DOI :http://dx.doi.org/10.52663/kcsr.2022.27.3.195

The Effectiveness of Anti-Corruption Education on Corruption in the Public Organizations of South Korea

청렴교육의 청렴도에 대한 효과성 연구

Min, Kyoung Sun(민 경 선)*

국문초록

부패방지교육 또는 청렴교육은 부패를 줄이는 효과적인 수단으로 널리 인식되고 있다. 하지만, 이에 관한 데이터의 부족으로 현재까지의 많은 연구는 청렴교육의 효과성에 대한 경험적 증거를 제시하지 못하고 있다. 본고는 국민권익위원회에서 시행하는 청렴도 평가와 국민권익위원회 청렴연수원에서 이루어지는 청렴교육 프로그램을 분석하여 청렴교육의 효과성을 실증적으로 보이고자 하였다. 2014년부터 2018년까지 51개의 공공기관을 대상으로 이루어진 청렴도 평가결과와 청렴교육 이수현황에 대해 고정효과모형과 시차변수를 활용하여 분석을 실시하였다. 그 결과 공공기관 직원의 10퍼센트가 청렴연수원에서 실시하는 청렴교육을 이수하면, 그다음 해에 종합청렴도가 약 0.8점 상승하는 것으로 나타났다. 하지만 2이 지나면 청렴도 상승효과는 사라지는 것으로 나타났다. 이러한 결과는 청렴교육이 청렴도 상승에 긍정적인 영향을 준다는 점과 청렴교육의 효과가 길게 유지되지 않기 때문에 지속해서 보수교육을 실시해야 한다는 점을 보여준다. 청렴교육의 효과는 외부청렴도의 경우에는 유의미하게 나타났으나, 내부청렴도에서는 그렇지 못하였기에 앞으로 청렴교육이 내부청렴도 향상에 영향을 주는 방안을 모색할 필요가 있다.

주제어: 부패, 부패방지, 부패방지교육, 청렴, 청렴교육

Ⅰ. Introduction

Anti-corruption education is just one of many anti-corruption methods proposed by experts, but among those methods, it is one of the most commonly implemented. Anti-corruption education can be construed as a specific education program that teaches public officials and citizens how to fight and mitigate corruption. Although

* 경찰대학 행정학과 조교수, 행정학박사

anti-corruption training is widely believed to be a practical approach to curbing corruption (Fajar and Muriman, 2018; Musofiana, 2016; Palandi, Zusana, and Aminah, 2017), there is little empirical evidence that supports this belief.

Does anti-corruption education reduce corruption? Due to a lack of data, this research question has not yet received a sufficient answer. Some studies have found a relationship between general education and the level of corruption. However, the impact of anti-corruption education specifically has been left out of these studies. Other researchers (Palandi, Zusana, and Aminah, 2017; Fajar and Muriman, 2018; Musofiana, 2016) have explored the effect of anti-corruption training, but their subjects were students and businesspersons, not public organizations.

This study seeks to fill this research gap and to measure the impact of anti-corruption education on corruption in public organizations. To that end, this study uses the Integrity Assessment dataset and the Anti-Corruption Education dataset produced by the Anti-Corruption and Civil Rights Commission (ACRC) of Korea. To develop the Integrity Assessment, the ACRC surveyed employees and citizens. Their answers were used to measure the level of integrity in public organizations, with “integrity” meaning the opposite of corruption (ACRC, 2015). Along with its various anti-corruption training programs, the ACRC compiles the Anti-Corruption Education dataset, which includes the number of trainees, the trainees’ ranks, and the names of the trainees’ organizations.

To answer the research question and investigate the relationship between anti-corruption education and corruption, this study examines 51 public organizations in South Korea from 2014 to 2018. A fixed-effects model and time-lagged regression enable this study to capture the impacts of anti-corruption education. This paper finds that if ten percent of employees in a public organization have received anti-corruption education, the level of comprehensive integrity will increase by about 0.8 points in the following year. This result suggests that anti-corruption education programs are effective in fighting corruption. Public workers should participate in anti-corruption education programs regularly because the program’s impact does not last long. Anti-corruption programs should be developed to increase external and internal integrity. After reviewing the literature and analyzing the data, this study concludes that anti-corruption education is effective for South Korean public organizations.

Ⅱ. Literature Review and Theory

1. Literature Review

Previous studies worldwide have investigated the impact of general education on curbing corruption. Studies in Nepal (Truex, 2011), across 53 African countries (Asongu and Nwachukwu, 2015), and in tertiary schools spanning 56 countries (Cheung and Chan, 2008) have shown general education to be effective at reducing corruption.

Similarly, anti-corruption education has been studied and has been found to be effective at curbing corruption. Studies have shown that anti-corruption education raises awareness about corruption's harmful effects (Palandi, Zusana, and Aminah, 2017) and effectively reduces corruption (Fajar and Muriman, 2018) even when it is taught to children (Musofiana, 2016). Anti-corruption education has been heralded as a primary component of anti-corruption agencies (Kuris, 2014).

