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INTERNAL AUDIT FUNCTION AND PUBLIC SERVICE QUALITY: EVIDENCE FROM INDONESIAN LOCAL GOVERNMENTS

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Abstract. This study investigates the role of local government internal audit function maturity and expertise in supervising local government public service quality. We use secondary data from all local governments in Indonesia for the 2016–2019 fiscal year that generates panel data with 1934 observations, analyzed with panel data regression. Local governments in Indonesia have a good average quality of public services. In most tests, we evidence the positive effect of local government internal audit function maturity and expertise on public service quality. Internal audit function maturity is the strongest contributor, while expertise supports the audit process to achieve higher public service quality. Our study provides implications for local government supervision that should be maximized through internal audit function to achieve good quality public services, by developing proper internal auditor programs of the Financial and Development Supervisory Agency (BPKP). The local government should also have a proper budget allocation for public service. The adoption of information technology should also be optimized in public service implementation and supervision. Finally, our study brings significant novelty to public service and internal audit literature in Indonesia by providing one of the first comprehensive studies covering all Indonesian local governments.

Keywords: local government, public service quality, internal audit function, maturity, expertise.

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Introduction

Many countries around the world have implemented decentralization, aiming at maximizing the potential of local governments following the concept of New Public Management (NPM) and New Public Service (NPS) (McLeod and Harun, 2014). In practice, most public services are delegated to local governments to deliver the best possible service to the public as a whole. This phenomenon is also typical to Indonesia that has experienced a set of fundamental changes in local governance since the 1998 reformation (Danar, Kusumasari and Muluk, 2020) with increasing democracy, reforming state financial management, and even implementing decentralization through regional autonomy (Furqan, Wardhani, Martani, and Setyaningrum, 2020). It is expected to create an accountable local government (Rakhman, 2019) and maximize public welfare. However, up until now, the quality of public service is still a significant issue (Furqan et al., 2020).

Public service in Indonesia still often invites public dissatisfaction, especially in local government (Dewi, 2020). Recent statistics from the Ombudsman of the Republic of Indonesia in 2020 show 11,087 complaints about public services organized by the government in 2019. The number of complaints is higher than in 2018, when there were 10,985 complaints. The main problem is that local governments become the highest subject contributing to low quality public services accounting for 41.03% of all cases. Furthermore, the compliance of local governments with the minimum standards of public services has not shown good statistics. According to the survey conducted by the Ombudsman of the Republic of Indonesia in 2019, there were 26.51% of district/city governments with low compliance, 40.47% with moderate compliance, and only 33.02% with high compliance scores. This can be seen as a severe issue, especially considering that regional autonomy has been implemented for almost two decades.

In addition to public service quality implementation issues in Indonesia, there is also a significant need for further research in literature. In fact, there is still a limited number of studies examining public service quality in the Indonesian context. Previous studies in the literature also have significant limitations that potentially reduce the generalizability of their findings (Furqan et al., 2020; Hadian, 2017; Hadiyati, 2014). The majority of previous studies are still limited in research data and observations (Hadiyati, 2014). Consequently, the results cannot be generalized because the specific characteristics of local governments may differ from one another. The issue of subjectivity still occurs due to the use of survey methods

in data collection (Hadian, 2017). Further, another study also contains endogeneity of the research model (Furqan et al., 2020), so the results may be less reliable. The issues above justify that further studies are necessary to comprehensively examine the quality of public services in Indonesia, especially its determinants.

Prior studies in the literature in many countries have developed the framework for improving the quality of public service by optimizing the role of local government supervision mechanisms. Scholars and experts worldwide have emphasized the role of local government internal auditing. One of the models developed is the maturity model based on the COSO framework. This framework is also adopted in Indonesia¹. Besides, scholars and experts also underline the importance of internal audit expertise. It is essential to have proper control over public governance and public service programs implementation to improve public services. The practice of public service delivery is also never apart from government programs, the use of financial resources, and specific procedures (Rahman and Fachri, 2016). Therefore, supervision becomes even more crucial to ensure the governance process (Muhtar, Sutaryo and Sriyanto, 2018). This study comprehensively examines the role of local government internal audit function as a determinant of public service quality in all Indonesian local governments. Thus, the study aims to answer the following research questions:

RQ1. *What is the impact of internal audit function maturity on the quality of public services provided by local government quality?*

RQ2. *How does internal audit function expertise affect the quality of public services provided by local government?*

Apart from the stated research questions, the characteristics of the local government are also considered as controlling factors that include financial, administrative, and demographic characteristics of local government. This research contributes to filling the gap the literature on public service by providing a comprehensive study that reveals the role of internal audit function in delivering good public service, both in terms of research observations and determining factors. This study also provides recommendations for the Indonesian local government in order to create local governments with high quality public services by optimizing the role of internal audit function. The remainder of the paper is structured as follows: literature review and hypotheses development; research method; results and discussion; and conclusion.

Literature review and hypotheses development

Agency relationship in Indonesian local government

As introduced by Jensen and Meckling (1976), agency theory explains the agency relationship between two parties (principal and agent) in a contract that leads to agency conflict. Lane (2005) and Araujo and Tejedro-Romero (2016) reveal that the concept of agency theory is also applicable in the government

¹ BPKP Head Regulation Number 4 of 2016 concerning Guidelines for Appraisal and Maturity Improvement Strategy of the Government Internal Control System; Institute of Internal Auditor: Internal Audit Process Maturity (2013).

context, with the population as the principal and the government as the agent. The application of this concept is given that the main characteristic of agency relationships is in the contractual transfer of authority and responsibility from the people to the executive. Halim and Abdullah (2006) explain that agency theory can be applied to the context of Indonesian local government. Within the agency relationship between the public and local government, internal audit function in local government plays a role as a supervision mechanism in order to ensure that local government properly practices good governance and thus is able to fulfill its obligations to the public, one of which is delivering good public services.

