The Importance Of ICT In Eradicating Corruption: Evidences From Across Continents

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Abstract: This work aims to describe the effort of corruption prevention across global countries. We analyzed over seven significant publishers with a total of 126 keywords to find the most suitable publishers and the best keywords for our research. After determining the keyword and publisher, we analyzed 101 records of journal articles in Taylor and Francis publisher. We analyze all the aspects, including meta-data for each record, topic of research, object of research, and we also added consideration of ICT aspect inclusion in each record. Our findings suggest that: (1) there are more research in Africa and Europe compared to the rest of the world; (2) corruption prevention effort mentioning ICT has increased 4.5 times in the time period of 2016-2018 compared to 2013-2015; (3) there are more research focusing in practicability and less in basic research in the time period of 2016-2018 compared to 2013-2015. We are hoping that this research can be used as a baseline in the future multi-continent studies.

Index Terms: ICT, Corruption, Across continents, Corruption prevention, Technology, Asia, Europe, Africa, Australia, America

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1 Introduction

According to Transparency International, corruption is most commonly and correctly defined as "misusing entrusted power for personal gain" [1]. Taking example in Indonesia, the Corruption Eradication Committee, an agency tasked to eradicate corruption, classified corruption action to 7 type: (1) goods and services procurement, (2) licensing, (3) bribery, (4) unauthorized collection, (5) budget misallocation, (6) money laundering, and (7) hindering investigation [2]. Iqbal [3] concisely categorized the causes of corruption into four categories, which are: (1) personal financial gain, (2) lack in legal factor, (3) coercion of corruption, and (4) others. Especially for a government employee, a relatively small salary may be one of the factor causing their involvement in corruption cases [4, 5]. Accountability, transparency, and regulation, law, justice readiness, maybe some of the legal factors affecting corruption under the assumption that when all the mentioned factors are improved, the corruption level in a country will decrease [6, 7, 4, 8]. Externally, integrity deviation in cases where individuals are forced to conform to other corruption perpetrators due to the "infection" in a certain environment [9]. As bad as it sounds, this "infection" is deemed common in government officials, proven by the rampant term for corruption practice, for example, "pocket money," "gift," and other terms [10]. There is no direct positive impact of corruption, especially in a developing country. There is quite a lot of negative impact that will be borne by the citizens. Firstly, there is a substantial economic impact: the hampering of foreign investment, the potential for inflation, monetary devaluation, and slow growth in economic power [11, 12]. Secondly, as mentioned by many observers, corruption can be seen as a culture. It is scary to imagine that the majority might accept corruption and become a socially accepted norm [13]. Thirdly, corruption has been seizing a significant portion of citizen rights to obtain a decent education [14]. State loss by corruption can also be used to improve

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infrastructure, public service, and healthcare [12]. Finally, corruption has slowly eroded public trust and satisfaction to the government, and it may cause social friction in the form of the criminal act, increase in violence, split in the nation, and an overall high level of danger [13, 12]. Because of its high level of danger, local or domestic coordination will never be sufficient. An overall study is needed to compare what actions were done by other countries in the world to eradicate corruption. The purpose is to de-localize knowledge, and to learn from what did not work, and to improve on what did work. In a world nearing Industry 4.0, where technology plays a huge part in every process, ICT implementation will also be one of the factors that will be explored. This Systematic Literature Review will be aimed at providing insight on the effort from multiple countries in the world to eradicate corruption, specifically in the scientific community. We will also compare and analyze the implementation of ICT in the analyzed works. The second part following this section will explain the methodology of this research. The third part will explain the result and discussion. The last part will explain the concluding remarks and future research.

2 METHODOLOGIES

Sufficient information is needed to explore further the effort of countries around the world in fighting corruption. This research was conducted using Grounded Theory (GT) methodology. Although the primary data gathering method of GT is similar to other qualitative methodology, the primary goal of this methodology is to develop specific knowledge and information based on obtained data, as opposed to the conventional hypo-deductive research methodology – where research process is based on proving or disapproving deductive hypothesis [15]. GT does not produce hypothesis and controlled speculation, but instead conducts data analysis dynamically and parallel to the process of obtaining data. Core features of GT are as follow [16]:

a. Literature exposure is limited. To minimize bias and to enable researchers to innovate, exposure to literature is limited. It is still needed to build a basic concept and to establish a deeper understanding of the current area of interest, but it is not treated as the main roadmap to follow.

b. Everything is data. While quantitative and qualitative analysis often removes unfit data to create more explicit data depiction, GT encourages all gathered

data to be kept and noted. Any result including data deformity can and must be analyzed.

c. Data analysis & comparison is not only iterative but also incremental. Because of its lack of literature exposure, data in GT must be analyzed as it is gathered, meaning that newer data may suggest newer information, and in typical cases, may even alter the research question.

d. Theoretical sampling. To prevent an exhaustive change in every data elicitation, GT encourages the researcher to gather partial data, to get a picture of how future data will look.

e. Theoretical sensitivity. In GT, the researcher must be able to draw the line between data; meaning the researcher must be sensitive to any relationship generated by the constant data comparison.

f. Coding. The researcher must be able to construct data analytical coding/tabulation (not to be confused with programming code) to provide structured data analysis. The output of the structured analytical code is a general categorization of data.

g. Constant memo taking. Memo taking is one of the most important things a researcher must do in GT. Referring to the importance of thinking that everything can be used as a data, memo taking is a rigorous but fruitful effort as a part of qualitative thinking in GT. Memo taking is the core feature of GT.

h. Theoretical sorting. This is the process of continually comparing memo to gathered data. This is done to give an adequate explanation and depiction of invariably obtained data, assuming all the categorization is noted in the researcher's memo.

i. Cohesive theory. The researcher is expected to move on from existing theory and should be able to produce a new theoretical framework based on the combination of gathered data and memo.

j. Theoretical saturation. Data gathering in GT is stopped when the result is saturated, meaning there is no new information obtained from newer data.

It may look like GT is a very complex and exhaustive methodology, but in practice, GT provides a structured and more agile approach in conducting research. This methodology is advantageous when the researcher wants to explore a problem in a more innovative way, not bounded by existing theory, yet still achieving an objective and reliable result. It also enables the researcher to solve complex problems systematically, while reducing the loss of information along the way. Considering the general complexity of this research, not to mention the detail process of finding information, categorizing it, and analyzing it both qualitatively and quantitatively, effective yet powerful methodology to support information findings like GT is very relevant to utilize [16]. We will also explore deeper on the ICT implementation if the research has any relevancy to ICT field. Although uncommon, incorporating GT as a socio-technical approach to empower researcher's understanding of underlying problems in ICT-aided social science is proven effective [17].