While anti-corruption training is widely believed to be a practical approach to curbing corruption, empirical evidence that supports this belief is lacking. Firman et al. (2021) argued that anti-corruption education in Islamic universities is meaningful, but they did not suggest the effectiveness of anti-corruption education with emprical evidence. Al-Fatih (2018) admitted that the anti-corruption education failed to get the positive response in Indonesia. Jonauskis (2004) introduced anti-corruption education programs in Lithuania and concluded that the short implementation period made it difficult to evaluate their effectiveness. Fajar and Muriman (2018) measured the attitudes and perceptions of elementary, junior, and senior high school students after taking two anti-corruption education modules. Hauser (2018) found that anti-corruption training positively reduces corruption among a dataset of 200 businesspersons. However, neither Fajar and Muriman (2018) nor Hauser (2018) included public officials in their studied groups. The impact of anti-corruption education on the integrity and level of corruption in public organizations remains unexamined.

2. Theory

Public workers, private workers, or citizens can all participate in anti-corruption

education, but this study focuses on anti-corruption programs for public workers. Does anti-corruption education reduce corruption within this group? Theoretically, three reasons could lead to a relationship between anti-corruption training and the level of corruption in public organizations.

First, anti-corruption programs teach participants strategies to resist corruption (Boehm and Nell, 2007). If participants understand anti-corruption laws and whistle-blower protection acts, they will know how to report corruption and protect themselves. Under these conditions, anti-corruption education can thereby increase the number of corruption reports. If whistle-blowers report more corruption, then the level of corruption will eventually decrease.

Second, anti-corruption programs help participants to increase their moral standards. If public workers have low moral standards, their conscience will not prohibit them from participating in corruption. For this reason, growing ethical standards can curb corruption (Boehm and Nell, 2007). Therefore, anti-corruption programs can reduce corruption by increasing the moral standard of the public worker participants.

Third, anti-corruption programs help participants spread integrity attitudes within their organizations. Suppose some public workers in a public institute receive anti-corruption education programs. In that case, they will likely change not only their behavior but also their co-workers' behavior. If this happens, the same positive attitudes about integrity can spread throughout the organization. In sum, anti-corruption education can reduce corruption by providing knowledge, increasing moral standards, and spreading positive attitudes toward integrity.

Ⅲ. Data, Hypotheses, and Identification Strategy

1. Data

Panel data from the ACRC inform this study. Fifty-one public organizations, including corporations, foundations, institutes, public agencies, and the like, were studied from 2014 to 2018. Central and local governments are not included due to a lack of observations. Table 1 shows the list of the public organizations in the panel data.

〈Table 1〉 List of Organizations

Public Corporation & Authority	Public Foundation & Association	Public Institute	Public Agency & Others
Korea Marine Environment Management Corporation	Korea Foundation for the Advancement of Science and Creativity	Korea Institute of Planning and Evaluation for Technology in Food, Agriculture and Forestry	Korea Agency of Education, Promotion and Information Service in Food, Agriculture, Forestry and Fisheries
Gyeong Nam Development Corporation	Korea Foundation for the Advancement of Science and Creativity	Korea Human Resource Development Institute for Health and Welfare	Korea Agency for Infrastructure Technology Advancement
Daegu Infrastructure Corporation	Korea International Broadcasting Foundation	Korea Institute of Ceramic Engineering and Technology	Korea Youth Work Agency
Seoul Metro Corporation	Seoul Credit Guarantee Foundation	Korea Institute of Design Promotion	Korea Fisheries Resources Agency
Ulsan Metropolitan City Corporation	National Research Foundation of Korea	Korea Institute of Science and Technology	The Korean Teachers' Credit Union
Incheon Facilities Corporation	Public Officials Benefit Association	Korea Health Industry Development Institute	Korea Educational Broadcasting System
Jeonbuk Development Corporation	Public Officials Benefit Association	Korea Meteorological Institute	Korean Sport and Olympic Committee
Chungbuk Development Corporation	Korea Population, Health and Welfare Association	Korea Institute of Energy Research	Korea Testing Laboratory
Chungcheomgnamdo Development Corporation	Korean Standards Association	Korea Atomic Energy Research Institute	Korea Exchange
Gangwon-do Development Corporation	Gyeonggi Credit Guarantee Foundation	Korea Institute of Civil Engineering and Building	SPO1
Korea Power Corporation Nuclear Fuel	Korea Sports Promotion Foundation	Korea Railroad Research Institute	
Korea Tourism Organization		Korea Institute of Oriental Medicine	
Yeosu Gwangyang Port Authority		Korea Institute of Ocean Science and Technology	
Korea Transportation Safety Authority		Korea Astronomy and Space Science Institute	
Ulsan Port Authority		Korea Development Institute	

Comprehensive, external, and internal integrity serve as the dependent variables. These variables measure the level of integrity in public organizations by surveying public service users, public employees, and experts. It is plausible that if we want to measure the impact of anti-corruption programs precisely, we should observe individuals' behavior. However, it is challenging to measure individuals' behavior. Individuals' behavior may affect the level of integrity in public organizations. Therefore, measuring the level of integrity can be a reasonable way to estimate the impact of anti-corruption programs.