Public service delivery in Indonesia

The outcome of the agency contract is the agent's performance and accountability (Mäntysaari, 2010). In the local government context, one of the tangible manifestations directly perceived by the public is public service (Petraakaki, Hayes and Introna, 2009). In Indonesia, there are several measurements of public service implementation by local governments, one of which is the Local Government Minimum Service Standards (SPM) assessment. The assessment is officially conducted by the Ministry of Internal Affairs every year. The assessment is performed by a special committee whose members are from the Ministry of Internal Affairs, the Ministry of Empowerment of State Apparatus and Bureaucratic Reformation, the Ministry of Finance, the Ministry of the National Development Planning Agency, the Financial and Development Supervisory Agency, the National Civil Service Agency, the National Statistics Bureau, Cabinet Secretary and the Government Administration Agency, assisted by public administration experts. The evaluation of public service quality is conducted at the local government level that covers all local governments in Indonesia. It illustrates the achievement of local government public service delivery by evaluating the extent to which a local government has delivered public services to its people.

The assessment of service standards is classified into two aspects, primary public services and secondary public services. Primary public services include education, health, environment, public work and spatial planning, public housing, youth and sports, cooperation and small and medium enterprises, population and civil registration, human resources, food security, women's empowerment and child protection, population control and family planning, transportation, land affairs, public order and people safety, support function, community and village development, social services, culture, statistics, archival, and library. Secondary public services include marine and fisheries, agriculture, tourism, industry, trade, and transmigration. In practice, the committee conducts assessment of these categories based on the annual local government administration report. Each category is given a score ranging from 0 (low) to 4 (very high). The score is multiplied by the weight of the respective category. The final score will be ranging from 0 (low) to 4 (very high). This mechanism can be used to monitor and continuously improve, the performance of local governments in providing public service

Several studies have been conducted to answer questions about the quality of public services in Indonesia. Aritonang (2017) reveals that the adoption of e-government has not provided a significant contribution to increasing the quality of pub-

lic services, but the analysis lacks empirical findings. Hadian (2017) studies the effect of organizational culture and organizational commitment on public service quality, but the examination is limited only to one local government. Furqan et al. (2020) study the effect of external audit on public service quality and find that the follow-up on audit recommendations has positive effects on improving public service quality. Lewis (2019) also examines the effect of local government expenditure and legislative monitoring on public service quality. However, there are very limited studies investigating the role of the internal audit function in determining public service quality in the literature. Thus, investigating the role of local government internal audit function on public service quality becomes very interesting.

The internal audit function in Indonesian local government

Internal audit function has been paid special attention by the Indonesian government in financial management. Government Regulation Number 60 of 2008² regulates that the internal audit function in local government is performed by the local government inspectorate. In this context, the Financial and Development Supervisory Agency (BPKP) becomes the authorized institution responsible for monitoring local government inspectorate's performance and developing the competencies of internal auditors in Indonesia to achieve good governance. There are several focus areas in developing the competencies of internal auditors, one of which is maturity³ and expertise⁴.

The maturity level of local government internal audit function in Indonesia is developed based on the Institute of Internal Auditor (IIA) guidelines that adopts the COSO framework⁵. It illustrates how well the internal audit function has been established based on several aspects consisting of the control environment, risk assessment, control activities, information and communication, and monitoring (COSO, 2013). Internal audit function with higher maturity should have adequate policies, methodologies and procedures, human resources, information systems, and communication and reporting procedures (IIA, 2013). The assessment of the maturity level of the local government internal audit is based on the above aspects and is conducted annually by the Financial and Development Supervisory Agency (BPKP), and the result is classified into six levels: Level 0 (Absent); Level 1 (Initiated); Level 2 (Developing); Level 4 (Defined); Level 4 (Managed and Measured); and Level 5 (Optimum).

Indonesia also places a great emphasis on internal auditor expertise. Local government internal auditor expertise is classified into two levels, namely qualified auditors and expert auditors. The presence of expert internal auditors in local government is necessary to perform audit duties and provide recommendations for governance improvement. A qualified internal auditor can be promoted to the expert internal auditor when the specific criteria are met, consisting of education,

² Government Regulation Number 60 of 2008 concerning Government Internal Control System.

³ BPKP Head Regulation Number 4 of 2016 concerning Guidelines for Appraisal and Maturity Improvement Strategy of the Government Internal Control System.

⁴ BPKP Head Regulation Number 15 of 2014 concerning the Amendments to BPKP Head Regulation Number PER-1274/K/JF/2010 concerning the Education, Training and International Auditor Certifications.

⁵ Institute of Internal Auditor: Internal Audit Process Maturity (2013).

certification, and working experience. Therefore, the Financial and Development Supervisory Agency (BPKP) continuously provides local government internal auditors with adequate education, training and international auditor certifications to improve their expertise.