2.1 Data Source
The first problem faced upon designing the criteria was determining the correct and valid source of record. Widely used databases were considered, for example, Google Scholar or Scopus by Elsevier, but upon further discussion, the team decided on finding empirical quantitative data about the number of keywords in each of 7 major journal publishers, and to also experiment on 126 relevant keywords for each publisher.

2.2 Keyword & Publisher
The keyword used in this research is determined upon a few criteria, which are: (1) not too familiar words, for example, 'corruption,' and (2) not too narrow. A total of 126 keywords were analyzed in 7 major journal publisher, totaling in 882 quantitatively analyzed records. Some example results can be seen in the table. The criteria for each publisher are the same, which are: (1) must be from research articles, (2) must be published between 2013 and 2018, and (3) the language used is English. All quantitative research were then mapped into Keyword Matrix. The part of the Keyword Matrix Table can be seen in Table 1.

Table 1. Keyword Matrix Example

No	Keywords*	A	B	C***	D	E	F	G	TOTAL
1	Abolish corruption	15	15	155	5	11	20	3	224
2	Abolish corruption strategy	9	11	155	2	8	16	N/A	201
3	Abolish corruption technology	4	3	63	3	1	9	N/A	83
4	Against corruption**	238	271	519	281	354	201	73	1937
5	Against corruption program	111	159	268	101	141	33	34	847
6	Against corruption, ICT	14	9	13	2	2	3	N/A	43
7	Anti-corruption	184	190	308	128	153	143	52	1158
8	Anti-corruption aid	34	72	109	36	70	15	20	356
...	…	…	…	…	…	…	…	…	…
126	Anti-corruption application	60	72	216	69	104	35	20	576

*A: Science Direct, B: Springer, C: Taylor and Francis, D: Sage Pub, E: John Wiley, F: Emerald Insight, G: Oxford Academic; **Chosen keyword; ***Chosen Publisher*

After applying the condition to all the 126 keywords, the most effective keywords are determined to be "*Against Corruption*," and the publisher was determined to be Taylor and Francis that has the most records with 519 relevant records. The amount of relevant record was chosen as one of the indicators in determining the source of data because of the assumption that more records equals more equally distributed research, both in regards of the disciplines, and also geo-location. Out of the 519 articles, 101 were chosen as a sample to be analyzed both quantitatively and qualitatively. The samples are obtained by sorting the research for the corresponding year by the most relevant, and taking 20% of total articles in that year. For example, if there were 100 relevant articles published in 2018, then the number of chosen articles to be further analyzed are 20 articles as samples.

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2.3 Categorization and Analysis Process

To understand the data more relevantly, we categorize the research into two periods: 2013-2015 and 2016-2018. To add to that, we categorize the researches based on three different types of research: (1) basic research; (2) practical research; and (3) experimental research. Basic research is research about basic understanding or primary suggestion. Practical research is a research that not only analyzes the problems, but also provides a practical solution, either in the form of a model, policy recommendation, or other practical-based solution. Experimental research is research that compares two or more previous research. The research can compare multiple basic research, many practical research, or a combination of basic and practical research. We also try to group the research based on the object country. It is important to note that by 'object country,' we mean that the research was conducted by using that relevant country as the object, and not the country origin of the author. We then also categorize the research based on topic. Finally, we put a note when the research is mentioning Information and Communication Technology (ICT), and we provide the findings in a different section.

3 RESULTS AND DISCUSSION

This research has explored a total of 101 research articles, and have categorized all the research by location, topic, and aspect of technology. A synthesis on all data has also been made. It must be noted that the total quantity of research is not 101, but 105. This is caused by articles that mentioned multiple countries as the object of their researches.

Table 2. The Study of Corruption based on Research Type

Location	Type	2013	2014	2015	2016	2017	2018	Total
Africa	Basic	1	4	1	1	0	0	7
	Practical	2	2	2	3	5	1	15
	Experiment	0	0	0	0	0	0	0
								22
Europe	Basic	2	4	3	0	0	0	9
	Practical	0	1	1	3	6	3	14
	Experiment	1	0	1	0	0	0	2
								25
North America	Basic	0	1	1	0	0	0	2
	Practical	0	0	1	1	2	3	7
	Experiment	0	0	0	0	0	1	2
								11
South America	Basic	0	0	1	0	0	0	1
	Practical	0	0	0	0	0	1	1
	Experiment	0	0	0	0	0	0	0
								2
Asia	Basic	4	2	1	0	0	0	7
	Practical	2	2	0	4	2	2	12
	Experiment	0	0	0	0	0	0	0
								19
Australia	Basic	0	2	1	0	0	0	3
	Practical	0	0	0	1	2	1	4
	Experiment	1	0	0	0	0	0	1
								8
Global	Basic	1	2	2	1	3	0	9
	Practical	3	1	3	2	0	0	9
	Experiment	0	0	0	0	0	0	0
								18
Unknown	Basic	0	0	0	1	3	1	5
	Practical	0	0	0	0	0	0	0
	Experiment	0	0	0	0	0	0	0

Based on Table 2 above, most of the research conducted throughout the world is practical research. Currently, most practical research was found in Africa with 15 studies and followed by Europe as many as 14 studies. Then, the basic research, until now, was widely found in Europe as many as nine studies and followed by Asia as many as seven studies. However, most of the basic studies did not specifically discuss on one continent but discussed globally because as of now nine basic studies have been found. Journals/articles related to corruption in 2013-2018 are found mostly in Europe and Africa, followed by Asia, North America, Australia and the last are South America.

3.1 Two Continents with the Most Corruption Study

We take specific note on the two continents that have the most number of corruption studies. It is interesting because both continents are on the different side of the spectrum in Corruption Perception Index score. In Europe, the study shows that the average level of corruption in European countries since 1984 is 0.78 units of corruption index, where the number 0 is interpreted as a country that is free from corruption, and number 6 is interpreted as the country with the highest level of corruption. Although the cleanest countries in the world such as Sweden, Finland, and Denmark are located on the European Continent, the number of corruption in Europe has increased by 1.34 units of corruption index so that in 2017 the number of corruption in Europe is 2.12 [18]. Meanwhile in Africa, **the study** found that 58 % of people in Africa said that the rate of corruption in Africa increased significantly. It has especially happened in North Africa where 4 out of 5 people (83%) said that they see corruption in their country overgrowing [19]. Also, according to the corruption perception index, it is known that the country with the highest level of corruption is occupied respectively by Somalia and South Sudan where the two countries are located in Africa [20].