Comprehensive, external, and internal integrity are aligned with the ACRC's definition of integrity from the ACRC Act, 2017, Articles 7 and 12: "the degree to which a public official carries out his/her duties transparently and fairly without committing an act of corruption" (ACRC, 2015). In contrast, the ACRC Act, 2017, Article 2, construes the act of corruption as "the act of a public organization employee to seek illegitimate gains for himself/herself or for any third party by abusing his/her position or authority, or violating Acts and subordinate statutes in connection with his/her duties." These definitions show that integrity can be understood as the opposite of corruption.

Comprehensive integrity includes data from an external integrity index, an internal integrity index, and a policy customer evaluation (ACRC, 2015). The external integrity index is constructed with the views and experiences of 166,873 public service users, while the internal integrity index uses the opinions and experiences of 56,988 public employees (ACRC, 2015). 21,237 experts performed the policy customer evaluation (ACRC, 2015). The ACRC randomly selects respondents using the systematic sampling method (ACRC, 2019a). To measure the level of integrity, the ACRC uses seven-point Likert-scale questions (ACRC, 2019a).

To calculate comprehensive integrity, the ACRC deducted incidents of corruption and actions that lowered assessment reliability from the aggregate of the three indices. Incidents of corruption were determined by the number of corruption cases in which a public organization was involved (ACRC, 2015). When manipulation in the assessment was detected, that manipulation was counted as an act that lowered the assessment reliability (ACRC, 2015). Table 2 illustrates the factors contributing to comprehensive integrity scores.

〈Table 2〉 Composition of Comprehensive Integrity (2015)

Section	Index	Indicators
External Integrity (0.601)	Corruption Index (0.638)	Direct and indirect experience and perception of corruption including the offering of money, gifts, entertainment or convenience, and improper pursuit of private interest (13 survey questions)
	Corruption Risk Index (0.362)	Transparency and accountability in the performance of duties (4 survey questions)
Internal Integrity (0.250)	Integrity Culture Index (0.433)	Prevalence of corrupt practices & effectiveness of anti-corruption systems (9 survey questions)
	Work Integrity Index (0.567)	Transparency & fairness in personnel management, budget execution, and order by superiors (24 survey questions)
Policy Customer Evaluation (0.149)	Perception of Corruption (0.427)	Perception of favor for former public officials, waste of budget, transparency/fairness in decision-making and overall work process, etc. (9 survey questions)
	Control of Corruption (0.294)	Perception of strict punishment, efforts to prevent corruption, etc. (3 survey items)
	Experience of Corruption (0.279)	Experience and perception of offering of money, gifts, and entertainment, etc. (1 survey items)
Occurrences of Corruption	Deduction Index	Corruption Public Official Disciplinary Index and Corruption Case Index (statistics)
Acts Lowering Assessment Reliability	Deduction Index	Manipulation/inaccuracy of the list of respondents, request for favorable responses, improper acts detected through on-site inspection, and disclosure, etc. (on-site inspection)

The numbers in parenthesis are weights. Comprehensive Integrity (100%) is the summation of External Integrity (60.1%), Internal Integrity (25%), and Policy Customer Evaluation (14.9%). External Integrity (100%) is the summation of Corruption Index (63.8%) and Corruption Risk Index (36.2%). The composition of the weights is determined by the advice of scholars, experts, and anti-corruption activists.
Source: ACRC (2015)

The key independent variable is the percentage of public workers participating in anti-corruption programs. The ACRC manages the Anti-Corruption Training Institute, established in 2012 (ACRC, 2019b). The Anti-Corruption Training Institute has developed various anti-corruption education programs in which many public officials participate (ACRC, 2019b). The institute provides education for both institutions and individuals. During the education programs for institutions, anti-corruption lecturers visit an institution, and most workers at the institution attend a one-hour lecture. The

workers of the institutions request this education program. The ACRC does not force the workers of the institutions to participate in the program. It means that the workers of the institutions voluntarily join the program. The institutions which join the program might be more interested in anti-corruption policies than the other institutions. The institutions which join the program might be less corrupt than the other institutions. If so, selection bias cannot be ignored. This study, therefore, removes the public organizations that receive this education program for their institutions. Moreover, it is hard to believe that a one-hour lecture can significantly change the workers' behavior.

The education program for individuals is quite different: participants stay at the Anti-Corruption Training Institute for several days and attend various lectures. Table 3 shows these anti-corruption training programs for individuals.

〈Table 3〉 Curriculum for Anti-Corruption Training Programs (2018)

Program	Course
Customized Training for Mandatory Integrity Education	Course for improvement in integrity leadership
	Course for improvement in integrity capability for newcomers
	Course for improvement in integrity capability for personnel managers
	Course for improvement in integrity capability for personnel workers
	Course for improvement in corruption response capability
Education to Improve Integrity Capability	Course for understanding integrity capability
	Course for reinforcing integrity capability
Education on the Improper Solicitation and Graft Act	Course for accurate understanding about the Improper Solicitation and Graft Act

Programs for Teachers and local council members, and, Integrity Education for Institutions are not included.
Source: ACRC (2019)

The control variable in this study is the number of public workers in an organization. This variable is vital for studying corruption in public organizations because, as Goel and Nelson (1998) found, larger public organizations have more corruption. It might be difficult to control many employees and a big budget, so there might be more opportunities for corrupt workers in larger public organizations. The number of employees was also used in this study because data on another

measurement of the size of public organizations – budget – was unavailable. Furthermore, the natural log of the number of workers was used in this study as the actual number was too large.

