The Importance of Digital Supervision Infrastructure: Fraud Prevention in Village Governments

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This study aimed to develop a digital supervision infrastructure framework for preventing fraud in village government. Village government manages and is responsible for village funds with the assistance of the village facilitator and supervisor. Village government supervision infrastructure includes district inspectorate auditor, members of village representative bodies, village facilitator, and village government supervision and governance system. This study collected primary data by distributing questionnaires to 156 respondents. The analytical method of this research used Structural Equation Modelling (SEM) with Warp PLS 6.0. The results of this study showed that the function of village supervision and governance system has a positive influence on fraud prevention. However, human resources competency has no effect on the prevention of fraud. The results of this study also showed that information technology utilisation plays a role in moderating human resource competence and village governance on fraud prevention. However, information technology utilisation could not moderate the effect of village government supervision on fraud prevention. The implication of this study is the importance of fraud prevention in village government by using digital/IT supervision infrastructure.

Key words: Supervision infrastructure, human resource competence, digitalisation, fraud prevention.
Introduction

The disbursement of village funds from the State Budget continues to increase every year. Village funds which are worth trillions of rupiah for village governments need good governance in order to have accountability and be protected from fraud. Village governance and effectiveness contribute to the success of national government realisation. Law Number 6 of 2014 about villages has placed villages as a sub-system of the national government system and the frontline of government administration. The ideal village as aspired to in law is a strong, advanced, independent and democratic village. The village should develop and empower the village community. Village community empowerment prioritises the realisation of community as the subject of development and legally manages village assets and funds.

The use of village funds is regulated in Government Regulation PP No. 60 of 2014 and the regulation in Ministry of Villages, Development of Disadvantaged and Transmigration No. 11 year 2019. It aims to provide maximum benefits to the villagers and restricts the misuse of village funds. According to a report, corruption cases in villages have increased annually. The total cases in 2015-2017 extended to 154 cases. Meanwhile the total shortfalls were Rp 47.56 billion (Indonesian Corruption Watch, 2018).

According to KPMG International (2016), fraud is influenced by opportunities. In order to prevent opportunities, effective internal control is needed. This internal control will result in information and reports which are free of misstatements, as stated in Delfi el al. (2014). Preventing fraud in village government is greatly influenced by the role and support of the village government. The function of village government supervision is very significant in supervising the activities of the village government. The higher the supervision, the greater the prevention of fraud. Otherwise, with weaker the supervision, the prevention of fraud will decrease, thus fraud cannot be minimised. This is in line with Wijayanti, et. al. (2018); Wida, et. al. (2017); Widiyarta (2017); Atmadja and Saputra (2015); Shanmugam, et. al. (2012), who stated that the role of village government supervision influences fraud prevention. However, this is not in line with the research by Semendawai et al., 2011 (Rustiarini & Sunarsih, 2017), which shows village government supervision does not influence fraud prevention. Increasing the function of village government supervisors and internal control systems is considered to be the fittest way for fraud prevention (Mangala, 2017; Roberts, 2018).

On the other hand, the competence of human resources is also an important element in an organisation. Human resources must be managed as well as possible in order to contribute optimally to the achievement of organisational goals. This is consistent with the statement of Spencer & Spencer (1993). It was stated that competence is a basic characteristic of an individual that is related to the results obtained at work. Adequate human resources competence in terms of quality and quantity will increase the report’s accountability at the village financial
level. As the result, it helps to prevent fraud (Grundy, Collier, & Spaul, 2012). The more competent human resources of the village government are, the more fraud will be minimised. In contrast, the more incompetent human resources of the village government are, the more fraud will be committed. The research of Laksmi and Sujana (2019); Saputra, et. al. (2019), Ardiyanti and Supriadi (2018); Ariastini, et. al. (2017); Aini, et. al. (2017); Grundy, Collier, & Spaul, (2012), show that human resource competence influences fraud prevention. However, this is in contrary to the research conducted by Indriani, et. al. (2016), which shows that human resource competence does not influence fraud prevention.

