by government officials with the order of the Strategic Plan Conformity of policy towards the vision and mission of government Development activities which are carried out periodically Results of follow-up response after the internal audit activity Local government activities The procurement process of operational support items

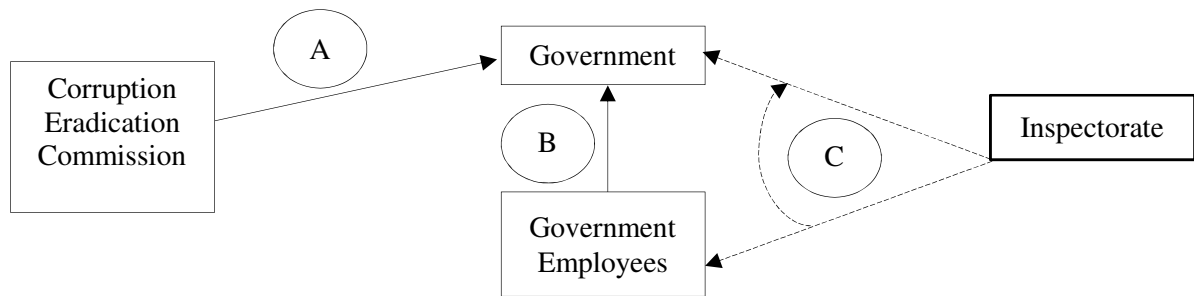


Diagram 1.2 The process of assessing the performance of government officials internally (Internal Appraisal)

CEP phase III sourced on text mining (TM) which is done by collecting a variety of news sources that are relevant to then extracted so that it can be analyzed and classification can be performed so that it can become an assessment source that is objective and accurate.

The next phase in the CEP is to gather input result of assessment partially that can describe the interdependency per dimension and per indicator, per part, per opinion of leaders in the regency/ city, provincial and national. The next phase of this research is by doing the interdependence analysis of EA, interdependence analysis of IA and interdependence analysis of text mining which can be viewed per regency / city, per province and on the national scale. CEP system receives input data from four sources, namely Perception, External, Internal, and Text Mining, each of the sources will be analyzed to generate data and mapped in the form of an interactive map. The requirements to realize the CEP software are the minimum PHP version 7.0, MySQL database and Curl.