〈Table 4〉 Descriptive Statistics of Variables

Variable	Mean	Std. Dev	Min	Max	Observations
$Integrity_{t-0}$ (Comprehensive)	8.303	.343	7.23	8.93	N=129 n=51
$Integrity_{t-0}$ (External)	8.545	.356	7.44	9.17	N=129 n=51
$Integrity_{t-0}$ (Internal)	7.730	.592	5.68	9.28	N=129 n=51
$Education_{t-0}$ (All)	.428	1.333	0	11.364	N=129 n=51
$Education_{t-1}$ (All)	.301	1.193	0	9.280	N=129 n=51
$Education_{t-2}$ (All)	.192	.552	0	9.400	N=129 n=51
$Education_{t-0}$ (Executive)	.014	.113	0	1.220	N=129 n=51
$Education_{t-1}$ (Executive)	.025	.163	0	1.351	N=129 n=51
$Education_{t-2}$ (Executive)	.015	.125	0	1.351	N=129 n=51
$Education_{t-0}$ (Non-Executive)	.414	1.306	0	11.364	N=129 n=51
$Education_{t-1}$ (Non-Executive)	.277	1.157	0	11.364	N=129 n=51
$Education_{t-2}$ (Non-Executive)	.177	.516	0	4.453	N=129 n=51
Number of Workers (Ln)	5.777	1.093	4.060	9.757	N=129 n=51

51 state-owned enterprises are in this dataset. There is no missing value in this dataset. Educationt has observations from 2014 to 2018. Integrityt-0 has observations from 2016 to 2018. Number of Workers is the control and time-invariant variable.

Table 4 shows the statistics of these variables. Comprehensive, external, and internal integrity, along with the policy customer evaluation, are included. The highest theoretical score is ten, indicating high integrity, and the lowest theoretical score is zero, indicating low integrity. Educationt-0 represents the percentage of trainees in an organization in the current year, and Educationt-1 represents the percentage of trainees in an organization in the previous year. The number of trainees in an agency includes

both executive and non-executive trainees. This study assumes that the influence of public officials might be different by rank, with the influence of executives likely stronger than that of ordinary employees. For this reason, this study adopts three independent variables: All Education, Executive Education, and Non-Executive Education.

2. Hypotheses

This paper tests nine hypotheses to find the causal relationship between the level of anti-corruption education and the level of integrity in a given agency.

Hypothesis 1-1: Public organizations with higher percentages of public workers who have participated in anti-corruption programs are likely to maintain higher levels of comprehensive integrity.

Hypothesis 1-2: Public organizations with higher percentages of executives who have participated in anti-corruption programs are likely to maintain higher levels of comprehensive integrity.

Hypothesis 1-3: Public organizations with higher percentages of non-executives who have participated in anti-corruption programs are likely to maintain higher levels of comprehensive integrity.

Hypothesis 2-1: Public organizations with higher percentages of public workers who have participated in anti-corruption programs are likely to maintain higher levels of external integrity.

Hypothesis 2-2: Public organizations with higher percentages of executives who have participated in anti-corruption programs are likely to maintain higher levels of external integrity.

Hypothesis 2-3: Public organizations with higher percentages of non-executives who have participated in anti-corruption programs are likely to maintain higher levels of external integrity.

Hypothesis 3-1: Public organizations with higher percentages of public workers who have participated in anti-corruption programs are likely to maintain higher levels of internal integrity.

Hypothesis 3-2: Public organizations with higher percentages of executives who have participated in anti-corruption programs are likely to maintain higher levels of internal integrity.

Hypothesis 3-3: Public organizations with higher percentages of non-executives who have participated in anti-corruption programs are likely to maintain higher levels of internal integrity.

3. Identification Strategy

Endogeneity can be an obstacle to estimating the impact of anti-corruption programs on the level of integrity. A correlation between independent variables and the error term can bias the estimators in the linear regression model. This study tries to avoid the two possible causes of endogeneity: omitted variables and simultaneity.

The first cause of endogeneity, omitted variables, can have a hidden but significant impact on an organization's integrity and, therefore, this study's estimates. Omitted variables can include unmeasured factors such as the average level of education or the internal culture within an organization. If an organization has a culture of high integrity, then its employees might embrace and participate actively in anti-corruption education. In this case, the coefficient of the independent variable would be overestimated. On the other hand, if an organization has a culture with a low level of integrity, then its employees might be reluctant to join anti-corruption programs. In this case, the coefficient of the independent variable would be underestimated.

Simultaneity is the other cause of endogeneity. Suppose the leader of an organization is worried about its low level of integrity. In that case, the leader may make a solid effort to force workers to participate in anti-corruption education. In this case, the low level of integrity and the high level of participation are associated, and the integrity coefficient could be negative. Thus, if simultaneity is not controlled, then the estimator in the simple OLS regression cannot be trusted.