In addition, village governance also plays a role in preventing fraud. Good village governance will increase fraud prevention, so that fraud can be minimised. It is because village governance functions as a guide for village government. Otherwise, bad village governance will decrease fraud prevention, so that the case of fraud will increase as well. This is in line with Larasati and Surtikanti (2019); Rowa and Arthana (2019); Sanusi, et. al. (2019); Larasati, et. al. (2017); Oktavia, et. al. (2017); Mahrani & Soewarno, (2018); and Beawiharta (2014). They argued that village governance affects fraud prevention. However, the research of Oktavia K.G. (2015) and Wiliyanti (2014) contrasts with previous research. Their research proved that village governance does not affect fraud prevention.

In addition to the factors that have been described above, in the current digital era, digital systems become an important factor for strengthening the monitoring of entities. Conventional supervision infrastructure systems must be transformed into a digital supervision infrastructure. Digital supervision infrastructure provides entry to discover and prevent fraud. So, in order to achieve fraud prevention, securing the software or applications correlated to infrastructure should be done (Bierstaker, Brody, dan Pacini, 2006; Rahman dan Anwar, 2014). Therefore, information technology utilisation can act as a moderator in the effect of village government supervision, human resource competence and village governance on fraud prevention. In accordance with the research results of Susena and Supadmi (2020), information technology utilisation moderates the role of village government supervision, human resource competence and village governance on fraud prevention. On the contrary, Sa’adah, et. al. (2017) indicated that information technology utilisation does not moderate the role of village government supervision, human resource competence and village governance on fraud prevention.

The findings of these studies are still inconsistent. Therefore, this research subject needs to be reviewed in light of the following research questions; 1) does the role of village government supervision, human resource competence and village governance affect fraud prevention? 2) Does information technology utilisation moderate the supervision role of village government, human resource competence and village governance on fraud prevention?
Theoretical Framework

The basic theories to underline this study are agency theory and GONE theory. Agency theory, according to a research, is defined as the connection between perpetrators and agents in identifying fraud (Jensen and Meckling, 1976). The aim of the theory is to find problem-solving in the agency in connection with perpetrators and dissimilar agents, referred to as agency problems, that will cause agency costs (Handayani & Rahayu, 2019). In agency theory, there is a relationship between the principal and agent. The principal appoints the agent to carry out a service and give the authority to the agent in terms of making decisions. In this case, village government is the agent, and gets the mandate from the Central and Regional Governments (principal) to carry out the affairs of village government, especially in village funds management.

GONE theory (Greed, Opportunity, Need and Exposure) can be explained as follows: Greed is human nature, Opportunity is the chance to perform fraud, Need is a necessity to sustain one’s life so that causes fraud in order to fulfil the needs of life, and Exposure is an act or consequence of fraud when the committer is proven to have committed it. Exposure associates fraud with the learning process since it is regarded as a relatively light penalty. Greed and Need are particularly subjective, and it is challenging to remove, therefore these two are prone to disobey the regulation. Meanwhile, Exposure and Opportunity are connected to the victims (e.g. communities, institutions, and organisations) who are harmed by fraud.

The components of agency and GONE theory are able to be reduced by the village government supervisors’ role and internal control systems, which include management of resources. The factor causing fraud in village funds is the lack of government supervision. Institutions such as Village Deliberation Agency (BPD) have not been wholly ideal in supervising village funds. BPD ought to prevent village funds fraud, which involves inspiring other villagers in supervising the development of the village (Indonesian Corruption Watch, 2018).

Village government supervisors have the role of overseeing village fund reports and must be held accountable for the use of these funds. The village government supervisors’ quality must be increased in order to have improved governance and to retain its safety from the misuse of village funds. To ensure that, the internal control system must be consecutively upgraded.