Internal audit function maturity and public service quality

Based on agency theory, an adequate supervision mechanism is essential to ensure that local government executives as principals, implement government programs appropriately according to the public interest to deliver high-quality public services (Lane, 2005). Thus, in order to provide proper governance supervision, internal audit maturity is essential in the local government context to reduce agency problems, specifically to ensure that the local government performs its role well in delivering public services. Van Looy et al. (2011) state that the general concept of maturity aims to systematically improve the organizational process to further align the organization to achieve its performance goal over time, that is in line with the concept of New Public Management (NPM). In practice, internal audit functions with higher levels of maturity can provide more structured and consistent monitoring of local government activities (Bechara and Kapoor, 2012; D'Onza, Selim, Melville and Allegrini, 2015). Further, the supervision is also conducted more effectively and efficiently thanks to better information technology implementation (Lenz, Sarens, and D'Silva, 2014). In addition, a higher level of maturity enables a comprehensive internal audit (DeSimone, D'Onza and Sarens, 2019) so that local government programs are well-managed in terms of the distribution of financial resources and the achievement of program objectives. Under these conditions, the local government will be able to implement its programs for the benefit of the population. Therefore, local governments will be able to achieve higher quality of public services. Therefore, we hypothesize that:

H₁. Internal audit function maturity positively affects public service quality.

Internal audit function expertise and public service quality

Auditor expertise is a crucial attribute for internal audit function to improve the quality of its supervision, to prevent potential misconduct, and reduce agency problems. The expertise of the internal audit function is evidenced to play an essential role in bringing positive value to organizational management performance and further create proper governance in a government institution thanks to its ability to provide recommendations (Enofe, Mgbame, Osa-Erhabor and Ehirobo, 2013). Several studies demonstrate the positive implications of internal audit expertise. It plays a significant role in achieving the goals of New Public Management (NPM) and New Public Service (NPS) by improving governance. Baltaci and Yilmaz (2006) argue that internal audit also helps supervise the service delivery effectiveness. Thus, government programs in delivering public services will be implemented following the established procedures and existing regulations. In addition, Moreno-Enguix, Gras-Gil, and Henández-Fernández (2019) find that a local government with an adequate internal audit function has better performance in terms of accountability and transparency. Aikins (2011) also finds that an effective internal audit as part of the internal control system has a positive impact on the financial performance of a gov-

ernment institution. Meanwhile, Suharyanto et al. (2018) provide evidence of the positive impact of internal auditors on local government performance in Indonesia. Finally, we formulate the following hypothesis.

H₂. Internal audit function expertise positively affects public service quality.

Research method

Population, samples, and research data

The population of our study is all local governments in Indonesia in the 2016–2019 fiscal period, while the samples are determined by the purposive sampling method. We use secondary data obtained from the authorized institution that consists of: (a) the results of the evaluation of local government public service delivery from the Ministry of Internal Affairs; (b) the result of the assessment of the maturity level of local government internal audit function and total expert auditor from the Financial and Development Supervisory Agency (BPKP); (c) local government financial data from the Supreme Audit Board; (d) local government characteristics from local government website; and (d) population and human development index (HDI) obtained from the Indonesia Statistics Bureau.

Variable measurement

We investigate the quality of local government public service delivery, classified into (a) aggregate public service, (b) primary public service, and (c) secondary public service that are dependent variables. The independent variables are the maturity and expertise of local government internal audit function. We also use control variables, namely local government financial characteristics, demographic characteristics, and administrative characteristics. The details of the variables, along with the measurements and sources, are presented in Table 1.

Table 1

Research Variables

Variable	Symbol	Measurement	Data source	References
<i>Dependent</i>				
Aggregate public service quality	AGGREGATE _{it}	Local government aggregate public service quality score by Ministry of Internal Affairs	Ministry of Internal Affairs	Furqan et al. (2020)
Primary public service quality	PRIMARY _{it}	Local government primary public service quality score by Ministry of Internal Affairs	Ministry of Internal Affairs	Furqan et al. (2020)
Secondary public service quality	SECONDARY _{it}	Local government secondary public service quality score by Ministry of Internal Affairs	Ministry of Internal Affairs	Furqan et al. (2020)

Variable	Symbol	Measurement	Data source	References
Independent				
Local government internal auditor maturity	IAFMAT _{it}	The score of local government internal audit maturity assessment	Financial and Development Supervisory Agency (BPKP)	Sutaryo and Sinaga (2018), Yasin et al. (2019)
Local government internal auditor expertise	IAFEXPERT _{it}	Percentage of expert auditor in local government internal audit function	Financial and Development Supervisory Agency (BPKP)	Emmanuel and Usman (2015), Syahdina (2017)
Control				
Local government assets	ASSET _{it}	Logarithm (Log) value of local government total asset	Local government financial statement	Harumiati and Payamta (2014), Sutaryo and Sinaga (2018)
Local government revenue	REVENUE _{it}	Logarithm (Log) value of local government total revenue	Local government financial statement	Harumiati and Payamta, (2014), Utama et al. (2019)
Local government expenditure	EXPEND _{it}	Logarithm (Log) value of local government total expenditure	Local government financial statement	Harumiati and Payamta (2014), Sutaryo and Sinaga (2018), Utama et al. (2019)
Local government complexity	LGCOMP _{it}	Total number of local government's working units	Local government financial statement	Adiputra, Utama and Rossieta (2018), Maulana and Bestari (2015)
Local government type	LGTYPE _{it}	Dummy variable: 1 for city local governments; 0 district local governments	Ministry of Internal Affairs	Arifin, Trinugroho, Prabowo, Sutaryo and Muhtar (2015), Rakhman, (2019)
Local government population	LGPOP _{it}	Natural logarithm (Ln) value of local government populations	Indonesia Statistics Bureau	Guillamón, Ríos, Gesuele, and Metallo (2016), Sutaryo, Rossa, Aryani, Rahmawati, and Muhtar (2018)
Local government human development	LGHDI _{it}	Local government Human development index (HDI)	Indonesia Statistics Bureau	Martani and Pramudya (2017), Saputra, Ardila, Siddi and Sutopo (2018)

Source: Compiled by authors (- hereinafter, unless otherwise noted).