Endogeneity and its confounding impact are controlled in this study through

fixed-effects and time-lagged models. The issue of omitted variables can be solved by employing a fixed-effects model, which controls for each organization's culture and circumstances. Since it is unlikely that these aspects have changed drastically over five years, the fixed-effects model should accurately filter out any confounding effects and lead to an accurate assessment of the connection between anti-corruption education and integrity. Simultaneity is controlled with the time-lagged model, which holds for the previous year's participation.

Ⅳ. Empirical Findings and Interpretation

1. Empirical Findings

Table 5 displays the correlation between the percentages of public workers in anti-corruption programs and comprehensive integrity amongst 51 state-owned companies. Table 6 shows the correlation between the percentages of public workers in anti-corruption programs and external integrity. Table 7 displays the correlation between the percentages of public workers in anti-corruption programs and internal integrity. The results of the OLS regression are shown in the first three models: Model Ⅰ has all education as the independent variable, Model Ⅱ has executive education as the independent variable, and Model Ⅲ has non-executive education as the independent variable. The results of the fixed-effects models are shown in the following three models: Model Ⅳ has all education as the independent variable, Model Ⅴ has executive education as the independent variable, and Model Ⅵ has non-executive education as the independent variable.

The results in Table 5 partly correspond with the first three hypotheses, which posit that comprehensive integrity is raised when the percentages of all public workers who have participated in anti-corruption programs increase. The results of Model Ⅰ reveal that the percentages of all public workers in anti-corruption programs of the current year are not associated with the level of comprehensive integrity. On the contrary, the percentages of all public workers who have participated in anti-corruption programs in the previous year positively affect the level of comprehensive integrity. If an agency increases the percentages of all public workers who have participated in anti-

corruption programs by ten percent, then comprehensive integrity would increase by 0.32 points, which is close to one standard deviation of comprehensive integrity. Thus, the coefficient of the independent variable in the previous year is practically significant.

Interestingly, the percentages of all public workers who have participated in anti-corruption programs in the year before the previous year have a negative effect on comprehensive integrity. If an agency increases the percentages of all public workers who have participated in anti-corruption programs by ten percent, then comprehensive integrity would decrease by 1.64 points. Thus, the coefficient of the independent variable in the year before the previous year is practically significant. While the results of Model Ⅱ show that the percentages of executives who have participated in anti-corruption programs in the previous year have only a positive effect on comprehensive integrity, the results of Model Ⅲ are similar to the results of model Ⅰ. In Model Ⅰ, Model Ⅱ, and Model Ⅲ, the number of workers does not affect increasing comprehensive integrity.

The results of the fixed-effects model are not very different from the results of the OLS model. In Model Ⅳ, if an agency increases the percentage of public workers who have participated in anti-corruption programs in the previous year by ten percent, then comprehensive integrity would decrease by 0.79 points, which is close to two standard deviations of comprehensive integrity. In Model Ⅵ, if an agency increases the percentage of public workers who have participated in anti-corruption programs in the previous year by ten percent, then comprehensive integrity would decrease by 0.83 points. Thus, the coefficient of the independent variable in the previous year is practically significant in Model Ⅳ and Model Ⅵ. In model Ⅴ, if an agency increases the percentage of executives who have participated in anti-corruption programs in the year before the previous year by ten percent, then comprehensive integrity would decrease by 4.82 points.

The results of the OLS model and the fixed-effects model show some differences. In Model Ⅳ and Model Ⅵ, the percentages of all public workers in anti-corruption programs in the current year also positively affect comprehensive integrity. But in Model Ⅴ, the coefficient of the independent variable in the previous year is not statistically significant.

〈Table 5〉 Dependent Variable: $Integrity_{t-0}$ (Comprehensive)

	I	II	III	IV	V	VI
$Education_{t-0}$ (All)	−.010			.053*		
	(.019)			(.027)		
$Education_{t-1}$ (All)	.032***			.079***		
	(.009)			(.027)		
$Education_{t-2}$ (All)	−.164***			−.086		
	(.032)			(.067)		
$Education_{t-0}$ (Executive)		−.199			−.251	
		(.059)			(.289)	
$Education_{t-1}$ (Executive)		.123*			.004	
		(.070)			(.215)	
$Education_{t-2}$ (Executive)		−.443			−.482*	
		(.136)			(.267)	
$Education_{t-0}$ (Non-Executive)			−.008			.061**
			(.019)			(.028)
$Education_{t-1}$ (Non-Executive)			.032***			.083***
			(.009)			(.028)
$Education_{t-2}$ (Non-Executive)			−.162***			−.057
			(.034)			(.073)
Number of Workers (Ln)	−.030	.030	.031			
	(.037)	(.037)	(.037)			
Constants	8.158***	8.126***	8.144***	8.273***	8.314***	8.265***
	(.216)	(.215)	(.215)	(.033)	(.027)	(.033)
Organization Fixed Effects				X	X	X
N	129	129	129	129	129	129
n	51	51	51	51	51	51
R^2 (Overall)	.090	.046	.082	.021	.035	.010
R^2 (Within)				.149	.060	.141
R^2 (Between)				.001	.023	.007

Standard errors clustered at the organization level are reported in parentheses.
***p < .01; **p < .05; *p < .1.

