

INFORMATION AND COMMUNICATION TECHNOLOGY IN ORGANIZATIONAL PERFORMANCE OF LOCAL GOVERNMENT

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Abstract: This study aims to determine the relationship of knowledge sharing technologies, ICT infrastructure and software, and communication technologies toward the organizational performance of local government. The sampling technique that will be used in this research is the saturated sample. Data collection techniques used primary data by sending questionnaires to 76 Local Apparatus Organization (LAO) of East Java Province. The data were examined using smart Partial Least Squares (PLS) with the help of WarpPLS software version 5.0. This study's results indicate that knowledge sharing technologies and ICT infrastructure and software have a positive relationship on the organizational performance of the local government. In comparison, communication technology does not have a relationship toward the performance of the East Java Provincial Government. This study result is expected to be useful for the development of accounting. It is also expected to make practical contributions to apply knowledge sharing technologies, ICT infrastructure, and software as well as effective communication technologies as a management tool in motivating and evaluating LAO's performance.

Keywords: knowledge sharing technologies, ICT infrastructure and software, communication technologies, local government organizational performance

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Introduction

The governance structure in Indonesia consists of the central government and the local government. The local government includes the provincial government and the second level local government, namely the district and city governments (Adiputra et al., 2018). The Local Apparatus Organization (LAO), as an entity related to public services, is demanded to improve its performance in performing public services. Performance is the main focus of every organization (Soewarno & Mardijuwono, 2018), and it is also applied to government agencies. One way to improve public services quality is to utilize ICT (Information Communication and Technology). ICT is one of the industries that is snowballing in recent years and will continue for years to come. The development of the ICT industry requires a

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better and more precise formalization of work and professions related to ICT expertise (Kliestik et al., 2020).

The mastery of ICT in this era has become a necessity. ICT becomes a tool in communicating and a required knowledge in this globalization and information age era. More specifically, for institutions, including the need to expedite administrative service work in government. The world community has long discussed the internet and ICT importance (Musa et al., 2020). The internet and ICT have significantly changed human and business behavior in several countries to bring human civilization to a new world termed "The Cyber Community." In the future, the ICT sector is the most dominant. Anyone who masters this technology, then he will become a leader in his world. This statement also applies in e-government, which refers to the use of ICT by government, such as using the intranet and the internet to connect the needs of residents, businesses, and other activities (Nor et al., 2019).

Three crucial components bind or are the driving factors of ICT in improving the organizational performance, namely knowledge sharing technologies, ICT infrastructure and software, and communication technologies. In general, knowledge sharing can be considered a process of interaction, communication, and coordination of knowledge or expertise (Haas & Hansen, 2007). Knowledge sharing consists of a series of shared understandings relating to providing access to relevant information to employees and utilizing existing knowledge in the organization (Lin, 2007). According to Hedgebeth (2007), knowledge sharing technologies can provide value-added to firms, especially if the tool is used effectively and efficiently. This technology is reminiscent of the fact that financial measures alone cannot measure organizational values but are largely based on intangible assets (Drucker, 1995).

Organizational performance is strongly induced by the mastery of technology from organizational members (Brown & Starkey, 1994), education, and training provided by the organization (Dalimunthe & Muda, 2017). The existence of knowledge sharing technologies will foster the occurrence of organizations members that master knowledge in the field of ICT will shares their expertise with other members. This sharing knowledge culture will lead the particular expertise can be mastered by every member in the organization and can be utilized for the decision-making process and obtain solutions to problems faced by LAO. Furthermore, this knowledge will improve overall LAO performance. Knowledge sharing is vital because it enables the dissemination of knowledge as an organization's collective knowledge and helps entities use available resources effectively and efficiently (Argote et al., 2000; Aisyah et al., 2019). With the component of knowledge sharing technologies, LAO can increase its members' knowledge in the field of technology, so that it can utilize the knowledge possessed by its members to improve the appropriate decision-making process to improve services effectively and efficiently. Therefore, effective knowledge sharing can be

a major productivity driver in public sector organizations (Silvi & Cuganesan, 2006).

Henttoten (2016) revealed that there is a positive tendency between knowledge sharing technologies to improve individual performance in organizations. Henttoten also showed that knowledge sharing technologies significantly relate to organizational members who are highly educated. In contrast with Henttoten's research, Käser and Miles (2002) revealed that the activities of knowledge sharing technologies cannot be forced and must be voluntary by members of the organization itself. Thus, the activity of knowledge sharing technologies in organizations is uncertain due to its dependence on its members' volunteerism. As such, an organization's ability to utilize its knowledge effectively depends on its members' capability to share, create, and use its knowledge.