Data Analysis

The initial data analysis step starts with descriptive statistics and correlation analysis to obtain a general description of the research data and the correlation of variables. The main analysis for hypotheses testing is performed with panel data regression analysis. The following are the equations of our regression model:

Equation 1:

$$\begin{aligned} \text{AGGREGATE}_{it} = & \alpha + \beta_1 \text{IAFMAT}_{it-1} + \beta_2 \text{IAFEXPERT}_{it} + \beta_3 \text{ASSET}_{it} + \\ & \beta_4 \text{REVENUE}_{it} + \beta_5 \text{EXPEND}_{it} + \beta_6 \text{LGCOM}_{it} + \\ & \beta_7 \text{LGTYPE}_{it} + \beta_8 \text{LGPOP}_{it} + \beta_9 \text{LGHDI}_{it} + \varepsilon_i \end{aligned}$$

Equation 2:

$$\begin{aligned} \text{PRIMARY}_{it} = & \alpha + \beta_1 \text{IAFMAT}_{it-1} + \beta_2 \text{IAFEXPERT}_{it} + \beta_3 \text{ASSET}_{it} + \\ & \beta_4 \text{REVENUE}_{it} + \beta_5 \text{EXPEND}_{it} + \beta_6 \text{LGCOM}_{it} + \\ & \beta_7 \text{LGTYPE}_{it} + \beta_8 \text{LGPOP}_{it} + \beta_9 \text{LGHDI}_{it} + \varepsilon_i \end{aligned}$$

Equation 3:

$$\begin{aligned} \text{SECONDARY}_{it} = & \alpha + \beta_1 \text{IAFMAT}_{it-1} + \beta_2 \text{IAFEXPERT}_{it} + \beta_3 \text{ASSET}_{it} + \\ & \beta_4 \text{REVENUE}_{it} + \beta_5 \text{EXPEND}_{it} + \beta_6 \text{LGCOM}_{it} + \\ & \beta_7 \text{LGTYPE}_{it} + \beta_8 \text{LGPOP}_{it} + \beta_9 \text{LGHDI}_{it} + \varepsilon_i \end{aligned}$$

Information:

AGGREGATE _{it}	: Local government aggregate public service quality
PRIMARY _{it}	: Local government primary public service quality
SECONDARY _{it}	: Local government secondary public service quality
IAFMAT _{it}	: Local government internal audit function maturity
IAFEXPERT _{it}	: Local government internal audit function expertise
ASSET _{it}	: Local government asset
REVENUE _{it}	: Local government revenue
EXPEND _{it}	: Local government expenditure
LGCOM _{it}	: Local government complexity
LGTYPE _{it}	: Local government type
LGPOP _{it}	: Local government population
LGHDI _{it}	: Local government human development
α	: Constant
β ₁ – β ₉	: Regression coefficient
ε _i	: Standard error

Results and discussion

Descriptive statistics and correlation

We conducted a descriptive analysis to describe better our research variables. The results are presented in Table 2. We found that the aggregate public service quality score in Indonesian local governments is at 2.716. This finding

means that local governments in Indonesia, in aggregate, are able to reach high quality of public services. The maximum value is at 4 and the minimum value at 0.207, while the standard deviation is 0.5. As for the primary public service quality, the average value is at 2.79, while secondary public service quality is averaging at 2.39. Thus, the achievement of local governments in Indonesia is also at the high level, for both primary and secondary public services.

Table 2

Descriptive statistics

<i>Panel A: Continuous variables</i>					
Variable	Obs	Mean	Std.Dev.	Min	Max
AGGREGATE _{it}	1891	2.716	0.5	0.207	4
PRIMARY _{it}	1934	2.79	0.528	0	3.941
SECONDARY _{it}	1899	2.39	0.56	0	3.842
IAFMAT _{it}	2032	2.207	0.7	0.153	3.991
IAFEXPERT _{it}	2032	0.722	0.171	0	1
ASSET _{it}	2032	12.381	0.268	11.483	13.631
REVENUE _{it}	2032	12.114	0.22	10.633	12.912
EXPEND _{it}	2032	12.059	0.215	11.116	12.912
LGCOMP _{it}	2032	51.498	21.312	22	209
LGPOP _{it}	2032	12.619	0.998	9.523	15.266
LGHDI _{it}	2032	66.374	7.435	21.12	86.11
<i>Panel B: Dummy variables</i>					
Variable	Obs	Dummy 0		Dummy 1	
		Frequency	Percentage	Frequency	Percentage
LGTYPE _{it}	2032	1660	81.7%	372	18.3%

Further analysis was conducted to investigate the trend of local governments' performance in providing good quality of public services over the years. The result is presented in Figure 1. We discovered that the quality of public services of Indonesian local governments in 2017–2019 is at the high level. Interestingly, the performance in 2016 was higher than in 2017 and 2018 for AGGREGATE_{it} and PRIMARY_{it}, as there was a considerable decrease from 2016 to 2017. Meanwhile, the average of SECONDARY_{it} increased from 2016 to 2017 with a noticeable improvement. In 2018, the achievement did not significantly change from the 2017. Fortunately, the quality of public services improved significantly in 2019 for both AGGREGATE_{it}, PRIMARY_{it}, and SECONDARY_{it}.