In sum, while the percentages of all public workers and non-executives who have participated in anti-corruption programs in the previous year overall have a positive effect on comprehensive integrity, the percentages of all public workers and non-executives who have participated in anti-corruption programs in the year before the previous year overall have a negative effect on comprehensive integrity. The impact of the percentages of executives who have participated in anti-corruption programs has overall weak statistical significance. The coefficient of the independent variable in the current year overall is not statistically significant.

〈Table 6〉 Dependent Variable: $Integrity_{t-0}$ (External)

	I	II	III	IV	V	VI
$Education_{t-0}$ (All)	−.007			.030		
	(.025)			(.025)		
$Education_{t-1}$ (All)	.040***			.075***		
	(.014)			(.025)		
$Education_{t-2}$ (All)	−.192***			−.118*		
	(.041)			(.063)		
$Education_{t-0}$ (Executive)		−.103*			−.168	
		(.061)			(.275)	
$Education_{t-1}$ (Executive)		.059			−.018	
		(.109)			(.205)	
$Education_{t-2}$ (Executive)		−.554***			−.504*	
		(.138)			(.253)	
$Education_{t-0}$ (Non-Executive)			−.005			.036
			(.026)			(.027)
$Education_{t-1}$ (Non-Executive)			.042***			.080***
			(.014)			(.026)
$Education_{t-2}$ (Non-Executive)			−.189***			−.094
			(.044)			(.069)
Number of Workers (Ln)	.042	.040	.044			
	(.047)	(.046)	(.047)			
Constants	8.33***	8.321***	8.315***	8.532***	8.556***	8.525***
	(.279)	(.276)	(.279)	(.031)	(.025)	(.031)
Organization Fixed Effects				X	X	X
N	129	129	129	129	129	129
n	51	51	51	51	51	51
R^2 (Overall)	.126	.060	.112	.058	.044	.038
R^2 (Within)				.162	.062	.145
R^2 (Between)				.058	.042	.001

Standard errors clustered at the organization level are reported in parentheses.
***p < .01; **p < .05; *p < .1.

The results in Table 6 partly correspond with the second three hypotheses, which posit that external integrity increases with higher percentages of public workers who have participated in anti-corruption programs. Although the results in Table 6 are fairly similar to the results in Table 5, there are some differences. In Model II, while the percentages of executives who have participated in anti-corruption programs in the current year and the year before the previous year have a negative effect on external integrity, the percentages of executives who have participated in anti-corruption programs in the previous year have no statistically significant impact on external integrity. In Model IV and Model VI, the percentages of all public workers in

anti-corruption programs in the current year positively affect external integrity. In Model Ⅰ, Model Ⅱ, and Model Ⅲ, the natural log of the number of workers does not affect external integrity.

〈Table 7〉 Dependent Variable: $Integrity_{t-0}$ (Internal)

	Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ	Ⅵ
$Education_{t-0}$ (All)	-.059			.029		
	(.048)			(.031)		
$Education_{t-1}$ (All)	.004			.036		
	(.033)			(.030)		
$Education_{t-2}$ (All)	-.064			.019		
	(.060)			(.076)		
$Education_{t-0}$ (Executive)		-.687***			-.620**	
		(.119)			(.305)	
$Education_{t-1}$ (Executive)		.250			.071	
		(.191)			(.228)	
$Education_{t-2}$ (Executive)		.024			-.212	
		(.185)			(.282)	
$Education_{t-0}$ (Non-Executive)			-.055			.038
			(.047)			(.032)
$Education_{t-1}$ (Non-Executive)			-.001			.036
			(.031)			(.032)
$Education_{t-2}$ (Non-Executive)			-.072			.048
			(.065)			(.083)
Number of Workers (Ln)	.033	.044	.034			
	(.065)	(.066)	(.064)			
Constants	7.578***	7.481***	7.572***	7.704***	7.741***	7.696***
	(.383)	(.391)	(.380)	(.038)	(.028)	(.037)
Organization Fixed Effects				X	X	X
N	129	129	129	129	129	129
n	51	51	51	51	51	51
R^2 (Overall)	.027	.029	.025	.012	.019	.016
R^2 (Within)				.022	.078	.027
R^2 (Between)				.012	.002	.017

Standard errors clustered at the organization level are reported in parentheses.
***p < .01; **p < .05; *p < .1.

The results in Table 7 do not correspond with the third set of hypotheses, which posit that high percentages of public workers who have participated in anti-corruption programs increase internal integrity. In Model Ⅱ and Model Ⅴ, the percentages of executives who have participated in anti-corruption programs in the current year have a negative effect on internal integrity. The other coefficients have no statistically

significant impact on internal integrity.

In summary, these results lead to several findings:

1) Public organizations with higher percentages of non-executives who have participated in anti-corruption programs in the previous year are likely to maintain higher levels of comprehensive and external integrity.

2) The impacts of the percentages of all public workers and non-executives who have participated in anti-corruption programs in the year before the previous year are mixed: in the OLS regressions, the impacts are negative, but in the fixed-effects model, the effects are not statistically significant.