3.2 The Analysis of the Study of Corruption based on Topics

We further categorize each research by the topic. We determine a total of 10 topic classifications in this work, and the detail for the quantity of each topic can be seen in Table 3.

Table 3. The Study of Corruption Prevention Based on Research Topic

Topic	2013	2014	2015	2016	2017	2018	Total
Politics	5	5	3	3	2	3	21
Law	0	1	0	1	4	2	8
Economy	5	2	3	1	1	1	13
Country studies	6	6	1	4	5	1	23
Social movement	0	1	0	2	3	0	6
Public policy	2	2	8	4	3	2	21
Education	0	1	0	0	0	0	1
Information Technology	0	0	0	3	4	1	8
Management	0	0	1	0	0	0	1
Ethics	1	2	1	0	0	0	4

Based on the above table, the type of research topics that are most commonly found is country studies which are 23 topics, followed by politics and public policy as many as 21 studies.

3.3 The Analysis of the Study of Corruption in Each Continent

To further analyze and highlight the researches that we found, we analyzed all the 101 records found, and explain the summary of each categorized research as a narration. Analysis on Africa Continent in *2013-2015,* shows the number of studies per year is four studies in 2013, six studies in 2014, and two studies in 2015. The total is 12 studies. Topics that most commonly raised in corruption studies in Africa are political studies [21, 22, 23, 24, 25], law [26], ethics [27, 28], economics [29], and the study of developing countries [30, 31, 32]. The number of basic research is six studies. The topic includes: the definition of "corruption" [31], the cause and effect of corruption [24, 32], explaining the role of Transparency International [27], exploring values that should be used as a reference for public policy making [28], and the implementation of anti-corruption activities [32]. Then, the number of practical research is six studies. The topic includes: how is the relation between corruption and democracy in Africa [21], the implementation of legal articles related to corruption [26, 29], how is the relationship between corruption and state political identity [23], how does corruption affect voting behavior [25]*,* and how ethnicity can explain corruptive behavior [30]. Meanwhile in 2016-2018, the study found that countries in Africa have conducted ten practical research and one basic research. If viewed yearly by 2016-2018, in 2016 Africa conducted three practical research and one basic study, in 2017 Africa conducted five practical research, and in 2018 Africa conducted one practical research. Topics of practical research on corruption in Africa are related to (1) Internal and external factors that trigger corruption, such as: Government administration [33], and Motivation & Personality [34]; (2) The strategy against corruption, including the role of justice system [35], establishment of anti-corruption institutions [36], enforcing the law [37], increasing transparency [36], increasing accountability [36], establishing entrepreneurial institutions [38], enriching ethical leaders [39], principal-agent theory [40], and collective action theory [40]; (3) analysis of corruption status / number as in determining if sub-national aid level is related to corruption) [41]; and (4) types of corruption [36]. Topics of basic research on corruption that develop in Africa are mostly talking about strategies to fight corruption in financial development [42], economic equality [42], and public transparency [42]. Analysis on Europe Continent in 2013-2015, shows the number of research for each year is three research in 2013, five research in 2014, and five research in 2015. The total is 13 research. The topics are politic [43, 44, 45, 46, 47], economic [48, 49, 50], education [51], public policies [52, 53], and the study of statehood [54, 55]. There is nine basic research. The topics discussed are: (1) the definition and the mapping of corruption [54, 53, 49, 56] Society perceptions on corruption [44, 52], the cooperation between government and external organizations in combating corruption [45, 46], and the description of government policy related to corruption [55]. From 2 practical research, it was studied about corruption in education [51], and the relation between corruption and voting behavior [47]. There is two experimental research that studied about: comparison between society's perceptions of Australia and the United Kingdom regarding punishment for corruptors [43], and the effectiveness of the anti-corruption campaign [50]. Using data in 2016-2018**,** it was found that countries in Europe have conducted 12 practical research. If viewed yearly by the 2016-2018 period, in 2016 Europe conducted four

practical studies, in 2017 Europe conducted five practical studies, and in 2018 Europe conducted two practical studies. Topics of corruption practical studies that expand in Europe relate to: (1) strategies for disclosing corruption case using means such as law enforcement [57, 58], exposing local government officials affected by corruption [57], and publishing the percentage of external members in government agencies [57]; (2) strategies for fighting corruption, including a proposal to improve electoral system [59], and to establish entrepreneurial communities [60]; (3) The understanding of anti-corruption from a political point of view [61]; (4) The overview of corruption in a country and the low level of corruption [62]; (5) Factors that trigger corruption, which are transparency & government style [63] and centralization and competition [64]; (6) the measurement of corruption level; (7) Corruption prevention program with technology, which are e-government [65], e-service tax administration [66], and entrepreneurial website [60]; and the last included area is (8) the measurement of a country's corruption status [67]. Analysis on North America Continent in 2013-2015, from sampling result, there is one research in 2014 and two pieces of research in 2015. The total is three research. The discussed topic is the study of public policy [68, 69] and economic [70]. There is two basic research, which is: (1) Explaining corruption in an institution and a country [70], as well as what is the right framework of thinking in understanding corruption [68]. There is one practical research [69] that discussed how corruptors rationalize their behavior to eliminate cognition and uncomfortable feeling in corrupt behavior. Meanwhile in 2016-2018, based on sampling results, it was found that countries in North America have conducted six practical studies and one experimental study. If viewed yearly by the 2016-2018 period, in 2016 North America conducted one practical study, in 2017 North America conducted two practical studies, and in 2018 North America conducted one experimental study and three practical studies. Topics of the study of corruption that developed in North America are related to: (1) Factors that trigger corruption including self-regulation [71]; (2) The overview of corruption in a country with a low level of corruption [72], (3) Strategies to fight corruption, by maintaining the stability of the corporate tax rate [73], establishing a corruption monitoring agency, Foreign Corrupt Practices Act / FCPA [74, 75], and Enforce punishment/sanctions for corruption using Deferred Prosecution Agreements/DPAs [74], and (4) Factor related to corruption, which includes level of trust and effectiveness [76]. The topic of experimental study of corruption that developed in North America relates to the impact of corruption on public perception [77]. Unfortunately, there is only one research from South America during 2013-2015, precisely from Paraguay. Gephart [78] did this basic research. The main topic is the study of public policy, where the researcher intensively discussed and criticized the role of International & Transnational Anti-Corruption Discourse (INTACD) in Paraguay. Meanwhile in *2016-2018*, based on sampling results, it was found that countries in the United States conducted 1 practical study in 2018. The topic on the study of corruption in the United States is related to Strategies to fight corruption, including a strategy to establish anti-corruption agencies [75]. With regard to Asia Continent sample in 2013-2015*,* the study shows that the number for each year is six research in 2013, four research in 2014, and one research in 2015. The total is 11 research. The topic covered includes