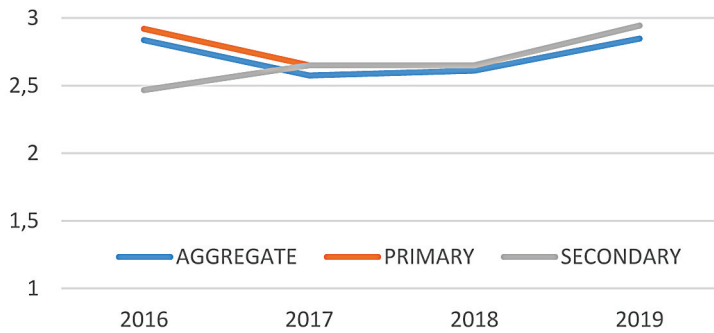


Figure 1. Quality of public services in Indonesian local governments, 2016–2019

Source: Processed data, Ministry of Internal Affairs of the Republic of Indonesia.

The data on the quality of public services in this research is officially obtained from the Ministry of Internal Affairs. A joint committee conducted the assessment based on the verified accomplishment stated by the local government in the local government report. Therefore, objectivity is guaranteed. In addition, the measurement has also been used in previous studies, such as Furqan et al. (2020). Nevertheless, the assessment of public service quality is only conducted at the local government level. Thus, there is not yet an assessment of public service quality at the national level that can be used to compare. Alternatively, we used international data from TheGlobalEconomy.com public service index to compare the public service quality in the South East Asian region. We found that the Indonesian public service index published by TheGlobalEconomy.com is at a medium level throughout the research period. Performance also improved slightly from 6.1 to 5.3 over 2016–2019. In South-East Asia, Indonesia ranks only 6th in public service over 2016–2019, behind Singapore, Brunei, Malaysia, Thailand, and Vietnam.

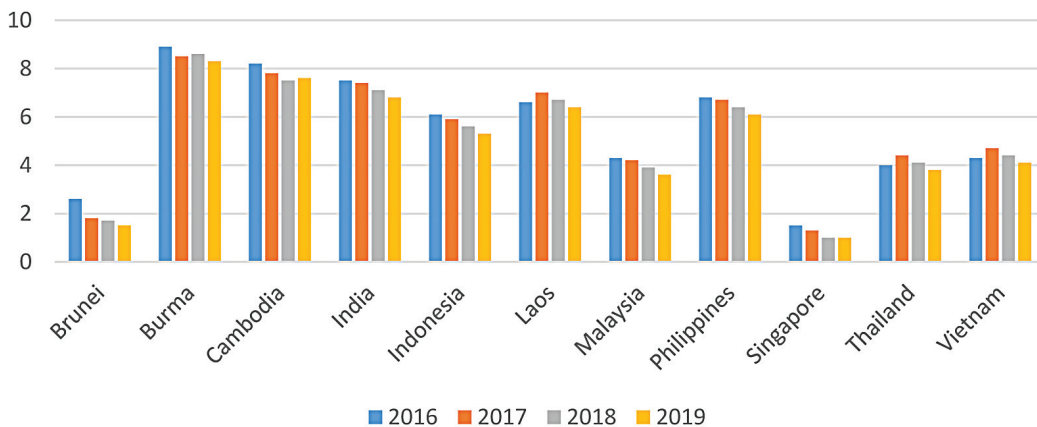


Figure 2. Comparison of public service index in South East Asian Countries, 2016–2019

Notes: 0 = high; 10 = low.

Source: Processed data, TheGolbalEconomy.com.

As for the independent variables, local government internal audit function maturity ($IAFMAT_{it}$) averages at 2.207, indicating that the average maturity is at level 2 (developing). The highest value for internal audit function maturity is 3.991, which nearly reaches level 4 (managed and measured), while the lowest value is 0.153. The average value for the internal audit function expertise ($IAFEXPERT_{it}$) is 0.722, which means that the average composition of the internal audit function in Indonesian local governments is 72.2% of expert auditors and 27.8% of qualified auditors. The highest value is 1, while the lowest is 0.

Local government asset ($ASSET_{it}$) is averaging at 12.381 with an actual value of 2,404,362,800,007 rupiahs. The mean value of local government revenue ($REVENUE_{it}$) is 12.114 with an actual value of 1,300,169,578,033 rupiahs, while local government expenditure ($EXPEND_{it}$) is 12.059 with an actual value of 1,145,512,941,446 rupiahs. Local government complexity ($LGCOMP_{it}$) is averaging 51 working units. The most complex local government has 209 working units, while the least complex has only 22 working units. The observations of our study, in terms of type ($LGTYPE_{it}$), consist of 1660 (81.7%) district local government observations, and the rest is 372 (18.3%) city local government observations. As for the local government population ($LGPOP_{it}$), the average is 12.619, with an actual value of 302,247. Finally, the average human development index ($LGHDI_{it}$) is 66.374, with a maximum value of 86.11 and a minimum value of 21.12. We also verified the correlation between our research variables, presented in Table 3.

Panel data regression analysis

The hypotheses testing is performed with the panel data regression analysis. The results show that the random effect is the best estimation for all research models. Our findings demonstrate that the $IAFMAT_{it}$ positively affects the quality of local government public services in the aggregate, primary, and secondary public services. Thus, the results confirm the hypotheses. $IAFEXPERT_{it}$ shows an insignificant effect on aggregate and primary quality of public services. The result only appears to be significant when it comes to secondary public service quality. The result of the panel data regression analysis is presented in Table 4.

We further conducted a subsample analysis to figure out whether the same findings would apply in a different type of local government. The research observations based on the type of local government are classified into district and city local governments. The results are presented in Table 5.

The regression results when examining district local governments show relatively similar findings. $IAFMAT_{it}$ shows consistent findings with a significant positive effect both in the aggregate, primary, and secondary quality of public services. $IAFEXPERT_{it}$ shows a positive effect on aggregate and secondary quality of public services but it is insignificant for primary public services. As for the examination in city local governments, we only find a positive impact of $IAFMAT_{it}$ on aggregate and primary quality of public services. Meanwhile, $IAFEXPERT_{it}$ shows no significant effect on all dimensions of public services.