Internal controls have two types: preventive and detective control. To prevent fraud is preventive control. It functions to supervise payment excluding reviewing. Whereas, to reveal fraud is detective control. Generally, it is not as popular as preventive control because detective control works after fraud has occurred. Both types also occur in two stages of different cycles of fraud (Ramamoorti, S. & Dupree, 2010). There is proactive stage which uses preventive
control to reduce fraud opportunities and also a reactive stage, which depends on detective control to detect fraud following its occurrence. Once fraud has occurred, or when deficiencies of control have been exposed, compensation control can be employed to minimise harmful consequences of financial recording (Gramling, A. A. et al, 2010). The compensation control can be either a preventive or detective mode of control that is used for businesses when lack of control occurs and labour is an encouragement.

Case in point: older preventive control requiring a primary review of reimbursement is useless. It is caused by management that never spares time to give daily payment authorisation. As the result, effective compensation control needs an enclosed slip in the form of reimbursement. By that means, those who are in charge of repayment are able to examine if the expense is valid and ready. Using this illustration, compensation control is commonly applied when the real control is overly high-priced or time-consuming. However, strong compensation control is more unattractive than preventive control since it is mostly used at the reactive phase of cycle of fraud.

In this study, internal control systems, where the control is used after fraud has happened, is also included in detective internal control. Connected to agency theory, internal control is highly recommended to be implemented from the start of the village government organisation in order to prepare a plan for budgeting in the application of village funds. Thus, the implementation of internal control systems at the entire phases can avoid self-centeredness. In addition, it also causes individuals not to be bound by rationality and avoid risk. Related to GONE theory, internal control systems at one phase of the Village Allocation Fund (ADD) will restrict one to be greedy (Greed), limit opportunity to do fraud (Opportunity), diminish all intentions to make oneself rich (Need), and, if cheating is committed, they will get punishments or penalties (Exposure).

Consistent with earlier research, frail management of village funds or the propensity of village funds fraud is caused by many factors. They include the absence of village facilitators, the element of guidance and control after the sub-region and from the Government Guard and Development Team (TP4) is frail, lack of a social contribution in supervising village funds, and a high-priced, non-budgetary, incompetent village fund manager and head of village (Wibisono dan Purnomo, 2017). Furthermore, the qualitative research of Wida, Supatmoko, and Kurrohman (2017) in Rogojampi, Banyuwangi also indicate that the control stage of village fund distribution, which has been progressing fine, can prevent fraud.

Once responsibility and accountability for village funds application are well placed, digital infrastructure supervision carries out a moderate function to encourage and ease the process of supervision using integrated digital technology systems. Through digital infrastructure
supervision, village facilitators can supervise the conditions in villages and make quick action in preventing all forms of fraud.

**Hypotheses Development**

Fraud is an intended scam to get an unjust advantage or break the law or to remove the victims from their lawful privileges (Lawrence, G.M., and Wells, 2004). This is in line with agency theory and GONE theory. Agency theory explains that there are differences in the interests between the principal and agent. Similarly, GONE theory explains that fraud occurs because of greed, opportunity, need and exposure. It is a must to solve these problems by public and private sectors both, particularly in Indonesia. Competent internal auditors who can evaluate financial statements and make structural procedures efficiently are necessary to reduce the risk of fraud (Ntim, Soobaroyen, & Broad, 2017). Strengthening internal control structures, improving control activities, and efficient functions of internal audit are the strategies of fraud prevention (Said & Abdullah, 2018).

The supervision function on preventing fraud has often been issued. Research (Wibisono dan Purnomo, 2017) reported that the frail management of village funds or the propensity of village funds fraud is caused by many factors. The factors include the absence of village facilitators, the element of guidance and control after the sub-region and from the Government Guard and Development Team (TP4) is frail, lack of a social contribution in supervising village funds, and a high-priced, non-budgetary, and incompetent village fund manager and head of village. Another study (Wida, Supatmoko, and Kurrohman, 2017) showed that in Rogojampi, Banyuwangi, the management stage of village fund allocation is expected to prevent fraud.