The goal of managing ICT infrastructure and software is to use a proven and repeatable process. According to Stankosky (2005), ICT infrastructure and software is one of the pillars of knowledge management (KM), which must support the effectiveness and efficiency in capturing tacit and explicit knowledge in promoting knowledge sharing activities in the organization through the quality decision making and problem-solving processes. Ultimately, the role of learning in increasing knowledge is aimed at managing information that is useful in building organizational knowledge. The use of this knowledge can be aimed at the work evaluation process and improving organizational performance (Agustia et al., 2017). Effective KM depends on people sharing their expertise through shared computer facilities. Using the organization's knowledge base, all members of the organization can access the organization's knowledge base (Martin, 2000).

Research results by Chong (2011) show that the development and maintenance of appropriate ICT infrastructure and software is an essential factor in improving an organization's performance. The extensive application of ICT infrastructure and software will create work systems and information management processes that are more effective and efficient. The ICT infrastructure and software that has been designed will include workflows, document management systems, advanced knowledge bases, and expert systems. Those functions are used to develop corporate memory, data mining, and filtering systems and technologies such as groupware, intranets, and the internet that connect organizations to both intra and inter organizations and the outside world (Martin, 2000).

Communication networks, e-mail, intranets, data mining, and decision support systems (DSS) are essential elements of KM technology infrastructure (Stankosky, 2005). The purpose of managing communication technologies is to using media channels in the form of software or other digital devices optimally. The communicator can convey the message's meaning so that there is an impact on the communicant as desired by the communicator. Regular access, communication networks to expert information, and technical and professional information is easily obtained and can be accessed by members of the organization are examples of information source opportunities (Chong, 2011).

Chong (2011), in his findings, revealed that communication technologies are one of the ICT components that have the highest value in improving the performance of public sector organizations. Therefore, more knowledge can be transferred and shared within and outside the organization (Syed-Ikhsan and Rowland, 2004), which results in improved organizational performance. Communication technologies can improve LAO performance by making it easier for the public to access programs from LAO through website channels. Communication technologies will consent the public to monitor the work programs designed by LAO. In addition, LAO can also improve communication between the government and the business in accessing transparent administrative processes so that it can eliminate mutual suspicion between various parties. The public can also provide input or complaints to LAO so that it can improve the performance of the LAO that is felt to be lacking. Through the application of communication technologies, LAO can communicate directly with the public through website media so that communication between the public service provider and the public can occur directly, and there is no hindrance in communicating. So, with LAO being more transparent to the public, public satisfaction with LAO performance will increase. There is a difference in the perspective of understanding the information provided digitally has a positive response (Bilal & Al Mqbali, 2015). Generally, this kind of behavior is caused by differences in cognitive behavior, age, gender, and culture. There is a difference with the research revealed by Vrana (2010), which revealed that 46 respondents who felt communication using ICT could result in the additional workload that did not provide any significant benefit. In addition, one respondent thought it was inappropriate to communicate using e-mail to their colleagues because it was feared that there was a misunderstanding. The existence of differences in results and perspectives has motivated researchers to examine more closely related factors related to LAO's performance. This study aims to explore the relationship of knowledge sharing technologies, ICT infrastructure and software, and communication technologies on organizational performance in 76 LAOs of East Java Province. This study result is expected to be useful for the development of accounting, especially management accounting and public sector accounting related to issues related to knowledge sharing technologies, ICT infrastructure and software, and communication technologies concerning LAO performance. It is also expected to make practical contributions to apply knowledge sharing technologies, ICT infrastructure, and software as well as effective communication technologies as a management tool in motivating and evaluating LAO's performance. The remainder of this paper is structured as follows. Section 2 literature reviews and develops the research hypotheses. Section 3 describes the sample, variables, and research design. Section 4 specifies the empirical result. Section 5 summarizes the paper and presents concluding remarks.

