International Journal of Economics, Commerce and Management
United Kingdom Vol. VI, Issue 1, January 2018
http://ijecm.co.uk/ ISSN 2348 0386

THE CORRELATION ANALYSIS OF THE STAGES OF ASSET LIFECYCLE WITH ASSET MANAGEMENT PERFORMANCE

STUDY AT CENTRAL BUREAU OF STATISTICS IN PROVINCE OF CENTRAL KALIMANTAN, INDONESIA

Rephy Ekawatie
Master of Management, University of Padjadjaran, Bandung, Indonesia
rephy_ekawatie@yahoo.co.id

Yudi Azis
Department of Management and Business, University of Padjadjaran, Bandung, Indonesia
yudi.azis@unpad.ac.id

Layyinaturrobaniyah
Department of Management and Business, University of Padjadjaran, Bandung, Indonesia
layyinaturrobaniyah@unpad.ac.id

Abstract

Asset management is an important issue in public sector organizations in Indonesia. This research was developed to answer the problems related to asset management performance at Central Bureau of Statistics of Central Kalimantan Province. Secondary data and prior empirical research form the basis of the question of formulating the research problem. Quantitative methods are used to analyze the relationship of strategy, plan, evaluation, procurement, operation, maintenance, modification and dispose of stages of asset management performance. Questionnaires were distributed to 32 managers of assets and returned with complete replenishment. Spearman Rank Order Correlation was used as a statistical tool. The results showed that the overall stages in the lifecycle management of assets have a positive and significant relationship with the performance of asset management. Two variables that have the strongest relationship are the planning stage (0.740) and evaluation (0.708).

Keywords: management of asset lifecycle, strategy, plan, evaluation, procurement, operation, maintenance, modification, disposal, asset management performance

INTRODUCTION

As per the Atikoh, *et. al.*, 2017; Pratama, *et. al.*, 2017, assets are an important issue in Public Sector Management in Indonesia at the moment. (Sihite, *et. al.*, 2016) The Indonesian government is currently intensively investing in public sector assets to support government services to the public. (Badan Pemeriksa Keuangan Republik Indonesia, 2016b) The State Audit Board of the Republic of Indonesia reported that the weakness of asset management is the main cause of the decline opinion of most government institutions in 2011 s 2015. (Badan Pemeriksa Keuangan Republik Indonesia, 2016a) The Central Bureau of Statistics is one of the government institutions that received the decrease of opinion from the Supreme Audit Board of the Republic of Indonesia in 2015. Central Bureau of Statistics of Central Kalimantan Province is one of the parts of Central Bureau of Statistics which were examined by the State Audit Board of the Republic of Indonesia to determine opinion in 2015. It also confirms the problem of asset management performance at the Central Bureau of Statistics of Central Kalimantan Province.

(Aira, 2014) The management of the lifecycle of an asset from the beginning to the end is a crucial issue in the assets management of the public sector. Secondary data (institutional asset application report) of Central Bureau of Statistics in Central Kalimantan Province supports the results of the research related to the problems indication in managing the lifecycle of the asset. (Kolinug, *et. al.*, 2015) The institutions of government in Indonesia in generally have implemented management of the stages of asset lifecycle. However, it is difficult to determine which stage of the asset management lifecycle has the greatest contribution to the implementation of asset management in the public sector. (Campbell, *et. al.*, 2011) Asset management lifecycle of an organization consists of stages of strategy, plan, evaluation, procurement, operation, maintenance, modification, and disposal.

An explanation of indication of asset lifecycle management problems related to asset management performance becomes the basis for determining the focus of research. Questions that will be answered in the formulation of research problems, among others: How do the correlation between each stage of strategy, plan, evaluation, procurement, operation, maintenance, modification, and disposal of assets with asset management performance?. The purpose of the study knows how does the relationship between the management of asset lifecycle stages (strategy, plan, evaluation, procurement, operation, maintenance, modification, and disposal) with asset management performance. The limitation of the study examines the relationship between the management of the asset lifecycle stages with asset management performance in Central Bureau of Statistics of Central Kalimantan Province, Indonesia. This research has a contribution as a reference on asset management issues in public sector organizations.