Supervision covers the internal control system and the village management supervisors’ quality, particularly in human resources. Atmadja and Saputra (2015) reported that internal control systems affected the prevention of fraud in Buleleng, Bali. Meanwhile, Widiyarta (2017) reported that internal control systems have a positive effect on the prevention of fraud in the management of village funds of Buleleng Regency. Wijayanti, et. al. (2018), and Shanmugam, et. al. (2012), argued that to improve the internal control system, internal organisations such as the apparatus of village who are responsible for village funds must be enhanced. Straight entry to the funds causes more fraud to be done by the internal people. Furthermore, a robust internal control system can prevent fraud.

In order to facilitate the supervision process by village government, digital progress is initiated to help the design. Based on Suryanto (2016), the utilisation of information technology in the management of community can improve functioning. Although it possibly will require various jobs to implement this system, digital infrastructure supervision using digital technology can slightly decrease the occurrence of fraud (Ojha, 2008).
Based on the argumentation, the theory and the findings of previous studies, the hypotheses are formulated as follows:

**H1:** The role of village government supervision has a positive influence on fraud prevention.

**H2:** Human resource competence has a positive influence on fraud prevention.

**H3:** Village governance has a positive influence on fraud prevention.

**H4:** Information technology utilisation moderates the effect of village government supervision on fraud prevention.

**H5:** Information technology utilisation moderates the effect of human resource competencies on fraud prevention.

**H6:** Information technology utilisation moderates the effect of village governance on fraud prevention.

**Research Method**

The study used primary data that was obtained directly from the original source. The primary data in this study was derived from the results of questionnaire responses by experts from the village facilitators who were targeted by researchers. The population in this study were all village facilitators in Central Java. The sampling technique is based on incidental sampling technique. This technique is based on coincidence, that anyone who incidentally meets the researcher can be used for samples, as long as the person is suitable as a source of data. The measurement variables involved Likert scale with a range of values 1-5.

Partial Least Squares-Structural Equation Modeling (SEM) analysis is applied to analyse path analytic with latent variables. PLS can be used with collected data through secondary data (Ittner et al., 1997; Papadopoulos & Amemiya 2005; Lee et al. 2011). This statistical analysis was selected since it has several benefits (Hair, et al., 2010). First, SEM component-based techniques (PLS / Partial Least Square) work well with a small sample size. It also does not require data normality. Second, SEM analysis is able to concurrently test multiple dependencies as a model in this study. Third, this technique applies different procedures for analysing data that contains measurement models, structural models, and overall models (Wold, 1974).

**Result and Discussion**

The primary data of this research is derived from questionnaire results as targeted by researchers. This study comprised 156 respondents from the target 160 respondents (97.5%). The respondents were dominated by men, with as many as 124 people (79.5%), and the remaining 32 people (20.5%) were women. The age of respondents ranged from 35-50 years.
old with an average of 43.7 years old. All respondents (100%) were bachelor (S1) graduates, and the majority (99.4%) currently work as village facilitators. Only 1 person (0.6%) currently is a supervisor of village government. Respondents came from all 29 districts in Central Java. All respondents (100%) have work experience <3 years.

The results of processed data by using PLS 6.0 are as follows:

Table 2: Hypothesis Test Result

<table>
<thead>
<tr>
<th>Path</th>
<th>Direct Effect</th>
<th>p-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control→Fraud</td>
<td>0.37</td>
<td>&lt; 0.01***</td>
<td>H1 accepted</td>
</tr>
<tr>
<td>HR→Fraud</td>
<td>0.02</td>
<td>0.39</td>
<td>H2 rejected</td>
</tr>
<tr>
<td>Gov→Fraud</td>
<td>0.36</td>
<td>&lt; 0.01***</td>
<td>H3 accepted</td>
</tr>
<tr>
<td>Control*Tech→Fraud</td>
<td>0.02</td>
<td>0.38</td>
<td>H4 rejected</td>
</tr>
<tr>
<td>HR*Tech→Fraud</td>
<td>-0.34</td>
<td>&lt; 0.01***</td>
<td>H5 accepted</td>
</tr>
<tr>
<td>Gov*Tech→Fraud</td>
<td>0.17</td>
<td>0.02**</td>
<td>H6 accepted</td>
</tr>
</tbody>
</table>