Literature review

TAM was first introduced by Davis (1986), is one of the models built to analyze and understand the factors that influence the acceptance of the use of computer technology (Safitri et al., 2017). TAM has the aim to explain and predict user acceptance of a technology (Chau, 1996). TAM is a development of the Theory of Reasoned Action (TRA). Herrera-Echeverry et al., (2020) are believed to be able to predict user acceptance of technology by utilizing TRA. TRA is a theory related to an individual's attitudes and behavior in carrying out reasonable activities or actions (Muda & Dharsuky, 2015).

Knowledge sharing consists of a series of shared understandings relating to providing access to relevant information to employees and using existing knowledge in the organization (Lin, 2007; Hussain et al., 2020). According to Hedgebeth (2007), knowledge sharing technologies can provide added value to firms, especially if the tool is used effectively and efficiently. This technology is reminiscent of the fact that financial measures alone cannot measure organizational values but are, in large part, based on intangible assets (Drucker, 1995). With the component of knowledge sharing technologies, an organization can increase the knowledge of its members in the field of technology, so that it can utilize the expertise possessed by its members to improve the appropriate decision-making process to improve services effectively and efficiently.

H₁: Knowledge sharing technologies has relationship to organizational performance

The application of ICT infrastructure and software to organizations can accelerate the process of exchanging information in e-mail and file-sharing. In addition, LAO also can develop software systems that aim to provide information to the public. By implementing ICT infrastructure and LAO software, it will be able to improve performance and gain public trust. Saxena (2017) revealed that ICT infrastructure and software turned out to have a significant relationship on public satisfaction on the performance of the Indian government by providing services in the form of m-government (mobile government). The opposite result is stated by Luyombya (2011), who revealed an effort to improve ICT infrastructure and software in the Ugandan government is only slightly enhance government performance. This result occurs as there was a critical gap in this approach because management in the public sector was not adequately handled. It can be concluded that to improve performance through ICT infrastructure and software has significance in enhancing performance, but it must be accompanied by qualified public sector management.

H₂: ICT infrastructure and software has relationship to organizational performance
Communication through ICT will have a positive relationship on performance because communicating using ICT can provide effectiveness and efficiency in communicating with colleagues in the country or abroad and for research preparation (Vrana, 2010). Adequate ICT support is essential to promote certain knowledge sharing types and ICT facilities in more effective ways. The best practice in fostering explicit knowledge is to have an effective repository, while

tacit knowledge is more appropriate with internet or email usage facilities. One component of KM technologies, namely communication technologies, is the highest value in improving organizational performance (Chong, 2011).

H₃: Communication technologies has relationship to organizational performance

Research methodology

The population in this study was 76 Local Apparatus Organizations (LAO) under the auspices of the Government of East Java Province. From the entire population, a sampling technique was carried out using the saturated sample method, which utilizes the entire population. This research is an explanatory quantitative study with primary data sources. Data collection is directly carried out by sending items of questions to the head of the finance division and the development division in each LAO Province of East Java. The questionnaire was sent on June 8, 2018, with 152 questionnaires distributed directly to 76 LAO Provincial Government of East Java. The research instrument used was a questionnaire with a Likert Scale starting from point 1 (strongly disagree) to point 5 (strongly agree). Point 1 shows a low value, and point 5 shows a high value on each question item that describes each variable.

Organizational performance (KO) is the organization's overall effectiveness for the needs determined by each group relating to systematic efforts and continuously improving the organization's ability to achieve their needs effectively (Pasolong, 2010: 176). The questionnaire in this study was developed based on research by Mahoney (1963), which refers to eight items. KO indicators are a) planning, b) investigation, c) coordination, d) evaluation, e) supervision, f) staff selection, g) negotiations, and h) representatives.

There are three independent variables in this study, namely knowledge sharing technologies, ICT infrastructure and software, and communication technologies. First, knowledge sharing (KS) is one method or phase in the knowledge management cycle that is used to provide opportunities for members of a group, organization, agency, or firm to share the knowledge they have with other members (Bukowitz & Williams, 1999). The questions in the questionnaire were based on indicators developed by Stankosky (2005), namely a) technology, b) organization structure, c) leadership, and d) learning. Second, ICT infrastructure and software (ICT) is the process of managing equipment, software, and services (ITIL, 2002: 1). The questionnaire was created based on indicators developed by Stankosky (2005) and Edwards et al. (2005) in Chong (2011), which includes a) process, b) performance measurement, and c) culture. Third, communication technologies (COM) are hardware equipment in an organizational structure that contains social values that enable each individual to collect, process, and exchange information with other individuals. The questionnaire was prepared based on indicators developed by Edwards (2005), namely a) people, b) technological, and c) process.