LITERATURE REVIEW

Asset Management Performance

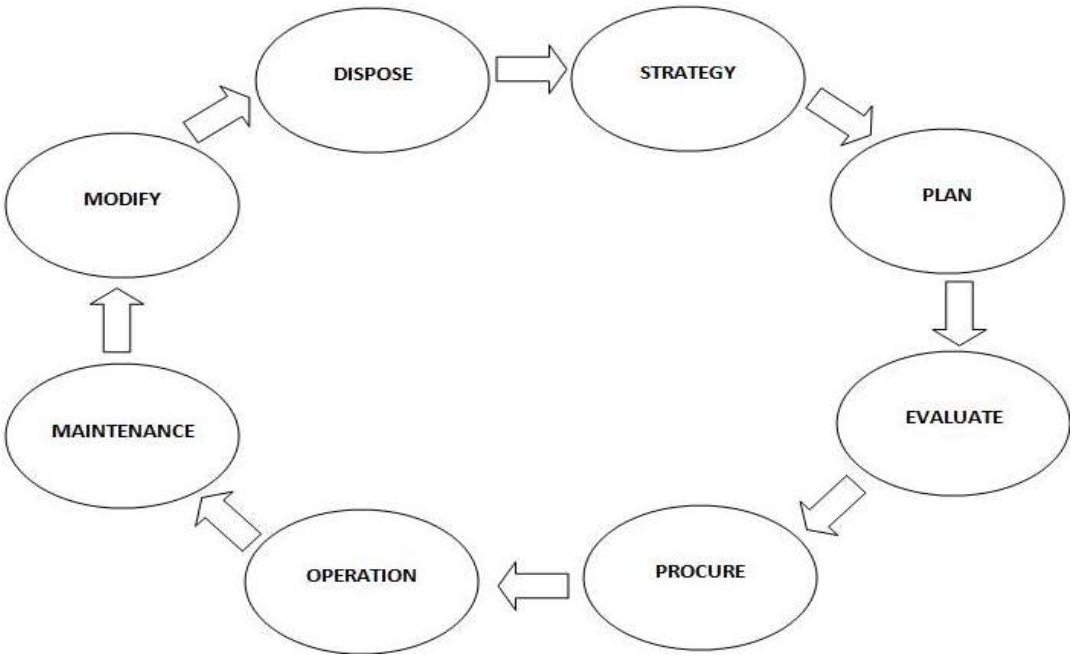
(Hastings, 2010) Asset management performance is related to how well technical, financial and management assessments are based on the principles of efficiency and effectiveness. The efficient action is appropriate to function through minimal utilization of resources to obtain optimal results. Effectiveness is an action appropriate to the target according to function in line with organizational goals to support asset management.

(Ngwira, et. al., 2012) Indicators used in the research, among others: generating capital receipts, rationalizing property holdings, reducing the level of required maintenance, reducing annual operating costs, enhancing sustainability of property holdings, increasing space utilization, introducing new working practices, improving facilities for service delivery, increasing cross-service working, increasing co-location and/or partnership working, increasing compliance with statutes, increasing the usage of services.

Management of Asset Lifecycle

(Campbell, *et. al.*, 2011) Asset lifecycle management is the main asset management process and the supporting components from the initial stage to the end. Asset strategy stages are activities that set up a rational strategy for asset classes and organizational needs. The strategy stage is a phase of decision-making, whether the main assets need to be owned, choose to access them on demand or take a hybrid approach. The planning stage is a stage of determining the target assets, standards, policies, and procedures focus on the delivery of asset management strategies. The evaluation stage is a phase where the asset to be decided to be purchased, the design of the asset to be made, or an asset to be built were evaluated. The Procurement stage is a phase that involves the act of creating, constructing, organizing pre-planned assets. The operation stage is a phase of operating assets according to their objectives using asset management standards, policies, and procedures. The maintenance phase is a stage of maintaining the asset using the organization's existing asset management standards, policies, and procedures. The stage of modification is a step taken to maintain the value and extend the life of the asset in response to the rapidly changing needs and developments of choice. The dispose stage is a stage involving the process of resignation, replacement, renewal, and asset transfer by considering the impact on the environment on an ongoing basis. Eight stages of asset lifecycle can be seen in Figure 1.