economic [79, 80], the study of statehood [81, 82, 83, 84, 85, 23], public policy [86], social movements [87], and management [88]. There are 7 basic research that discussed about (1) what is the attitude of society towards corruption [82] (Yu, Chen, Lin, 2013), (2) anti-corruption movements and strategies in certain countries [87, 85, 83], (3) critics on government policies [81], as well as (4) how to understand corruption (definition, the framework for thinking, and corruption in certain institutions) [88, 84]. Of 4 practical research, they discussed (1) the relationship between corruption and democracy [79], (2) the relationship between corruption and state political identity [23], (3) the measurement of corruption [86], and (4) the relationship between corruption and foreign investment [80]. Using data in 2016-2018, it was found that countries in Asia have conducted eight practical studies. If viewed yearly by the 2016-2018 period, in 2016 Asia conducted four practical studies, in 2017 Asia conducted two practical studies, and in 2018 Asia conducted two practical studies. The topic of study of corruption that developed in Asia is related to (1) The obstacles in fighting corruption [89], (2) Strategies in fighting corruption by establishing anti-corruption institutions [90, 91], increasing transparency [90], improving society participation and awareness in fighting corruption [90]; (3) the overview of morality and law systems of corruption [92]; (4) corruption prevention program [93, 94]; (5) factors related to corruption, which are bureaucracy, state autonomy and business [90], political connections [95], and economic opportunities [96]; and (6) how to prevent corruption using technology. Some of the researches include Whistleblowing via telephone [62], using website [93], and analysis of Guanxi & Social Network [94]. On the other hand, analysis on Australia Continent using data in 2013-2015 the results show that number of research for each year is one research in 2013, two research in 2014, and one research in 2015. The total is four research. The topics covered include political study [43, 97], and public policy [98, 68]. There is three basic research that discussed (1) the perception of corruption in society [97]; (2) corruption in Australia's local council [98], and (3) the framework of thinking in understanding corruption [68]. There is one experimental research that is a comparative study between society perceptions of Australia and the United Kingdom on the law for corruptors [43]. For the year 2016-2018, Based on sampling results, it was found that countries in Australia have conducted four practical studies. If viewed yearly by 2016-2018 period, in 2016 Australia conducted one practical study, in 2017 Australia conducted two practical studies, and in 2018 was one practical studies. Topics of corruption study that developed in Australia are: (1) The measurement of corruption status in a country [99]; (2) Strategies to fight corruption by increasing transparency through AICD good governance principle and guidelines [100, 74], and increasing accountability [74]; (3) factors that correlate with corruption, which is education level [101]. Another important and interesting findings come from Global data during 2013-2015. Based on sampling results, there is four research in 2013, three research in 2014, and five research in 2015. The total is 12 research. The topics covered include politic [102], economic [103, 104, 11], ethic [105, 106], study of statehood [107, 108], as well as study of public policy and management [109, 110, 111, 53]. There is five basic research. All of them were discussed the definition of corruption both in general [105] and in certain sectors such as in post-conflict environment [107, 108], in sports sector [111],

or developed countries [109]. There are 7 practical research that discussed about the relationship between corruption and (1) E-government and government presence [112, 110], (2) level of religiosity [102], (3) migration [103], (4) economic productivity [104], (5) foreign investment [11], and (6) publication activities [106]. Meanwhile using data during 2016-2018 the study found that there are three practical studies and three basic studies in a global context. If viewed yearly by 2016-2018 period, in 2016 there are two practical studies and one basic study, in 2017 there were two basic studies, and in 2018 there were two practical studies. Topics of practical study of corruption that develop in the global aspect are related to (1) Corruption prevention program with technology supporting e-readiness [113], and e-participation [114]; (2) strategies to fight corruption; and (3) factors related to corruption, which is political uncertainty [48]. Topics of basic study of corruption that develop based on global aspect relate to (1) the measurement of corruption case by United Nation Statistic Division and Transparency [115]; (2) factors related to corruption, which is the quality of budgetary management and audit system [116]; and (3) the analysis of corruption prevention program with technology using e-governance [117]. For undefined regions during 2013-2018, the study found that: There are five basic studies whose research area is unknown. If viewed yearly by 2013-2018 period, in 2016 there was one basic study, in 2017 there were three basic studies, and in 2018 there was one practical study. There are none in the 2013-2016 period. The topics of basic study of corruption which the location is unidentified are about (1) factors related to corruption which is collective action [118]; (2) strategy to fight corruption, which are done by building integrity [119], increasing transparency [119], increasing Accountability [119], community monitoring interventions [120], and establishing anti-corruption institutions [121]; and (3) the impact of corruption between trade and inequality [122].

3.4 ICT Mention Categorization
We further categorize the records based on the presence if ICT aspect in their researches. The result can be seen in Table 4.

Table 4. Records classification based on ICT mention

No	Period	Technology	Journal	Total
1	2013-2015	Not mentioning technology	[21], [22], [23], [24], [25], [26], [27], [28], [29], [30], [31], [32], [43], [44], [45], [47], [49], [50], [51], [52], [53], [54], [55], [56], [68], [69], [70], [79], [80], [81], [82], [83], [84], [85], [86], [87], [88], [97], [98], [102], [103], [104], [11], [105], [106], [107], [108], [109], [111]	49
2	2013-2015	Mentioning technology	[110], [112]	2
3	2016-2018	Not mentioning technology	[33], [34], [35], [36], [37], [38], [39], [40], [41], [42], [48], [57], [58], [59], [89], [61], [62], [63], [64], [67], [71], [72], [73], [74], [75], [76], [77], [91], [92], [95], [96], [99], [100], [101], [115], [116], [118], [119], [120], [121], [122]	41
4	2016-2018	Mentioning technology	[60], [65], [66], [90], [93], [94], [113], [114], [117]	9
			Total	**101**

After carefully checking the researches that mention technology, we further categorize it based on what technological aspect is mentioned. The result can be seen in Table 4.