3) Public organizations with higher percentages of executives who have participated in anti-corruption programs in the current year are likely to maintain lower levels of internal integrity.

4) The number of workers is not related to the level of integrity.

2. Interpretation

These counterintuitive findings lead to several questions. Why do the current year's percentages of public workers in anti-corruption programs generally not affect the level of integrity? Why do the percentages of public workers who have participated in anti-corruption programs in the year before the previous year generally have a negative effect on the level of integrity? Why do the percentages of executives who have participated in anti-corruption programs generally not affect the level of integrity? Why does internal integrity have no statistically significant relationship with the independent variables?

Time might serve as an answer to why the percentages of public workers who have participated in anti-corruption programs in the current year generally do not affect the level of integrity. The impacts of anti-corruption education programs will likely be more effective over time. It is plausible that anti-corruption education needs more time to cause an effect because participants' behavior is not easy to change. Moreover,

spreading the anti-corruption message and behavior from attendees to non-attendee coworkers takes time. For these reasons, while the percentages of public workers who have participated in anti-corruption programs in the current year do not affect the level of integrity, the percentages of public workers in anti-corruption programs in the previous year have a positive effect on the level of integrity.

The next question is: Why do the percentages of public workers who have participated in anti-corruption programs in the year before the previous year generally have a negative effect on the level of integrity? One possible answer is that the impact of anti-corruption education programs does not last long. If public workers participated in anti-corruption education two years prior, they might need reeducation to maintain a high level of integrity. However, if this were the case, the coefficients would be zero, but they are negative. Another possible explanation is that public workers in anti-corruption programs of the year before the previous year rarely participated in the programs in the previous year. If so, organizations that have high percentages of educated public workers in the year before the previous year and organizations which have high percentages of educated public workers in the previous year might not overlap. Table 8 supports this assertion. Only nine organizations sent their employees to participate in anti-corruption education programs in both the previous year and the year before the previous year.

〈Table 8〉 Numbers of Organizations Which Participated In Anti-Corruption Education

	$Education_{t-2}$ (All): No	$Education_{t-1}$ (All): Yes
$Education_{t-1}$ (All): No	77	21
$Education_{t-2}$ (All): Yes	22	9

The next question concerns executives: Why do the percentages of executives who have participated in anti-corruption programs generally have no effect on the level of integrity? There are two possible explanations. First, the percentages of executives who have participated in anti-corruption programs are too small; Table 3 shows them to be between 0.01 and 0.03. It seems that more participation of executives is needed to better gauge the impact of these programs. Second, many executives might have been replaced during the period studied. In May 2017, the presidential election was held. According to Democratic Party Representative Kim Jung Wu, more than 37

percent of the heads of public organizations were replaced after the election (Korean Economy, 2019). There are no data about the total percentage of the replaced executives. However, it is plausible that some of the executives who participated in anti-corruption programs in the previous year and the year before the previous year were replaced.

The final question is: Why does internal integrity generally have no statistically significant relationship with the independent variables? One possible answer is that insiders' perceptions might differ from those of outsiders (Min, 2019). Table 9 supports this assertion. While external integrity and comprehensive integrity are highly correlated, external integrity and internal integrity are not closely correlated. It seems that an anti-corruption education program only has effects on the relationship between public service users and public workers. Such programs do not seem to affect the relationship between non-executives and executives. If the percentages of educated executives increase, then anti-corruption education might positively affect internal integrity.

〈Table 9〉 Correlation Matrix of Integrity Indices

	Comprehensive	External	Internal
Comprehensive	1.000		
External	.865	1.000	
Internal	.474	0.037	1.000

V. Conclusion and Policy Implication

The empirical results partly support the theory suggested in this paper. Generally, public organizations with higher percentages of non-executives who have participated in anti-corruption programs in the previous year are likely to maintain higher levels of comprehensive and external integrity. In short, anti-corruption education programs curb corruption. This study is meaningful in that it empirically tests the relationship between anti-corruption education and integrity.

However, this study is subject to some limitations. First, the number of executives

who participated in anti-corruption education programs is too small to effectively measure the impacts of anti-corruption education on integrity. More observations are needed to capture the causal effects sufficiently. Second, this study does not measure the impacts of different anti-corruption education programs. Different programs may have different impacts on integrity. Unfortunately, due to a lack of detailed data, this study does not investigate different anti-corruption education programs or their impact Further studies will be needed to capture the impact of anti-corruption education on corruption with more detailed data.

The results of this study provide some policy implications. First, anti-corruption education programs are indeed effective in fighting corruption. While many anti-corruption agencies rely heavily on punishment, experts argue that anti-corruption agencies should adopt and implement prevention and education measures to fight corruption effectively (Scott and Gong, 2018). This study supports this assertion. Second, public workers should participate in anti-corruption education programs regularly because the impacts of anti-corruption education programs do not last long. Third, anti-corruption programs should be developed to increase both external and internal integrity. The empirical evidence shows that anti-corruption education programs in South Korea have a positive effect on external integrity but have no impact on internal integrity. These results mean that to decrease corruption between executives and non-executives, the Anti-Corruption Training Institute should develop a new anti-corruption education program focusing on internal corruption.