Table 3

Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) AGGREGATEit	1.000											
(2) PRIMARYit	0.347*** 0.000	1.000										
(3) SECONDARYit	0.243*** 0.000	0.369*** 0.000	1.000									
(4) IAFMATit	0.264*** 0.000	0.266*** 0.000	0.163*** 0.000	1.000								
(5) IAFEXPERTit	0.116*** 0.000	0.113*** 0.000	0.092*** 0.000	0.130*** 0.000	1.000							
(6) ASSETit	0.193*** 0.000	0.186*** 0.000	0.176*** 0.000	0.207*** 0.000	0.151*** 0.000	1.000						
(7) REVENUEit	0.211*** 0.000	0.204*** 0.000	0.196*** 0.000	0.199*** 0.000	0.179*** 0.000	0.373*** 0.000	1.000					
(8) EXPENDit	0.247*** 0.000	0.240*** 0.000	0.222*** 0.000	0.214*** 0.000	0.205*** 0.000	0.816*** 0.000	0.435*** 0.000	1.000				
(9) LGCOMPit	0.067*** 0.004	0.053** 0.020	0.054** 0.015	0.075*** 0.000	0.030 0.287	0.143*** 0.000	0.213*** 0.000	0.212*** 0.000	1.000			
(10) LGTYPEit	0.124*** 0.000	0.141*** 0.000	0.026 0.301	0.167*** 0.000	0.115*** 0.000	0.149*** 0.000	-0.087** 0.015	0.007*** 0.000	-0.118*** 0.000	1.000		
(11) LGPOPit	0.326*** 0.000	0.313*** 0.000	0.299*** 0.000	0.211*** 0.000	0.155*** 0.000	0.388*** 0.000	0.395*** 0.000	0.314*** 0.000	0.256*** 0.000	-0.016 0.516	1.000	
(12) LGHDIt	0.423*** 0.000	0.428*** 0.000	0.269*** 0.000	0.271*** 0.000	0.083*** 0.000	0.316*** 0.000	0.195*** 0.000	0.271*** 0.000	0.025 0.189	0.352*** 0.000	0.329 0.000	1.000

Notes: *** significant at 0.01 level; ** significant at 0.05 level, * significant at 0.1 level.

Table 4

Panel data regression result

Dependent:	AGGREGATE _{it}	PRIMARY _{it}	SECONDARY _{it}
IAFMAT _{it}	0.0820***	0.0832***	0.0585***
	(0.0167)	(0.0176)	(0.0196)
IAFEXPERT _{it}	0.102	0.0733	0.151*
	(0.0671)	(0.0706)	(0.0788)
ASSET _{it}	-0.125	-0.176*	0.108
	(0.0865)	(0.0912)	(0.0965)
REVENUE _{it}	-0.148	-0.123	-0.361**
	(0.140)	(0.148)	(0.173)
EXPEND _{it}	0.188	0.245	-0.00178
	(0.166)	(0.174)	(0.202)
LGCOMP _{it}	0.000222	-0.000008	-0.000626
	(0.000564)	(0.000593)	(0.000650)
LGTYPE _{it}	-0.141***	-0.117**	-0.210***
	(0.0452)	(0.0478)	(0.0470)
LGPOP _{it}	0.0968***	0.0884***	0.162***
	(0.0241)	(0.0253)	(0.0266)
LGHDI _{it}	0.0266***	0.0277***	0.0183***
	(0.00244)	(0.00259)	(0.00255)
Constant	0.550	0.331	2.008*
	(1.044)	(1.090)	(1.162)
Observations	1,891	1,934	1,899
R-squared	0.248	0.238	0.141
Chi-square	327.248	306.826	223.155
Prob > chi2	0.000	0.000	0.000

Notes: *** significant at 0.01 level; ** significant at 0.05 level, * significant at 0.1 level.

Table 5

Results of subsample analysis

Dependent:	AGGREGATE _{it}	PRIMARY _{it}	SECONDARY _{it}
<i>Panel A. District local governments</i>			
IAFMAT _{it}	0.0758***	0.0794***	0.0624***
	(0.0194)	(0.0200)	(0.0224)

Dependent:	AGGREGATE_{it}	PRIMARY_{it}	SECONDARY_{it}
<i>Panel A. District local governments</i>			
IAFEXPERT _{it}	0.127*	0.0981	0.185**
	(0.0733)	(0.0761)	(0.0850)
ASSET _{it}	-0.212*	-0.258**	-0.00628
	(0.111)	(0.116)	(0.122)
REVENUE _{it}	-0.186	-0.157	-0.389**
	(0.148)	(0.154)	(0.181)
EXPEND _{it}	0.288	0.307	0.149
	(0.193)	(0.200)	(0.230)
LGCOMP _{it}	0.000146	0.000159	-0.000662
	(0.000634)	(0.000658)	(0.000733)
LGPOP _{it}	0.102***	0.0963***	0.156***
	(0.0270)	(0.0281)	(0.0294)
LGHDI _{it}	0.0283***	0.0291***	0.0206***
	(0.00266)	(0.00279)	(0.00273)
Constant	0.700	0.800	1.852
	(1.240)	(1.282)	(1.346)
Observations	1,535	1,567	1,542
R-squared	0.261	0.249	0.161
Chi-square	276.501	258.203	209.101
Prob > chi2	0.000	0.000	0.000
<i>Panel B: City local government</i>			
IAFMAT _{it}	0.0949***	0.106***	0.0512
	(0.0307)	(0.0335)	(0.0381)
IAFEXPERT _{it}	0.199	0.218	0.0860
	(0.170)	(0.184)	(0.212)
ASSET _{it}	0.149	0.126	0.480***
	(0.135)	(0.148)	(0.164)
REVENUE _{it}	0.594	0.564	0.220
	(0.475)	(0.492)	(0.605)
EXPEND _{it}	-0.264	-0.118	-0.569
	(0.388)	(0.410)	(0.503)
LGCOMP _{it}	0.000014	0.000266	0.000347
	(0.00107)	(0.00122)	(0.00129)