Table 4. ICT Mention Based on Technology Aspect

No	Journal	Technology Aspect	Country	Continent
1	[110]	E-Government Readiness	Global	Global
2	[112]	Web Presence	Global	Global
3	[90]	Whistleblowing via a telephone hotline	Korea	Asia
4	[113]	Electronic readiness	Global	Global
5	[114]	E-participation	Global	Global
6	[65]	E-government	Kazakhstan	Africa
7	[117]	E-government	Global	Global
8	[93]	Website: Lexis, Nexis, Scopus	Thailand	Asia
9	[66]	E-service tax administration	Eurasia	Europe
10	[60]	Web site	Moscow, Saint Petersburg, and the Republic of Karelia	Europe
11	[94]	Guanxi Network and Social Network Analysis	China	Asia

Based on the above table, it is apparent that countries in Africa, Asia, Europe, and Eurasia have used technology as a medium to support anti-corruption program. For example, some studies in Indonesia had developed the corruption system based on online news as it is considered to reflect Indonesia's current condition [123][124].

4. CONSLUSION

We have found several significant findings in our Systematic Literature Review. Firstly, there is significantly more research conducted in Africa and Europe. This is very interesting because both continents are scored on the extreme in the Corruption Perception Index (CPI). Europe has some of the cleanest country, ranking top on the CPI, which are Sweden, Finland, and Denmark. On the other hand, Africa has some of the lowest score countries in CPI, such as Somalia and South Sudan. Secondly, there are significant differences in corruption prevention effort mentioning technology when we compare two periods: 2013-2015 and 2016-2018. Between 2013 and 2015, there are only two researches regarding corruption prevention that mention technology. However, between 2016 and 2018, there are nine pieces of research mentioning technology. This is interesting to underline because we can perceive that a lot of researches in corruption prevention are accompanying technology in their work. Thirdly, there is an interesting increase of trend in research about corruption when we compare the 2013-2015 to the 2016-2018 period. In the 2013-2015 period, more researcher is doing basic research. In the 2016-2018 period, a reversal happened, and there is more practical research compared to basic research. This further suggests that a lot of researchers is moving into a more practical way to help solve corruption across the world. These findings are extremely important when we are trying to build an international community of research focusing on corruption prevention. We are hoping that a lot of future researchers can benefit from the findings in our work, and more corruption prevention effort can be made based on our findings.

6. REFERENCES

[1] Transparency International, "What is Corruption?," 2018. [Online]. Available: https://www.transparency.org/what-is-corruption. [Accessed 21 May 2018].

[2] H. Y. Prabowo and K. Cooper, "Re-understanding corruption in the Indonesian public sector through three behavioural lenses," Journal of Financial Crime, vol. 23, no. 4, pp. 1028-1062, 2016.

[3] Z. Iqbal, H. Ahmad, M. A. Mushtaq and S. Iqbal, "Causes of Corruption in Public Sector Organization: The Study of District Bahawalnagar, Punjab," Management and Administrative Sciences Review, vol. 4, no. 6, pp. 837-845, 2015.

[4] J. S. T. Quah, "Causes and consequences of corruption in Southeast Asia: A comparative analysis of Indonesia, the Philippines and Thailand," Asian Journal of Public Administration, vol. 25, no. 2, pp. 235-266, 2003.

[5] J. V. Henderson and A. Kuncoro, "Corruption in Indonesia," National Bureau of Economic Research, pp. 1-38, 2004.

[6] V. Tanzi, "Corruption around the world: Causes, consequences, scope, and cures," Working Paper of the International Monetary Fund, pp. 1-39, 1998.

[7] A. K. Jain, "Corruption: A review," Journal of Economic Surveys, vol. 15, no. 1, pp. 71-122, 2001.

[8] M. Martini, "U4 Expert Answer: Causes of coruption in Indonesia," Anti-Corruption Resource Centre, 2012. [Online]. Available: https://www.u4.no/publications/causes-of-corruption-in-indonesia.pdf. [Accessed 2018].

[9] C. Moore, "Psychological Processes in Organizational Corruption," in Psychological Perspectives on Ethical Behavior and Decision Making, North Carolina, Information Age Publishing, 2009, pp. 35-71.

[10] H. Znoj, "Deep Corruption in Indonesia: Discourses, Practices, Histories," in Corruption and the Secret of Law: A Legal Anthropological Perspective, Hampshire, Ashgate Publishing Limited, 2007.

[11] A. A. Teixeira and L. Guimarães, "Corruption and FDI: Does the use of distinct proxies for corruption matter?," Journal of African Business, vol. 16, no. 1, pp. 159-179, 2015.

[12] S. Rose-Ackerman and B. J. Palifka, Corruption and Government: Causes, Consequences, and Reform, 2nd ed., Cambridge: Cambridge University Press, 2016.

[13] A. Arifianto, "Corruption in Indonesia: Causes, History, Impacts, and Possible Cures," 13 Januari 2003. [Online]. Available: http://people.brandeis.edu/~cerbil/AlexCorruption.pdf. [Accessed September 2016].

[14] D. Suryadarma, "How corruption diminishes the effectiveness of public spending on education in Indonesia," Bulletin of Indonesian Economic Studies, vol. 48, no. 1, pp. 85-100, 2012.

[15] J. D. Shaw, "Advantages of Starting with Theory," Academy of Management Journal, vol. 60, no. 3, pp. 819-822, 2017.

[16] K.-J. Stol, P. Ralph and B. Fitzgerald, "Grounded Theory in Software Engineering Research: A Critical Review and

Guidelines," in 2016 IEEE/ACM 38th International Conference on Software Engineering, Austin, 2016.

[17]   M. Halaweh, "Using grounded theory as a method for system requirements analysis," Journal of Information Systems and Technology Management, vol. 9, no. 1, pp. 23-38, 2012.

[18]   PRS Group, "International Country Risk Guide," PRS Group, New York, 2017.

[19]   Transparency International, "PEOPLE AND CORRUPTION: AFRICA SURVEY 2015 – GLOBAL CORRUPTION BAROMETER," Transparency International, Berlin, 2015.

[20]   Transparency International, "2017," Transparency International, Berlin, Corruption Perception Index 2017.

[21]   J. W. Musila, "Does democracy have a different impact on corruption in Africa?," Journal of African Business, vol. 14, no. 3, pp. 162-170, 2013.

[22]   I. Chipkin, "Whither the state? Corruption, institutions, and state-building in South Africa," Politikon, vol. 40, no. 2, pp. 211-231, 2013.

[23]   C. Orjuela, "Corruption and identity politics in divided societies," Third World Quarterly, vol. 35, no. 5, pp. 753-769, 2014.

[24]   S. K. R. Hope, "Kenya's corruption problem: Causes and consequences," Commonwealth & Comparative Politics, vol. 52, no. 4, pp. 493-512, 2014.