**Model Fit Indicators**

<table>
<thead>
<tr>
<th>Path</th>
<th>Coefficient</th>
<th>p-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Path Coefficient (APC)</td>
<td>0.214</td>
<td>0.001***</td>
<td></td>
</tr>
<tr>
<td>Average R-square (ARS)</td>
<td>0.403</td>
<td>&lt; 0.001***</td>
<td></td>
</tr>
<tr>
<td>Average Variance Inflation Factor (AVIF)</td>
<td>2.237</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** the processing results of PLS, 2019

**Note:** *, **, and *** indicate significance (one-tailed) at the 0.10; 0.05; and 0.01 levels, respectively.

**The Role Village Government Supervision Has Positive Influence on Preventing Fraud**

The first hypothesis testing shows that the role of village government supervision has a positive and significant influence on preventing fraud ($\beta = 0.37, P <0.01$). It means that it is in accordance with the first hypothesis, where the role of village government supervision has a positive effect on fraud prevention. The path coefficient value is 0.37, which shows a positive relationship. This means that the respondents' answer regarding the role of village government supervision on fraud prevention show that better village government supervision will further prevent fraud. This means that the first hypothesis can be accepted. This condition is in line with agency theory, which explains that there are differences in interests between the principal and agent. In addition, the findings of this study are also aligned with GONE theory, which states that fraud occurs because of greed, opportunity, need and exposure.

The results of this study reinforce the research finding of Wijayanti, et. al. (2018); Wida, et. al. (2017); Widiyarta (2017); Atmadja and Saputra (2015); and Shanmugam, et. al. (2012). Their
findings prove that the role of village government supervision has an influence on fraud prevention. However, the results of this study are not aligned with the research of Rustiarini & Sunarsih (2017). They indicated that the role of village government supervision has no influence on fraud prevention.

**Figure 1. Model Test Results**

*Human Resource Competence Has a Positive Influence on Fraud Prevention*

The results from the second hypothesis testing explains that human resource competence has no influence on fraud prevention ($\beta = 0.02$, $P = 0.39$). In other words, it is not in accordance with the second hypothesis where human resource competence has an effect on fraud prevention. The ineffectiveness of human resource competence on preventing fraud is allegedly caused by the human resources of the village government who limited ability and not all of them have good competence related to fraud prevention.

Indriani, et. al. (2016) proved that human resource competence has no effect on fraud prevention; it is aligned with the results of this study. However, the results of this study are not aligned with the research of Laksmi and Sujana (2019); Saputra, et. al. (2019), Ardiyanti and Supriadi (2018); Ariastini, et. al. (2017); Aini, et. al. (2017); and Atmadja and Saputra (2017). They showed that human resource competence has an influence on preventing fraud.

*Village Governance Has Positive Influence on Fraud Prevention*

The results of the third hypothesis statistical test indicate that village governance has a positive and significant influence on fraud prevention ($\beta = 0.36$, $P <0.01$). It is in accordance with the third hypothesis where village governance positively affects fraud prevention. The path coefficient value is 0.36 which shows a positive relationship. It means that the respondents' answers regarding village governance on fraud prevention indicate that better village
governance increases fraud prevention. In other words, fraud can be minimised. This means that the third hypothesis can be accepted. This condition is in line with agency theory which explains that there are differences in interests between principal and agent. In addition, the findings of this study are correspondingly aligned with GONE theory, which states that fraud occurs because of greed, opportunity, need and exposure.