Dependent:	AGGREGATE _{it}	PRIMARY _{it}	SECONDARY _{it}
<i>Panel B: City local government</i>			
LGPOP _{it}	-0.0458	-0.0783	0.0646
	(0.0569)	(0.0614)	(0.0696)
LGHDI _{it}	0.00441	0.00502	-0.0102
	(0.00631)	(0.00719)	(0.00741)
Constant	-3.150	-3.828*	0.401
	(2.056)	(2.165)	(2.534)
Observations	356	366	356
R-squared	0.153	0.148	0.099
Chi-square	45.224	39.153	33.214
Prob > chi2	0.000	0.000	0.000

Notes: *** significant at 0.01 level; ** significant at 0.05 level, * significant at 0.1 level.

Source: Compiled by the authors.

Discussion on empirical findings

Overall, we find that IAFMAT_{it} positively affects the quality of public services provided by local government. A higher level of maturity of the internal audit function allows local governments to more fully monitor the implementation of local government programs. In line with Abdolmohammadi, D'Onza, and Sarens (2016), IAFMAT_{it} plays a great role in improving audit quality. A higher IAFMAT_{it} provides an internal audit function with better audit procedures (DeSimone et al., 2019). Internal audit function with a higher IAFMAT_{it} is also more likely to be equipped with a more advanced audit system thanks to having better information technology adoption (Smidt, Ahmi, Steenkamp, van der Nest, and Lubbe, 2019). Internal audit function can also maximize e-government by the local government to ensure that public accountability is also fulfilled (Aritonang, 2017). Therefore, the audit process will be more consistent, precise, and comprehensive (Sarens, Allegrini, D'Onza, and Melville, 2011). With better audit quality, the local government is able to meet the specified quality of public services.

We demonstrated that the effect IAFEXPERT_{it} appears to be significant in the secondary quality of public services. Considering the significant effect of IAFMAT_{it} in all tests, the role of IAFEXPERT_{it} should be optimized for improving the supervision of local government public service delivery. By having expert auditors with a higher level of competency, the supervision of local government programs implementation in delivering public services will be more detailed (Huefner, 2010). In addition, higher IAFEXPERT_{it} indicated a significant contribution in improving local government performance (Ma'ayan and Carmeli, 2016), information transparency (Pamungkas, 2018), and local government's commitment to the public (Lewis, 2019). Therefore, higher

IAFEXPERT_{it} increases the supervision of public service delivery to a greater level and reaches secondary public services delivery. From these results it can be concluded that IAFMAT_{it} and IAFEXPERT_{it} variables should be continuously improved to enhance the supervision of public service delivery. Public service should be reformed, re-invented, and modernized repeatedly over time (Aritonang, 2017).

Our empirical results regarding the variables of the internal audit function imply that internal audit function supervision is essential in decentralization in Indonesia in managing the agency problem that exist in the relationship between the public and local government executives. Indeed, the role of local government in delivering high-quality public services must be continuously monitored as a part of public accountability. In this context, the internal audit function supports local government in achieving the goals of New Public Management (NPM) and New Public Service (NPS). This can be achieved through continuous supervision to improve the effectiveness, efficiency, and compliance at the local government level.

Regarding our control variables, we overall found no strong effect of the financial characteristics of local governments, both ASSET_{it}, REVENUE_{it}, and EXPEND_{it} on the quality of public services. Local governments in Indonesia have not fully benefited from the potential of their assets and thus, the assets have not been optimized for public service quality. As for the revenue, many local governments in Indonesia are still dependent on the transfers from central government, so the effect is not significant. The insignificant effect of local government expenditure indicates that the capital expenditure budget that focuses on public service needs to be increased and wellimplemented (Lewis, 2019). These findings emphasize that the role of the internal audit function needs to be improved continuously to make sure that the financial management and budget implementation are conducted properly. It is important to realize desirable outcomes, one of which is by achieving higher public service quality.

Our findings also demonstrate the insignificant effect of LGCOMP_{it}. The LGCOMP_{it} depends on the size, population, financial, culture, and other local factors that may apply differently in different regions. We discover that LGPOP_{it} and LGHDI_{it} provide a positive effect on public service quality. Local governments with larger populations tend to be more developed than those with lower populations (Dalimunthe, Fadli, and Muda, 2015). The public service quality can be expected to be higher. Higher LGHDI_{it} also indicates that local government has better achievement in education, health, and economy so that it results in higher public service quality achievement (Setyaningrum, Wardhani, and Syakhroza, 2017). Therefore, the quality of public services in local governments with a larger population and better human development can be expected to be higher.

Robustness check

We conducted a robustness test to check the consistency of our findings. We employed a variable proxy change of our dependent variables to perform the robustness check. The public service quality measurement is changed into

dummy variable: 1 for local governments of which the quality of public services level is higher than average; and 0 for local governments of which public service quality level is below average. We evidence consistent results for the IAFMAT effect on all public service quality measures. The effect of IAFEXPERT shows a consistent coefficient but a different significance. The results are presented in Table 6.