References

ACRC. (2015). A practical guide to Integrity Assessment. Sejong: Anti-Corruption and Civil Rights Commission.

ACRC. (2019a). 공공기관 청렴도 측정 매뉴얼 [Manual for Integrity Assessment in Public Organizations]. Sejong: Anti-Corruption and Civil Rights Commission.

ACRC. (2019b). ACRC Korea Annual Report 2018. Sejong: Anti-Corruption and Civil Rights Commission.

Al-Fatih, S. (2018). Darus as an Anti-Corruption Education. Asia Pacific Fraud Journal, 3(1), 117-123.

Asongu, S. A., and Nwachukwu, J. (2015). The Incremental Effect of Education on Corruption: Evidence of Synergy from Lifelong Learning. Economics Bulletin, 35(4), 2288 - 2388. https://doi.org/10.2139/ssrn.2661448

Boehm, F., and Nell, M. (2007). Anti-corruption training and education. Norway: Cornell University.

Cheung, H. Y., and Chan, A. W. (2008). Corruption across countries: Impacts from education and cultural dimensions. The Social Science Journal, 45(2), 223-239. https://doi.org/10.1016/j.soscij.2008.03.002

Fajar, A., and Muriman, C. (2018). Prevention of Corruption through Anti-Corruption Education. Annual Civic Education Conference (ACEC 2018), 650 - 653. Atlantis Press.

Firman, F., Kaso, N., Arifuddin, A., Mirnawati, M., Ilham, D., & Karim, A. R. (2021). Anti-Corruption Education Model in Islamic Universities. AL-ISHLAH: Jurnal Pendidikan, 13(3), 2146-2158.

Goel, R. K., and Nelson, M. A. (1998). Corruption and government size: A disaggregated analysis. Public Choice, 97(1-2), 107-120.

Hauser, C. (2018). Fighting against corruption: Does anti-corruption training make any difference? Journal of Business Ethics, 1-19.

Hong, S.Y. (2019, July 15). 김정우 "정권 바뀐뒤 공공기관장 교체, MB정부 53%, 문정부 37%" [Democratic Party Representative, Kim Jung Wu says, "53 percent of the CEOs of public organizations were replaced in the Lee administration, and 37% percent of the CEOs of public organizations were replaced in the Moon Administration"]. Maeil Business News Korea, Retrieved from https://www.mk.co.kr/news/politics/view/2019/07/522312/

Jonauskis, M. (2004). Anti-Corruption Education and Training in Lithuania. In B. Michael, R. Kattel, and W. Drechsler (Eds.), Enhancing the Capacities to Govern: Challenges Facing the Central and Eastern European Countries (pp. 254-269). Slovakia: NISPAcee.

Kuris, G. (2014). From underdogs to watchdogs: How anti-corruption agencies can hold off potent adversaries (pp. 1-23). Princeton, NJ: Innovations for Successful Societies.

Musofiana, I. (2016). Anti-Corruption Education at an Early Age as a Strategic Move to Prevent

Corruption in Indonesia. In Comparative Law System of Procurement of Goods and Services Countries in Asia, Australia and Europe (pp. 304-3012). Unissula Press.

Min, K. S. (2019). The effectiveness of anti-corruption policies: measuring the impact of anti-corruption policies on integrity in the public organizations of South Korea. Crime, Law and Social Change, 71(2), 217-239.

Palandi, J. F., Zusana, E., and Aminah, P. S. (2017). Anti-Corruption Education, Culture and Character Building: A Literature Review for Preventing and Controlling Corruption. The 5 Celt International Conference Proceeding: Contextualizing the Trajectory of Language and Arts in Contemporary Society, 9, 143.

Scott, I., and Gong, T. (2018). Corruption prevention and governance in Hong Kong. New York: Routledge.

Truex, R. (2011). Corruption, attitudes, and education: Survey evidence from Nepal. World Development, 39(7), 1133-1142.

투고일자 : 2022. 09. 09
수정일자 : 2022. 09. 24
게재일자 : 2022. 09. 30

<Abstract>

The Effectiveness of Anti-Corruption Education on Integrity in the Public organizations of South Korea

Min, Kyoung Sun

Anti-corruption education is widely accepted as an effective tool for curbing corruption. However, due to a lack of data, the current literature has not yet been able to comprehensively evaluate the effectiveness of anti-corruption education on corruption or integrity. Using the Integrity Assessment dataset and the Anti-Corruption Education dataset, this paper empirically tests the impact of anti-corruption education on the level of integrity amongst 51 public organizations in South Korea from 2014 to 2018. A fixed-effects model and time-lagged regression enable this study to capture the impacts of anti-corruption education on integrity. This paper finds that if ten percent of employees in a public organization receive anti-corruption education, then the level of comprehensive integrity within that organization will increase by about 0.8 points in the following year. This study also finds that in some conditions, anti-corruption programs have no effect on reducing corruption. These results suggest that anti-corruption education programs are indeed effective in fighting corruption. Public workers should participate in anti-corruption education programs regularly because the program's impact does not last long. Anti-corruption programs should be developed to increase external integrity and internal integrity.

Key words: Anti-Corruption, Corruption, Education, Integrity, South Korea