We use Partial Least Square (PLS) data analysis techniques to test the relationship of knowledge sharing technologies, ICT infrastructure and software, and communication technologies on organizational performance in LAO. We are using WarpPLS 5.0 as our statistical software to conduct the statistical test. PLS was chosen because the variables used are variables with indirect measurements, but through indicators that reflect each variable (Sumardi & Fernandes, 2020). In addition to PLS, other analytical techniques are respondents' descriptive statistics, outer model measurements, inner model measurements, model fit tests, and hypothesis testing.

Result and discussion

In this study, respondents were the finance division of the Local Apparatus Organization (LAO) of the Government of East Java Province. The questionnaire was sent on June 8, 2018, with 152 questionnaires distributed directly to 76 LAO Provincial Government of East Java. Based on table 1, the questionnaires returned were 122 questionnaires out of 152 questionnaires that had been distributed or 80.26%, and all of it is eligible to be further processed. The final total questionnaire used for data processing was 122 questionnaires.

Table 1. Respondent Descriptive Statistic

Description	Amount	Percentage
Questionnaires that disseminated	152	100%
Questionnaires that returned	122	80,26%
Questionnaires that not eligible	0	0%
Questionnaires that valid	122	100%

Table 2. Respondent Characteristic Description

Characteristic	Respondent Amount	Percentage
Gender		
Male	70	57.4%
Female	52	42.6%
Position		
Finance Staff	9	7.3%
Chief of Finance Division	52	42.6%
Other Division	61	50%
Educational Background		
Diploma 3	23	18.6%
Strata 1	74	60.7%
Strata 2	25	20.5%
Age		
Less than 25 years old	0	0%
25 – 35 years old	40	32.8%
36 – 45 years old	46	37.7%
More than 45 years old	36	29.5%

Characteristic	Respondent Amount	Percentage
Working Period		
Less than 5 years	36	29.5%
5 – 10 years	48	39.3%
11 – 15 years	17	13.9%
More than 15 years	21	17.2%

We are using WarpPLS 5.0 software to know the outer loading factor value of each indicator. Indicators that have an outer loading factor value below 0.5 are assumed to be inappropriate indicators that can reflect their respective variable. The indicators that cannot reflect the predetermined variables are eliminated and recalculated the outer loading factor value to obtain optimal results.

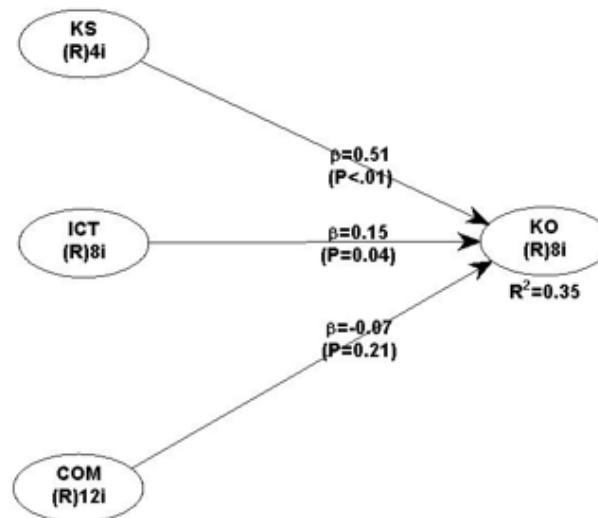


Figure 1: Outer Loading Factor Interaction Result

Validity and Readability Test

Table 4 shows that all variables have discriminant validity values, as indicated by AVE values above 0.50. From these results, it can be concluded that all variables are valid and can provide a sufficient confidence level to be used in this research model. Table 4 also shows that all variables have a composite reliability value higher than 0.70. Therefore, it can be concluded that all variables in the study can be declared reliable and can be relied upon to be used in further analysis tests.

Table 4. Coefficient of Determination Test Result

Variable	Average Variance Extract (AVE)	Composite Reliability
Knowledge Sharing Technologies	0.748	0.922
ICT Infrastructure and Software	0.568	0.911

Communication Technologies	0.518	0.927
Organizational Performance	0.576	0.915

Fit Model Test

Based on the results of data processing in table 5, the model in this study was declared fit, so it is appropriate to be used in further analysis. Average Path Coefficient (APC), Average R-squared (ARS), and Adjusted Average R-squared (AARS) have p-values less than 0.05. Mahrani and Soewarno (2018) suggest that the Average Block Variance Inflation Factor (AVIF) of the research model is more than 3.3. Following their suggestion, this model has no multicollinearity problem between the indicators and variables used because the model in this study has an AVIF value more than 3.3.