The findings of this study supported Larasati and Surtikanti (2019); Rowa and Arthana (2019); Sanusi, et. al. (2019); Larasati, et. al. (2017); Oktavia, et. al. (2017); Beawiharta (2014); Lei, Dino, Song, & Wang, (2014) Agarwal and Medury (2011); and Chapple, et. al. (2009). They proved that village governance has an influence on preventing fraud. However, the results of this study are not aligned with the research of Oktavia K.G. (2015) and Wiliyanti (2014), that village governance has no influence on preventing fraud.

Information Technology Utilisation Moderates the Positive Effect of Village Government Supervision on Fraud Prevention

The fourth hypothesis test explained that information technology utilisation does not moderate the role of village government supervision on fraud prevention ($\beta = 0.02, P = 0.38$). It is not in accordance with the fourth hypothesis where information technology utilisation does not moderate the role of village government supervision on preventing fraud. This can be caused by the low use of information technology in village governments, in other words, not all village governments utilise the available information technology.

The results of this study reinforce the research findings of Sa’adah, et. al. (2017) which prove that information technology utilisation does not moderate the role of village government supervision on fraud prevention. However, the results of this study are contrary to the research of Susena and Supadmi (2020). They showed that information technology utilisation moderates the role of village government oversight on fraud prevention.

Information Technology Utilisation Moderates the Positive Effect of Human Resource Competence on Fraud Prevention

The fifth hypothesis test results indicate that information technology utilisation moderates the effect of human resource competence on fraud prevention ($\beta = -0.34, P <0.01$). It is in accordance with the fifth hypothesis that the application of information technology moderates the effect of human resource competence on fraud prevention. The path coefficient value is -0.34 which shows the information technology utilisation weakens the effect of human resource competence on fraud prevention. This condition is in line with agency theory which explains that there are differences in interests between the principal and the agent. In addition, the
findings of this study are also aligned with GONE theory, which states that fraud occurs because of greed, opportunity, need and exposure.

The findings of this study support Suryanto (2016), who stated that information technology in society management may help improve functioning. Although it might require various works to implement this system, digital infrastructure supervision through digital technology can slightly minimise the occurrence of fraud (Ojha, 2008). However, the results of this study are not aligned with Sa’adah, et. al. (2017), who argued that information technology utilisation does not moderate the effect of human resource competencies on fraud prevention.

Information Technology Utilisation Moderates the Positive Effect of Village Governance on Fraud Prevention

The final hypothesis testing suggests that information technology utilisation moderates the effect of village governance on fraud prevention ($\beta = 0.17, P = 0.02$). It is in accordance with the sixth hypothesis where information technology utilisation moderates the effect of village governance on fraud prevention. The path coefficient value is 0.17, which shows that information technology utilisation will strengthen the effect of village governance on fraud prevention. This means that good information technology utilisation will strengthen village governance so that fraud can be prevented. This condition is in line with agency theory which explains that there are differences in interests between principal and agent. In addition, the findings of this study are also aligned with GONE theory which states that fraud occurs because of greed, opportunity, need and exposure.

The findings of this research support the findings of Halbouni, S. S., Obeid, N., & Garbon, A., 2016), who show that the participation of information technology in the management of community may improve functioning. Although it might require various works to implement this system, digital infrastructure supervision through digital technology should be able to slightly reduce the occurrence of fraud (Lokanan & Tran, 2019). However, it is in contrast with Sa’adah, et. al. (2017), who showed that information technology utilisation does not moderate the effect of village governance on preventing fraud.

Conclusion

The results of this study prove that the role of village government supervision and village governance has a significant positive influence on fraud prevention. However, human resource competence has no effect on fraud prevention. In addition, the results of the study also show that information technology utilisation moderates the competence of human resources and village governance. Nevertheless, the use of information technology does not moderate the effect of village government supervision on fraud prevention. Therefore, in implementing this
research concept, improving digital supervision infrastructure strengthens fraud prevention. Moreover, it also can be a standard to improve accountability and transparency in the management of village funds.
REFERENCE