Table 6

Robustness test using logistic regression

VARIABLES	AGGREGATE_D	PRIMARY_D	SECONDARY_D
IAFMAT	0.417*** (0.0757)	0.405*** (0.0742)	0.228*** (0.0730)
IAFEXPERT	0.840*** (0.301)	0.717** (0.296)	0.363 (0.290)
ASSET	-0.152 (0.357)	-0.0826 (0.350)	0.219 (0.347)
REVENUE	-0.589 (0.670)	-0.559 (0.668)	-0.678 (0.698)
EXPEND	1.423* (0.795)	0.746 (0.782)	0.776 (0.794)
LGCOMP	-0.00186 (0.00246)	-0.000701 (0.00244)	-0.00317 (0.00235)
LGTYPE	-0.170 (0.171)	-0.0764 (0.169)	-0.505*** (0.162)
LGPOP	0.0669*** (0.0104)	0.0698*** (0.0104)	0.0327*** (0.00916)
LGHDI	0.211** (0.0982)	0.230** (0.0972)	0.391*** (0.0963)
Constant	-16.64*** (4.383)	-10.03** (4.254)	-11.36*** (4.269)
Observations	1,891	1,934	1,899
R-squared	0.097	0.088	0.073
Chi-square	254.784	236.532	221.312
Prob > chi2	0.000	0.000	0.000

Notes: *** significant at 0.01 level; ** significant at 0.05 level, * significant at 0.1 level.

The robustness check is also conducted for the subsample analysis, as presented in Table 7. The result is consistent in IAFMAT for the analysis in district local governments while the result varies a little in the city local government analysis with insignificant effect on the quality of secondary public services. The result of robustness analysis of the IAFEXPERT variable in district local government shows a consistent effect on the overall quality of public services with different effect significance on the primary and secondary quality of public services. Moreover, IAFEXPERT shows an insignificant effect on all measures of public service quality in the city local government analysis.

Table 7

Robustness test in subsample analysis

VARIABLES	AGGREGATE_D	PRIMARY_D	SECONDARY_D
<i>Panel A: District local governments</i>			
IAFMAT	0.400***	0.382***	0.292***
	(0.0850)	(0.0830)	(0.0827)
IAFEXPERT	1.007***	0.780**	0.480
	(0.320)	(0.313)	(0.309)
ASSET	-0.896**	-0.636	-0.374
	(0.440)	(0.428)	(0.432)
REVENUE	-0.729	-0.662	-0.855
	(0.706)	(0.703)	(0.744)
EXPEND	2.102**	1.267	1.708*
	(0.896)	(0.875)	(0.894)
LGCOMP	-0.00155	-0.00136	-0.00380
	(0.00274)	(0.00269)	(0.00267)
LGPOP	0.0731***	0.0730***	0.0405***
	(0.0113)	(0.0111)	(0.00992)
LGHDI	0.191*	0.239**	0.318***
	(0.107)	(0.106)	(0.104)
Constant	-14.19***	-8.501*	-12.89***
	(4.871)	(4.747)	(4.814)
Observations	1,535	1,567	1,542
R-squared	0.092	0.079	0.067
Chi-square	194.656	172.121	143.784
Prob > chi2	0.000	0.000	0.000

VARIABLES	AGGREGATE_D	PRIMARY_D	SECONDARY_D
<i>Panel B: City local governments</i>			
IAFMAT	0.542***	0.488***	0.0192
	(0.176)	(0.172)	(0.165)
IAFEXPERT	-0.827	0.241	-0.712
	(1.044)	(0.995)	(0.953)
ASSET	1.620**	1.428*	1.663**
	(0.790)	(0.746)	(0.728)
REVENUE	3.452	2.111	2.320
	(2.841)	(2.817)	(2.869)
EXPEND	-1.900	-1.596	-3.365
	(2.420)	(2.513)	(2.538)
LGCOMP	-0.00755	-0.000936	-0.00132
	(0.00573)	(0.00624)	(0.00525)
LGPOP	0.0196	0.0402	-0.0309
	(0.0322)	(0.0321)	(0.0300)
LGHDI	-0.208	-0.256	0.409
	(0.309)	(0.299)	(0.298)
Constant	-37.49***	-24.38**	-10.32
	(12.60)	(11.37)	(11.15)
Observations	356	367	357
R-squared	0.119	0.086	0.072
Chi-square	55.644	39.860	35.793
Prob > chi2	0.000	0.000	0.000

Notes: *** significant at 0.01 level; ** significant at 0.05 level, * significant at 0.1 level.

Conclusion

This study examines the role of the maturity and expertise of the internal audit function in supervising the quality of local government public services. We discovered that the quality of Indonesian local government public services was at the high level in 2016–2019 with no significant improvement during the observation period. Our result generally showed that internal audit function maturity substantially contributed to improving the quality of public services in Indonesian local governments. Further, the expertise of local government internal auditors significantly supported the internal auditing process to raise the

quality of public services to a higher level. Our findings bring several implications for public service delivery by local government in Indonesia. Firstly, local government should maximize the role of internal audit function supervision to bring a significant improvement on public service quality. Thus, the Financial and Development Supervisory Agency (BPKP) should continuously develop the maturity and expertise of internal audit function in local governments with various programs for a better internal audit process. The introduction of technology can lead to significant improvements through better implementation of e-government. The local government should also provide a proper budget for public service delivery to show the commitment to bringing good public service to the people. Finally, local government should improve New Public Management (NPM) and New Public Service (NPS) goals through more effective and efficient bureaucracy and good quality of public services.

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