Figure 1. The stages of asset lifecycle management (Campbell, *et. al.*, 2011)



.

Correlation between stages of asset lifecycle management and asset management performance

(Campbell, *et. al.*, 2011) The stages of the asset lifecycle consist of strategy, plan, evaluation, procurement, operation, maintenance, modification, and disposal. Each of the asset lifecycles relates to asset management performance. (Hastings, 2010) Asset management performance is related to efficiency and effectiveness in terms of technical and financial assessment in management practices to support the achievement of organizational goals. Conclusion based on the explanation, the implementation of the stages in the lifecycle management of assets related to the performance of asset management.

CONCEPTUAL FRAMEWORK

(Abdullah, *et. al.*, 2011; El-Thalji and Liyanage, 2012; Ibendahl *et al.*, 2014; Tukunang, 2016) The stages of asset lifecycle management are related to asset management performance in an organization. (Badan Pemeriksa Keuangan Republik Indonesia, 2016a) Central Bureau of Statistics of Central Kalimantan Province is one of the government institutions that face the problems of implementation of the lifecycle stages of assets correlate with the performance of asset management. The relation of the stages of asset lifecycle management with asset management performance at the Central Statistics of Central Kalimantan Province is compiled in the conceptual framework in Figure 2.

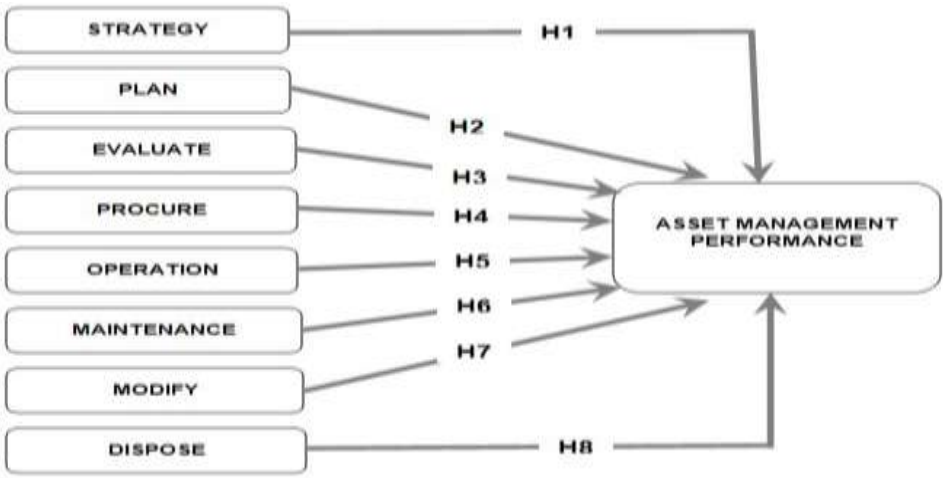


Figure 2. The Conceptual Framework

The research hypothesis is built to answer the problem formulation, among others:

H1: There is a relationship between asset strategy and asset management performance

H2: There is a relationship between asset plan and asset management performance

H3: There is a relationship between asset evaluation and asset management performance

H4: There is a relationship between asset procurement and asset management performance

H5: There is a relationship between asset operation and asset management performance

H6: There is a relationship between asset maintenance and asset management performance

H7: There is a relationship between asset modification and asset management performance

H8: There is a relationship between asset disposal and asset management performance

RESEARCH METHOD

(Sugiyono, 2013) The type of this research is quantitative by using an explanation of relationship. The population in the study was entirely sampled (saturated samples). The study was conducted on all work units of the Central Bureau of Statistics in Central Kalimantan Province in 2017. The unit of analysis was a manager of an asset and financial in each work unit.