Table 5. Fit Model Test Result

Measurement	Value
APC	0.300, P<0.001
ARS	0.752 P<0.001
AARS	0.746 P<0.001
AVIF	3.701

Inner Model Test

From table 6, it can be seen that the performance of LAO has an adjusted R-square (adjusted R²) value of 0.337 (33.7%). This value shows that organizational performance variables can be predicted by knowledge sharing technologies, ICT infrastructure and software, and communication technologies by 33.7%. In comparison, the rest (66.3%) can be explained by other variables excluded in this research model.

Table 6. Inner Model Test Result

Endogeneous Variable	R-square Adjusted Value (Adjusted R ²)
Organizational performance	0.337

Based on table 7, it can be concluded that knowledge sharing technologies and ICT infrastructure and software have a statistically significant and positive relationship on LAO's performance. This result can be seen from the original sample value, which shows a positive number and p-values of <0.05. So the first and second hypotheses in this study were accepted. While communication technologies have no statistically significant relationship on organizational performance because the p-values indicate a number of 0.215 (> 0.05), the third hypothesis is rejected.

Table 7. Hypothesis Test Result

Relationship between Variables	Original Sample (O)	<i>p-values</i>
KS → KO	0.511	<0.001
ICT → KO	0.155	0.039
COM → KO	-0.070	0.215

Discussions

The results of this study indicate that knowledge sharing technologies and ICT infrastructure and software conducted by local governments have a positive relationship on the performance of LAO. It can be concluded that knowledge sharing technologies and ICT infrastructure and software are two critical factors to improve the LAO performance of the East Java Provincial Government. This result is in line with research conducted by Chong (2011), Henttonen (2016), Hedgebeth (2007), Saxena (2017), and Stantosky (2005). Technological Acceptance Model (TAM) says that the reaction and perception of technology's use will stimulate its attitude in acceptance of the technology. Knowledge Management System (KMS) assists organizations in identifying, selecting, organizing, disseminating, and transferring relevant information and experiences that are part of the organization (Dalkir, 2011; Serban & Luan, 2002; Debowski, 2006; Wahda, 2017). The knowledge possessed by the organization is one of the determinants of organizational growth and development. Therefore, a qualified management approach about how knowledge can be obtained then managed, and properly utilized by the organization is needed. This approach was made to improve further the performance of the organization to face increasingly aggressive global competition. So we need the integrating knowledge process in the human resources development framework in an organization.

With the presence of knowledge sharing technologies, it is hoped that LAO members who already understand the field of technology can share their experiences with other members. This sharing activity will improve overall organizational performance and enhance the quality of decision-making processes that are appropriate for enhancing provide services effectively and efficiently. Knowledge sharing technologies that are applied appropriately will continuously adapt to the dynamics and demands required by the public. Thus, making LAO always focus on meeting the needs of the community is necessary. The existence of knowledge sharing technologies can also improve efficiency in the processes and ways of working by implementing efficient strategies, tactics, and methods, and in the end, it will create better work results.

Not only knowledge sharing technologies, ICT infrastructure, and software are also one of the crucial aspects that influence the growth and development of the organization. The application of ICT infrastructure and software to organizations can accelerate the process of exchanging information in the form of e-mail and file-sharing. In addition, LAO also can develop software systems that aim to provide

information to the public. With a software system that can present information that can be accessed by all members of the community and at the same time it allowed to be accessed anytime and anywhere, it can answer the problem of the quality of service processes faced by LAO. By implementing ICT infrastructure and software, LAO will improve its performance and gain public trust.

The study result indicates that the communication technology variable does not relate to LAO performance. Communication technologies activities must be able to build and support knowledge-sharing technologies that occur within the organization. Organizational leaders must be able to develop knowledge views that can benefit the organization in the future, communicate these views to members of the organization, and build a culture of the knowledge importance as the organization's most valuable resource (Chong, 2011).