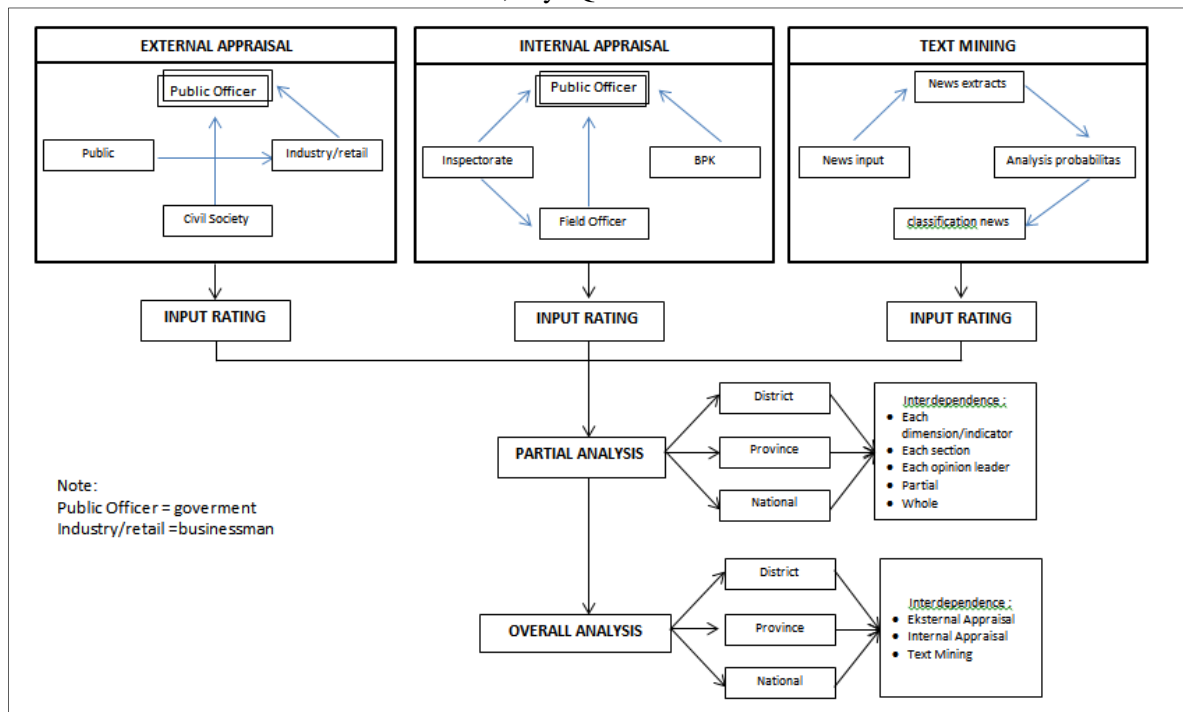


Diagram 1.3. Design of Model of Corruption Early Prevention (CEP)

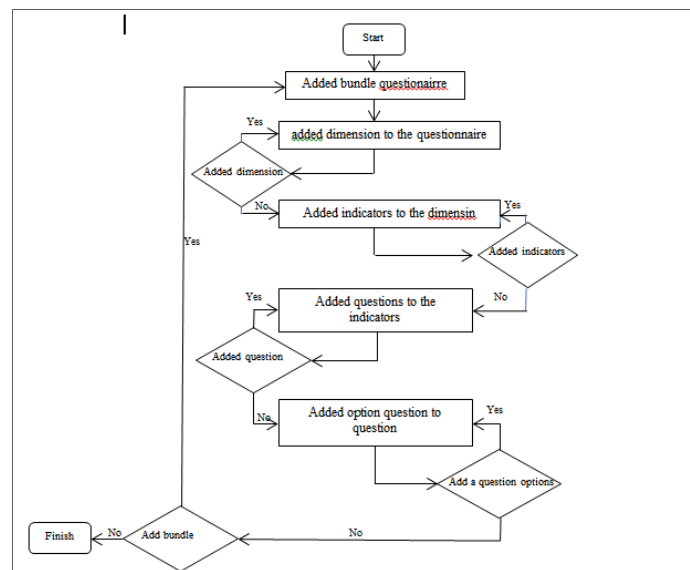


Diagram 1.4 Development of Assessment Sheet of CEP

4. Conclusion and Recommendation

CEP construct is theoretically feasible, valid and reliable by content to be developed in the context of corruption prevention in Indonesia as an early prevention system that diagnoses Indonesia simultaneously and in real time, and the concept of system design and business process of CEP is predicted to be realized in the IT-based program.

The result of exploratory research can be concluded that theoretical construct CEP as content is valid for Indonesia society context. CEP is corruption early prevention that categorized by three dimensions which are external and internal appraisal that create index of corruption prevention, and then the third dimension is text mining dimension as cross-validation for the finding of index of corruption prevention. The results of exploratory research show that the respondent tends to respond very agree to construct CEP within Indonesia context, significantly at $\alpha < 0.5$. While the results of confirmatory research indicate that there is no difference in response to construct CEP within the context of Indonesian society if seen from the difference respondents based the scientific field and gender significantly at $\alpha < 0.5$.

Recommendations of this research is the actualization of Law No. 30 Year 2002 concerning the Commission for Corruption Eradication through the policy of "corruption eradication based on prevention" through an integrated system as an early warning as well as an early detection on the prevention of corruption which leads to the establishment of synergy and integration of education system that can revolutionize human mental in Indonesia for anti-corruption. Based on the findings of CEP construct as a decision support system for the President of the Republic of Indonesia, the design "systems and business process" can be realized and become valid to be implemented by building IT systems in real time for the President of the Republic of Indonesia.

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