Data collection was done using questionnaires distributed to 32 managers in the unit of analysis and returned by 32 with complete replenishment within the period of 12 September to 12 October 2017. The design of the questionnaire was prepared based on literature review (Campbell *et al.*, 2011; Hastings, 2010; Siregar, 2004) and previous empirical studies related to the research (Arlini, *et. al.*, 2014; Ngwira *et al.*, 2012; Pekei & Hadiwidjojo, 2014; Rahardiyanti & Abdulrachman, 2012).

Table 1. The operational definition variable

Variable		Operational definition	Scale
Asset management performance	Y	Technical, financial and management assessments are based on the principles of efficiency and effectiveness.	Ordinal
Strategy	X1	The stage to determine main decision related to an asset, whether do the asset need to be owned, prefer to access the asset on demand, or take a hybrid approach.	Ordinal
Planning	X2	The stage of targeting assets, standards, policies, and procedures focus on the delivery of asset management strategies.	Ordinal
Evaluation	X3	The evaluation stage of the asset to be decided to be purchased, the design of the asset to be made, or an asset must be built.	Ordinal
Procurement	X4	The stage involves action create, build, and establish pre-planned assets.	Ordinal
Operation	X5	The stage of operating assets according to their objectives by using asset management standards, policies, and procedures.	Ordinal
Maintenance	X6	The stage of safeguarding assets by using the organization's existing asset management standards, policies, and procedures.	Ordinal
Modification	X7	The stage of maintaining the value and extending the life of the asset in response to the rapidly changing needs and developments of choice.	Ordinal
Disposal	X8	The stage involving the process of resigning, replacing, renewing, and transferring assets by considering the impact on the environment on a continuing basis.	Ordinal

Sources: Hastings, 2010; Campbell, *et. al.*, 2011

(Lukiastuti & Hamdani, 2012) Spearman Rank Order Correlation is a statistical test tool to test the relationship between research variables. (Arikunto, 2000) Spearman Rank Order Correlation is an appropriate statistical analysis tool for analyzing statistical data with ordinal data types in small sample quantities. (Ghozali, 2011) The correlation statistic test aims to measure the strength of the linear association between two variables. Statistical Package for the Social Science (SPSS) is one of the tools used to perform statistical calculations. SPSS 13.0 trial version is a worth software used to test research data with the small amount (32 respondent data). The operational definition of each variable can be seen in Table 1.

ANALYSIS

Validity and Reliability Testing

(Ghozali, 2011) The validity test measures the ability of a questionnaire to reveal something that the questionnaire will measure. Reliability measures the consistency of the respondent's answer to the statement from time to time. The validity was tested by looking at the significance of the correlation value between statement items that describe the research variables. The reliability test looks at the results of statistical test output through Cronbach's Alpha (> 0.7) as a parameter. Validity and reliability test results are shown in Table 2.

Table 2. Summary of Test Result Validity and Reliability

Variable		Validity Testing		Reliability Testing		
		Significance	Explanation	Value of Cronbach's Alpha	Rule of thumb	Explanation
Strategy	X1	Significant	Valid	0.862	> 0.7	Reliable
Planning	X2	Significant	Valid	0.834	> 0.7	Reliable
Evaluation	X3	Significant	Valid	0.871	> 0.7	Reliable
Procurement	X4	Significant	Valid	0.812	> 0.7	Reliable
Operation	X5	Significant	Valid	0.820	> 0.7	Reliable
Maintenance	X6	Significant	Valid	0.833	> 0.7	Reliable
Modification	X7	Significant	Valid	0.838	> 0.7	Reliable
Disposal	X8	Significant	Valid	0.770	> 0.7	Reliable

Hypothesis Testing

(Ghozali, 2011) Hypothesis testing for correlation analysis by using Spearman Rank Order Correlation is done by comparing the value of t-arithmetic with t-table or see the significance of the correlation test results.