[25]   J. K. Faller, "The system matters: Corruption and vote choice in Uganda," Commonwealth & Comparative Politics, vol. 53, no. 4, pp. 428-456, 2015.

[26]   J. D. Mujuzi, "Legal pluralism and using foreign previous convictions or criminal records for the purpose of sentencing: implementing Article 41 of the United Nations Convention against Corruption in South Africa," The Journal of Legal Pluralism and Unofficial Law, vol. 46, no. 3, pp. 338-356, 2014.

[27]   S. Kimeu, "Corruption as a challenge to global ethics: the role of Transparency International," Journal of Global Ethics, vol. 10, no. 2, pp. 231-237, 2014.

[28]   E. G. Hoseah, "Corruption as a global hindrance to promoting ethics, integrity, and sustainable development in Tanzania: the role of the anti-corruption agency," Journal of Global Ethics, vol. 10, no. 3, pp. 384-392, 2014.

[29]   D. E. Agbiboa, "Corruption and economic crime in Nigeria," African Security Review, vol. 22, no. 1, pp. 47-66, 2013.

[30]   A.-S. Isaksson, "Corruption along ethnic lines: A study of individual corruption experiences in 17 African countries," The Journal of Development Studies, vol. 51, no. 1, pp. 80-92, 2015.

[31]   Y. Funaki and B. Glencorse, "Anti-corruption or accountability? International efforts in post-conflict Liberia," Third World Quarterly, vol. 35, no. 5, pp. 836-854, 2014.

[32]   V. Naidoo, "The politics of anti-corruption enforcement in South Africa," Journal of Contemporary African Studies, vol. 31, no. 4, pp. 523-542, 2013.

[33]   H. T. C. Mondlane, F. Claudio and M. A. Khan, "Remedying Africa's self-propelled corruption: The missing link," Politikon, pp. 1-26, 2016.

[34]   A. A. Agbo and E. I. Iwundu, "Corruption as a propensity: Personality and motivational determinants among Nigerians," The Journal of Psychology, pp. 1-25, 2016.

[35]   B. Bazuaye and D. Oriakhogba, "Combating corruption and the role of the judiciary in Nigeria: Beyond rhetoric and crassness," Commonwealth Law Bulletin, vol. 42, no. 1, pp. 125-147, 2016.

[36]   A. A. Oyelana and S. M. Kang'ethe, "Exploring the strategies of addressing pertinent forms of corruption and accountability in selected African countries," Journal of Social Sciences, vol. 50, no. 1, pp. 36-43, 2017.

[37]   A. A. Fayed, "The current status of corruption in Egypt," Contemporary Arab Affairs, vol. 10, no. 4, pp. 510-521, 2017.

[38]   T. A. Liedong, "Combating corruption in Africa through institutional entrepreneurship: Peering in from business-government relations," Africa Journal of Management, pp. 1-18, 2017.

[39]   P. Mishra and S. Maiko, "Combating corruption with care: Developing ethical leaders in Africa," Africa Journal of Management, pp. 1-16, 2017.

[40]   J. Perfect-Mrema, "Anatomy of forest-related corruption in Tanzania: Theoretical perspectives, empirical explanations, and policy implications," Journal of Global Ethics, pp. 1-20, 2017.

[41]   S. Burrowes, "Katangale or kuba?: Development assistance and the experiences and perceptions of local corruption in Malawi," Development Studies Research, vol. 5, no. 1, pp. 37-49, 2018.

[42]   S. Adams and E. K. M. Klobodu, "Financial development, control of corruption and income inequality," International Review of Applied Economics, pp. 1-19, 2016.

[43]   O. F. Yap, "When do citizens demand punishment of corruption?," Australian Journal of Political Science, vol. 48, no. 1, pp. 57-70, 2013.

[44]   V. Memoli and A. Pellegata, "Corruption and EU institutions: The Italians' opinion," Perspectives on European Politics and Society, vol. 15, no. 2, pp. 165-182, 2014.

[45]   L. Di Puppo, "The construction of success in anti-corruption activity in Georgia," East European Politics, vol. 30, no. 1, pp. 105-122, 2014.

[46]   E. Pavlova, "The Russian Federation and European Union against corruption: A slight misunderstanding?," European Politics and Society, vol. 16, no. 1, pp. 111-125, 2015.

[47]   C. Ziller and T. Schübel, ""The Pure People" versus "the Corrupt Elite"? Political corruption, political trust and the success of radical right parties in Europe," Journal of Elections, Public Opinion and Parties, pp. 1-19, 2015.

[48]   R. K. Goel and J. W. Saunoris, "Political uncertainty and international corruption," Applied Economics Letters, vol. 24, no. 18, pp. 1298-1306, 2017.

[49]   E. Denisova-Schmidt and M. Huber, "Regional differences in perceived corruption among Ukrainian firms," Eurasian Geography and Economics, vol. 55, no. 1, pp. 10-36, 2014.

[50]   E. Denisova-Schmidt, M. Huber and Y. Prytula, "An experimental evaluation of an anti-corruption intervention among Ukrainian university students," Eurasian Geography and Economics, pp. 1-22, 2015.

[51]   M. N. Kobakhidze, "Corruption risks of private tutoring: Case of Georgia," Asia Pacific Journal of Education, vol. 34, no. 4, pp. 455-475, 2014.

[52]   A. Dormaels, "Perceptions of corruption in Flanders: Surveying citizens and police. A study on the influence of occupational differential association on perceptions of corruption," Policing and Society, vol. 25, no. 6, pp. 596-621, 2015.

[53]   I. Beeri and D. Navot, "Local Political Corruption: Potential structural malfunctions at the central–local, local–local and intra-local levels," Public Management Review, vol. 15, no. 5, pp. 712-739, 2013.

[54]   B. Kajsiu, "The birth of corruption and the politics of anti-corruption in Albania, 1991-2005," Nationalities Papers: The Journal of Nationalism and Ethnicity, vol. 41, no. 6, pp. 1008-1025, 2013.

[55]   G. Yılmaz and D. Soyaltın, "Zooming into the 'domestic' in Europeanization: Promotion of fight against corruption and minority rights in Turkey," Journal of Balkan and Near Eastern Studies, vol. 16, no. 1, pp. 11-29, 2014.

[56]   R. K. Goel, J. Budak and E. Rajh, "Private sector bribery and effectiveness of anti-corruption policies," Applied Economics Letters, vol. 22, no. 10, pp. 759-766, 2015.