The results of this study are in line with research conducted by Käser and Miles (2002). They found that the knowledge sharing process cannot be forced and must be voluntary by members of the organization itself. Thus, knowledge sharing activities in organizations have uncertainty due to their dependence on their members' volunteerism. As such, the ability of an organization to utilize its knowledge effectively depends on its members' capability to share, create, and use its knowledge. Abdullahi et al. (2019) stated that not all ICTs have succeeded in making organizational performance more efficient and effective.

Any effort made as a strategy to build a communication that aims to create a culture of knowledge sharing in an organization is an effort that does not produce results if the members of the organization itself do not have the will to share their knowledge. In short, although the leader's capability to develop a sharing knowledge culture is essential, but organizational culture needs more than a few individuals within the organization to adequately established. This explanation is the reason communication technologies do not relate to organizational performance.

Conclusion

There are several conclusions that can be drawn from this study. First, knowledge sharing technologies and ICT infrastructure and software conducted by LAO have a positive relationship on the performance of LAO. Second, communication technologies have no relationship on the performance of LAO. This study result is expected to be useful for the development of accounting, especially management accounting and public sector accounting related to issues related to knowledge sharing technologies, ICT infrastructure and software, and communication technologies concerning LAO performance. The implications of the results of this study are expected to make practical contributions to apply knowledge sharing technologies, ICT infrastructure, and software as well as effective communication technologies as a management tool in motivating and evaluating LAO's performance.

This research certainly does not escape limitations, such as there are respondents who did not return the questionnaire. Hence, the test power was not strong enough because they were unable to get the overall data. In addition, the emergence of possible biases that occur because respondents do not answer seriously and the possibility of a mismatch of indicators and items of questions with the research subject. Further research is recommended to increase the number of respondents and develop more comprehensive performance measurement instruments for LAO to avoid bias, such as using deep interview instruments.

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TEKNOLOGIE INFORMACYJNO-KOMUNIKACYJNE W DZIAŁANIU ORGANIZACYJNYM SAMORZĄDU LOKALNEGO

Streszczenie: Celem pracy jest określenie związku technologii dzielenia się wiedzą, infrastruktury i oprogramowania teleinformatycznego oraz technologii komunikacyjnych z wynikami organizacyjnymi samorządu terytorialnego. Technika pobierania próbek, która zostanie wykorzystana w tych badaniach, to próbka nasycona. Techniki gromadzenia danych wykorzystywały dane pierwotne, wysyłając kwestionariusze do 76 organizacji ds. Aparatów lokalnych (LAO) w prowincji East Java. Dane zostały zbadane za pomocą inteligentnego narzędzia Partial Least Squares (PLS) z pomocą oprogramowania WarpPLS w wersji 5.0. Wyniki tego badania wskazują, że technologie dzielenia się wiedzą oraz infrastruktura i oprogramowanie teleinformatyczne mają pozytywny wpływ na wyniki organizacyjne samorządu. Dla porównania, technologia komunikacyjna nie ma związku z wynikami rządu prowincji East Java. Oczekuje się, że wyniki tego badania będą przydatne w rozwoju rachunkowości. Oczekuje się również, że wniesie praktyczny wkład w zastosowanie technologii dzielenia się wiedzą, infrastruktury teleinformatycznej i oprogramowania, a także skutecznych technologii komunikacyjnych jako narzędzia

zarządzania w motywowaniu i ocenie wyników LAO.

Słowa kluczowe: technologie dzielenia się wiedzą, infrastruktura i oprogramowanie teleinformatyczne, technologie komunikacyjne, wyniki organizacyjne samorządu

地方政府组织绩效中的信息和通信技术

摘要:本研究旨在确定知识共享技术, ICT基础设施和软件以及通信技术与地方政府组织绩效之间的关系。本研究中将使用的采样技术是饱和样品。数据收集技术通过向东爪哇省的76个地方仪器组织(LAO)发送问卷来使用原始数据。借助WarpPLS软件5.0版,使用智能的偏最小二乘(PLS)检查了数据。这项研究的结果表明,知识共享技术,信息通信技术基础设施和软件与地方政府的组织绩效有着积极的关系。相比之下,通信技术与东爪哇省政府的表现没有关系。预期该研究结果将对会计的发展有用。预计还将为应用知识共享技术, ICT基础设施和软件以及有效的通信技术作为激励和评估LAO绩效的管理工具做出实际贡献。

关键词:知识共享技术, ICT基础设施和软件, 通信技术, 地方政府组织绩效