Table 3. Guidelines for Consistency of Correlation Coefficients

Coefficient Interval	Correlation level
0.000 - 0.199	Very weak
0.200 - 0.399	Weak
0.400 - 0.599	Moderate
0.600 - 0.799	Strong
0.800 - 1.000	Very strong

Source: Muhidin and Abdurahman, 2007

(Muhidin & Abdurahman, 2007) The correlation between variables is divided into 5 (five) categories (Table 3). The analysis of the statistical processing data to test the hypothesis refers to the correlation criteria in Table 3. The interpretation results of the statistical tests on the hypothesis are found in Table 4.

Table 4. Statistical Test Results for Correlation between Variables

Variable		Correlation Coefficient Value	Correlation Category	Significance
Strategy	X1	0.698	Strong	Significant
Plan	X2	0.740	Strong	Significant
Evaluate	X3	0.708	Strong	Significant
Procurement	X4	0.603	Strong	Significant
Operation	X5	0.663	Strong	Significant
Maintenance	X6	0.670	Strong	Significant
Modification	X7	0.457	Moderate	Significant
Disposal	X8	0.510	Moderate	Significant

The data in Table 4 form the basis for making decisions on the research hypothesis. The recapitulation of the decision on the hypothesis is given in Table 5.

Table 5. Recapitulation Conclusion of Research Hypothesis

Hypothesis		Conclusion
H1:	There is a relationship between asset strategy and asset management performance	Ho rejected
H2:	There is a relationship between asset plan and asset management performance	Ho rejected
H3:	There is a relationship between asset evaluation and asset management performance	Ho rejected
H4:	There is a relationship between asset procurement and asset management performance	Ho rejected

	Hypothesis	Conclusion
H5:	There is a relationship between asset operation and asset management performance	Ho rejected
H6:	There is a relationship between asset maintenance and asset management performance	Ho rejected
H7:	There is a relationship between asset modification and asset management performance	Ho rejected
H8:	There is a relationship between asset disposal and asset management performance	Ho rejected

DISCUSSION

The result of the research shows that with 95% confidence level there is a positive and significant correlation between the whole management stages of asset lifecycle with asset management performance at work unit of Central Bureau of Statistics in Central Kalimantan Province. The positive correlations between the lifecycle stages of asset and asset management performance have a meaning, more good practice in each stage of asset lifecycle will make asset management performance be a better. The result in line with (Hastings, 2010; Campbell, *et. al.*, 2011) the stages of the asset lifecycle have a relationship with asset management performance.

The stages of strategy, plan, evaluation, procurement, operation, and maintenance are in the category strong relationships with asset management performance. The stages of modification and disposal are in moderate relationships with asset management performance. The correlation coefficient value indicates that the plan stages (0.740) and the evaluation (0.708) are the strongest relationships with asset management performance in the Central Bureau of Statistics work unit in Central Kalimantan Province.

(Aira, 2014) Asset management at government institutions should give an attention and consider matters relates to planning needs and budgets before entry to procurement, storage, distribution, use until transfer. (Tumuhairwe & Ahimbisibwe, 2016) Manage the information and the recording is constraint faced in the planning phase. Documenting and recording all forms of information at the planning stage will assist to decide and analyze possible risks. An integrated system for recording information and simple to access is very important helping to make decisions. It also supports the ease of evaluating assets.

(Pekei *et. al.*, 2014) The quality of human resources related to competence and the quantity related to the number of employees affect the process at the stages of monitoring and evaluation in the lifecycle management of assets. (Alhazmi, 2017) The majority of the public sector faces inconsistent professional and policy issues. Most civil servants have insufficient experience and knowledge in managing assets, particularly in the management of the planning and evaluation stages of assets.