[57]   G. D'onza, F. Brotini and V. Zarone, "Disclosure on measures to prevent corruption risks: A study of Italian local governments," International Journal of Public Administration, pp. 1-13, 2016.

[58]   D. Soyaltin, "Public sector reforms to fight corruption in Turkey: A case of failed Europeanization?," Turkish Studies, pp. 1-20, 2017.

[59]   W. Selinger, "Le grand mal de l'époque: Tocqueville on French political corruption," History of European Ideas, vol. 42, no. 1, pp. 73-94, 2016.

[60]   Y. Krylova, "The role of entrepreneurial organizations in organizing collective action against administrative corruption: Evidence from Russia," Journal of Contemporary Central and Eastern Europe, pp. 1-17, 2017.

[61]   E. Sicakova-Beblava and M. Beblavy, "Using government manifestos to analyse the political salience and shape of anti-corruption policies in the Czech Republic and Slovakia," Policy Studies, pp. 1-19, 2016.

[62]   M. Kimpimäki, "Corruption in a non-corrupt country: What does corruption look like in Finland?," International Journal of Comparative and Applied Criminal Justice, pp. 1-20, 2017.

[63]   J. Rius-Ulldemolins, V. F. Moreno and G.-M. Hernàndez, "The dark side of cultural policy: Economic and political instrumentalisation, white elephants, and corruption in Valencian cultural institutions," International Journal of Cultural Policy, pp. 1-16, 2017.

[64]   P. Detkova, E. Podkolzina and A. Tkachenko, "Corruption, centralization and competition: Evidence from Russian public procurement," International Journal of Public Administration, pp. 1-21, 2018.

[65]   G. Sheryazdanova and J. Butterfield, "E-government as an anti-corruption strategy in Kazakhstan," Journal of Information Technology & Politics, pp. 1-12, 2017.

[66]   B. Ponomariov, O. Balabushko and G. Kisunko, "The decisive impact of tax administration practices on firms' corruption experience and perceptions: evidence from Europe and Central Asia," International Journal of Public Administration, pp. 1-10, 2017.

[67]   A. Kotchegura, "Preventing corruption risk in legislation: Evidence from Russia, Moldova, and Kazakhstan," International Journal of Public Administration, pp. 1-11, 2018.

[68]   A. Graycar, "Corruption: Classification and analysis," Policy and Society, vol. 34, no. 2, pp. 87-96, 2015.

[69]   A. Gannett and C. Rector, "The Rationalization of political corruption," Public Integrity, pp. 165-175, 2015.

[70]   R. K. Goel, "PACking a punch: Political Action Committees and corruption," Applied Economics, vol. 46, no. 11, pp. 1161-1169, 2014.

[71]   A. Quinn, "Co-regulation and anti-corruption in U.S. journalism," Journal of Media Ethics, vol. 31, no. 2, pp. 116-129, 2016.

[72]   A. K. Jain, "Fighting corruption: contemporary measures in Canada," Canadian Foreign Policy Journal, vol. 23, no. 1, pp. 93-116, 2017.

[73]   J. A. Dove, "Some additional evidence on the interplay between corruption, tax policy and firm entry using US states," Applied Economics Letters, vol. 24, no. 18, pp. 1307-1310, 2017.

[74]   R. Tomasic, "Global corporations, bribery and corrupt practices," Law and Financial Markets Review, pp. 1-13, 2018.

[75]   F. Stapenhurst, A. Staddon, R. Draman and L. Imbeau, "Parliamentary oversight and corruption in the Carribean: Comparing Trinidad & Tobago and Grenada," Commonwealth & Comparative Politics, pp. 1-30, 2018.

[76]   A. Ugues (Jr.) and D. Esparza, "The relationship between crime victimization, corruption, and public attitudes of Mexico's armed forces," Democracy and Security, pp. 1-27, 2018.

[77]   J. Caillier, "The priming effect of corruption and bureaucracy bashing on citizens' perceptions of an agency's performance," Public Performance & Management Review, vol. 41, no. 2, pp. 201-223, 2018.

[78]   M. Gephart, "Contested meanings in the anti-corruption discourse: International and local narratives in the case of Paraguay," Critical Policy Studies, vol. 9, no. 2, pp. 119-138, 2015.

[79]   N. Campbell and S. Saha, "Corruption, democracy, and Asia-Pacific countries," Asia Pacific Economy, vol. 18, no. 2, pp. 290-303, 2013.

[80]   H. E. Helmy, "The impact of corruption on FDI: Is MENA an exception?," International Review of Applied Economics, vol. 27, no. 4, pp. 491-514, 2013.

[81]   E. Y. Wing-Yat, "Anti-corruption approach in Macao: Lawmaking and legal enforcement," Journal of Contemporary China, vol. 22, no. 79, pp. 93-108, 2013.

[82]   C. Yu, C.-M. Chen and M.-W. Lin, "Corruption perception

in Taiwan: Reflections upon a bottom-up citizen perspective," Journal of Contemporary China, vol. 22, no. 79, pp. 57-76, 2013.

[83] I. Scott, "Institutional design and corruption prevention in Hong Kong," Journal of Contemporary China, vol. 22, no. 79, pp. 77-92, 2013.

[84] A. De Lauri, "Corruption, legal modernisation and judicial practice in Afghanistan," Asian Studies Review, vol. 37, no. 4, pp. 527-545, 2013.

[85] A. Sharma, "Epic Fasts and shallow spectacles: The 'India Against Corruption' movement, its critics, and the re-making of 'Ghandi'," South Asia: Journal of South Asian Studies, vol. 37, no. 3, pp. 365-380, 2014.

[86] M.-W. Lin and C. Yu, "Can Corruption Be Measured? Comparing global versus local perceptions of corruption in East and Southeast Asia," Journal of Comparative Policy Analysis: Research and Practice, vol. 16, no. 2, pp. 140-157, 2014.

[87] M. Sengupta, "Anna Hazare's anti-corruption movement and the limits of mass mobilization in India," Social Movement Studies, vol. 13, no. 3, pp. 406-413, 2014.

[88] T. Gong, S. Wang and J. Ren, "Corruption in the eye of the beholder: Survey evidence from Mainland China and Hong Kong," International Public Management Journal, vol. 18, no. 3, pp. 458-482, 2015.

[89] B. De Speville, "The struggle against corruption: Progress at a Snail's Pace. Why?," Asia-Pacific Review, vol. 23, no. 1, pp. 115-124, 2016.

[90] T. Kalinowski, "Trends and mechanisms of corruption in South Korea," The Pacific Review, pp. 1-21, 2016.