CONCLUSION AND SUGGESTIONS

The conclusions based on the previous discussion are:

1. The asset strategy has a positive and significant relationship in the strong category (0.698) with asset management performance;
2. Asset planning has a positive and significant relationship in the strong category (0.740) with asset management performance;
3. Asset evaluation has a positive and significant relationship in strong category (0.708) with asset management performance;
4. Asset procurement has a positive and significant relationship in strong category (0.603) with asset management performance;
5. Asset operation has a positive and significant relationship in the strong category (0.663) with asset management performance;
6. Maintenance of assets has a positive and significant relationship in the strong category (0.670) with asset management performance;
7. Modification of assets has a positive and significant relationship in the medium category (0.457) with asset management performance;
8. Asset disposal has a positive and significant relationship in the medium category (0.510) with asset management performance.

And, following practical suggestions are made:

a. Central Bureau of Statistics of Central Kalimantan Province tightens supervision on the implementation of the stages in the lifecycle management of assets, especially at the planning and evaluation stage;

b. Central Bureau of Statistics of Central Kalimantan Province improves the governance in implement the stages of asset lifecycle to support the improvement of asset management performance by evaluating the management of information and human resource as the manager of a function of recording asset management.

LIMITATIONS

The limitation of research analyzes the relationship of management of the lifecycle stages of assets with asset management performance in the work unit of the Central Bureau of Statistics in Central Kalimantan Province. The number of population as well as the sample in the study amounted to 32 and included in the small classification. The research data makes the generalization to the study only limited to the condition of asset management at the Central Statistics in Central Kalimantan Province.

FUTURE RESEARCH

a. Future research can develop research by looking at the effect of each lifecycle stage of the asset with asset management performance in a larger population and more number of samples;

b. Further research can be done on some government institutions so that research results can be used generally to solve the problem of asset management in public sector organizations;

c. Further research can be developed by adding other variables in the research model to be studied and investigate how big the impact of each variables to asset management performance.

REFERENCES

Abdullah, Shardy; Razak, Arman Abdul; Pakir, A. H. K. (2011). The characteristics of real estate assets management practice in the Malaysian Federal Government. Journal of Corporate Real Estate, 13(1), 16–35. https://doi.org/10.1108/14630011111120323

Aira, A. (2014). Peran manajemen aset dalam pembangunan daerah. Penelitian Social Keagamaan, 17(1), 21–39. Retrieved from http://id.portalgaruda.org/?ref=browse&mod=viewarticle&article=293919

Alhazmi, N. (2017). Physical asset management practices in the Saudi public sector. Built Environment Project and Asset Management, 7(1), 19–31. https://doi.org/10.1108/BEPAM-12-2015-0070

Arikunto, S. (2000). Manajemen Penelitian. Jakarta: Rineka Cipta.

Arlini, M., Darwanis, & Abdullah, S. (2014). Pengaruh Kompetensi Sumberdaya Manusia, Sistem Informasi, Regulasi, dan Kompensasi terhadap Manajemen Aset. Jurnal Magister Akuntansi Pascasarjana Syiah Kuala, 3(4), 66–75.

Atikoh, N., Febrian, E., & Hendrawan, R. (2017). Fixed asset management in the Indonesian Government Agencies: A case study at ministry of trade. International Journal of Economics, Commerce and Management, V(12), 674–694.

Badan Pemeriksa Keuangan Republik Indonesia, B. R. (2016a). Ikhtisar Hasil Pemeriksaan Semester I Tahun 2016. Jakarta: BPK RI. Retrieved from http://www.bpk.go.id/ihps

Badan Pemeriksa Keuangan Republik Indonesia, B. R. (2016b). Laporan Hasil Pemeriksaan BPK RI atas Laporan Keuangan Pemerintah Pusat Tahun 2015. Jakarta: BPK RI.

Campbell, J. D., Jardine, A. K. S., & McGlynn, J. (2011). Asset Management Excellence (Second). London: CRC Press Taylor and Francis Group. https://doi.org/10.1080/07293682.1998.9657803

El-Thalji, I., & Liyanage, J. P. (2012). On the operation and maintenance practices of wind power asset: A status review and observations. Journal of Quality in Maintenance Engineering, 18(3), 232–266. https://doi.org/10.1108/13552511211265785

Ghozali, I. (2011). Aplikasi Analisis Multivariate dengan Program IBM SPSS 19. (P. P. Harto, Ed.) (Fifth). Semarang: Badan Penerbit Universitas Diponegoro.

Hastings, N. A. J. (2010). Physical asset management. Physical Asset Management. https://doi.org/10.1007/978-1-84882-751-6

Ibendahl, G., Farrell, M., Spurlock, S., & Tack, J. (2014). Optimal replacement age of a conventional cotton harvester system. Agricultural Finance Review, 74(1), 2–16. https://doi.org/10.1108/AFR-02-2013-0008

Kolinug, M. S., Ilat, V., & Pinatik, S. (2015). Analisis pengelolaan aset tetap pada Dinas Pendapatan Pengelolaan Keuangan dan Aset Daerah Kota Tomohon. Riset Ekonomi, Manajemen, Bisnis Dan Akuntansi, 3(1), 818–830. Retrieved from https://ejournal.unsrat.ac.id/index.php/emba/article/view/7556

Lukiastuti, & Hamdani. (2012). Statistika Non Parametris: Aplikasinya dalam Bidang ekonomi dan Bisnis. Yogyakarta: Caps.

Muhidin, S. A., & Abdurahman, M. (2007). Analisis Korelasi, Regresi dan Jalur dalam Penelitian. Bandung: CV. Pustaka Setia.

Ngwira, M. M., Parsa, A., & Manase, D. (2012). Effectiveness of property asset management in Scottish councils. Corporate Real Estate, 14(2), 105–120. https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216

Pekei, B., & Hadiwidjojo, D. (2014). The Effectiveness Of Local Asset Management (A Study On The Government Of Jayapura), 3(3), 16–26.

Pratama, T., Sudarsono, R., & Komara, R. (2017). The impact of management information system success on physical asset management performance: Case study in Bandung City, Indonesia. International Journal of Economics, Commerce and Management, V(12), 95–113.

Rahardiyanti, A. K., & A.; Abdulrachman, E. (2012). Evaluasi Efektivitas Sistem Informasi Manajemen Dan Akuntansi Barang Milik Negara (SIMAK-BMN) Di Departemen Kebudayaan Dan Pariwisata Republik Indonesia. Journal of Applied Finance and Accounting, 5(1), 110–128.

Sihite, M., Sule, E. T., Azis, Y., & Kaltum, U. (2016). Business performance sustainability: A case of industry of building automation system in Indonesia. International Journal of Economics, Commerce and Management, IV(9), 459–479.

Siregar, D. D. (2004). Management Aset Strategi Penataan Konsep Pembangunan Berkelanjutan secara Nasional dalam Konteks Kepala Daerah sebagai CEO's pada Era Globalisasi dan Otonomi DaerahManagement Aset Strategi Penataan Konsep Pembangunan Berkelanjutan secara Nasional dalam Ko. (M. A. Herry, Achmad, Rianto, Edy, Sunarlistiawati, Tri Endah, Muttaqin, Ed.) (First). Jakarta: Gramedia Pustaka Utama.

Sugiyono. (2013). Metode Penelitian Manajemen. (Setiyawami, Ed.) (First). Bandung: Alfabeta.

Tukunang, S. C. F. (2016). Manajemen Aset Daerah pada Dinas Pendapatan Pengelolaan Keuangan dan Aset Daerah Kabupaten Kepulauan Siau, Tagulandang, Biaro. Riset Ekonomi, Manajemen, Bisnis Dan Akuntansi, 4(2), 236–253. Retrieved from https://ejournal.unsrat.ac.id/index.php/emba/article/view/12800

Tumuhairwe, R., & Ahimbisibwe, A. (2016). Procurement records compliance, effective risk management and records management performance Evidence from Ugandan public procuring and disposing entities. Records Management, 26(1), 83–101. https://doi.org/http://dx.doi.org/10.1108/MRR-09-2015-0216