[91] S. M. Abdullah, "Corruption protection: fractionalization and the corruption of anti-corruption efforts in Iraq after 2003," British Journal of Middle Eastern Studies, pp. 1-17, 2017.

[92] N. Pani, "Historical insights into modern corruption: Descriptive moralities and cooperative corruption in an Indian city," Griffith Law Review, pp. 1-17, 2016.

[93] M. Dyussenov, "Who sets the agenda in Thailand? Identifying key actors in Thai corruption policy, 2012-2016," Journal of Asian Public Policy, pp. 1-31, 2017.

[94] Z. Chang, "Understanding the corruption networks revealed in the current Chinese anti-corruption campaign: A social network approach," Journal of Contemporary China, pp. 1-13, 2018.

[95] L. Dang and R. Yang, "Anti-corruption, marketisation and firm behaviours: Evidence from firm innovation in China," Economic and Political Studies, vol. 4, no. 1, pp. 39-61, 2016.

[96] F. Yi, Z. Gao and H. H. Zhang, "What leads to official corruption in China? A politico-economic analysis of economic opportunities and government corruption across China's provinces," Post-Communist Economies, pp. 1-17, 2018.

[97] I. McAllister, "Corruption and confidence in Australian political institutions," Australian Journal of Political Science, vol. 49, no. 2, pp. 174-185, 2014.

[98] M. A. Islam, "Bribery and corruption in Australian local councils," Public Money & Management, vol. 34, no. 6, pp. 441-446, 2014.

[99] A. B. Masters and A. Graycar, "Making corruption disappear in local government," Public Integrity, vol. 18, no. 1, pp. 42-58, 2016.

[100] M. A. Islam, S. Haque and D. Gilchrist, "NFPOs and their anti-corruption disclosure practices," Public Money & Management, pp. 1-8, 2017.

[101] G. W. Walton and C. Peiffer, "The impacts of education and institutional trust on citizens' willingness to report corruption: Lessons from Papua New Guinea," Australian Journal of Political Science, pp. 1-20, 2017.

[102] U. Sommer, P. B.-N. Bloom and G. Arikan, "Does faith limit immorality? The politics of religion and corruption," Democratization, vol. 20, no. 2, pp. 287-309, 2013.

[103] E. Dimant, T. Krieger and D. Meierrieks, "The effect of corruption on migration, 1985-2000," Applied Economics Letters, vol. 20, no. 13, pp. 1270-1274, 2013.

[104] A. Saastamoinen and T. Kuosmanen, "Is Corruption Grease, Grit, or a Gamble? Corruption Increases Variance of Productivity Across Countries," Applied Economics, vol. 46, no. 23, pp. 2833-2849, 2014.

[105] F. G. Madsen, "Corruption: A global common evil," The RUSI Journal, vol. 158, no. 2, pp. 26-38, 2013.

[106] E. I. Ani, "Combatting corruption with public deliberation," South African Journal of Philosophy, vol. 34, no. 1, pp. 13-28, 2015.

[107] J. Lindberg and C. Orjuela, "Corruption in the aftermath of war: An introduction," Third World Quarterly, vol. 35, no. 5, pp. 723-736, 2014.

[108] B. Rothstein, "What is the opposite of corruption?," Third World Quarterly, vol. 35, no. 5, pp. 737-752, 2014.

[109] A. Graycar and O. Monaghan, "Rich country corruption," International Journal of Public Administration, pp. 1-10, 2015.

[110] X. Zhao and H. D. Xu, "E-Government and Corruption: A longitudinal analysis of countries," International Journal of Public Administration, vol. 38, no. 6, pp. 410-421, 2015.

[111] A. Masters, "Corruption insport: From the playing field to the field of policy," Policy and Society, pp. 1-13, 2015.

[112] M. Garcia-Murillo, "Does a government web presence reduce perceptions of corruption?," Information Technology for Development, vol. 19, no. 2, pp. 151-175, 2013.

[113] W. D. Ntemi and U. O. Mbamba, "The relationship between electronic readiness and corruption reduction: Countrywide data analysis," Cogent Business & Management, pp. 1-14, 2016.

[114] Y. Zheng, "The impact of E-participation on corruption: A cross-country analysis," International Review of Public Administration, pp. 1-13, 2016.

[115] J. O. Gutierrez-Garcia and L.-F. Rodríguez, "Social determinants of police corruption: Toward public policies for the prevention of police corruption," Policy Studies, pp. 1-20, 2016.

[116] I. Brusca, F. M. Rossi and N. Aversano, "Accountability and transparency to fight against corruption: An international comparative analysis," Journal of Comparative Policy Analysis: Research and Practice, pp.

1-19, 2017.

[117] D. H. Dunchack, "Government anti-corruption strategies: A cross-cultural perspective," Public Integrity, pp. 1-4, 2016.

[118] P. Broda, "Commons, collective action, and corruption," Journal of Economic Issues, vol. 50, no. 3, pp. 769-787, 2016.

[119] L. Armey and F. Melese, "Minimizing public sector corruption: The economics of crime, identity economics, and money laundering," Defence and Peace Economics, pp. 1-13, 2017.

[120] E. Molina, L. Carella, A. Pacheco, G. Cruces and L. Gasparini, "Community monitoring interventions to curb corruption and increase access and quality in service delivery: A systematic review," Journal of Development Effectiveness, pp. 1-38, 2017.

[121] S. M. Gemperle, "Improving state legitimacy? The role of anti-corruption agencies in fragile and conflict-affected states," Global Crime, pp. 1-20, 2017.

[122] A. Reinecke and H.-J. Schmerer, "Redistribution, trade and corruption: An empirical assessment," Applied Economics, vol. 50, no. 34, pp. 3855-3869, 2018.

[123] Noerlina, Wulandhari,L.A, Arifin,Y.,Sasmoko, Ashari, A.M.M. Alamsyah, M., Kelvine, Soenarto, H., "Corruption system development based on Indonesia's corruption perception index", ICIC Express Letters, Part B: ApplicationsVolume 9, Issue 2, 1 February 2018, Pages 155-162.

[124] Noerlina, Dewanti,R, Mursitama,T.N., Fairianti, S.P., Kristin, D.M., Sasmoko, Muqsith, A.M., Krishti, N.S., Makalew, B.A., "Development of a Web Based Corruption Case Mapping Using Machine Learning with Artificial Neural Network", Proceedings of 2018 International Conference on Information Management and Technology, ICIMTech 20188 November 2018, Article number 8528150, Pages 400-405.