Information System Analysis of the Process of Opening a Savings Account at Bank "XYZ" Using the Cobit 4.1 Framework

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Abstract

Effective money storage and easy access system through the bank. The system used at Bank "XYZ" is still experiencing problems in the opening process. When customer service inputs prospective customer data, the input process exceeds the time specified by the system, the process will stop and return to the login display. Based on these problems, an information system audit is needed regarding the maturity level of Bank "XYZ"'s information system. The aim of this research is to determine the maturity level of the process of evaluating and maintaining ICT performance in information systems. This research uses the COBIT 4.1 framework which focuses on the Planning and Organization (PO), Deliver and Support (DS), and Monitor and Evaluate (ME) domains. The research results show that overall based on the maturity level in COBIT, the information system for the process of opening savings at Bank "XYZ" is at level 2 (repeatable but intuitive), which means the company has carried out a repetitive business process but there is no standard procedure for opening savings. To reach level 3 (define process) Bank "XYZ" needs to make process improvements by implementing the COBIT 4.1 Framework, namely PO, ME and DS which have a number of subdomains.

Keyword: Audit, COBIT 4.1, Information Systems, Savings Account

1. INTRODUCTION

The rapid development of Information and Communication Technology opens up opportunities and challenges to create, access, process and utilize information appropriately and accurately. Bankx is a financial institution that performs three functions, namely1accepting money deposits, lending money2 and3money transfer services. Before performing these three functions, prospective customers must have one form of savings in the form of savings. In every bank there is a requirement for creating a savings account, including Bank "XYZ".Prospective customers who will open a savings account to Bank "XYZ" must attach 2 identities such as ID cards and driver's licenses or may use a passport or other identity in accordance with the applicable SPA. In addition, each bank will provide requirements for a minimum initial deposit, a minimum retained balance and a savings account closing fee. Bank "XYZ" has 2 types of savings, namely SIMASXYZ and MASSVXYZ savings. But before processing the creation of the savings account. Customer Service must input data into the existing system in accordance with the customer's identity to get a Customer Information System (CIF) number or customer data number using the Temenos system, in this system the data entry process to get a CIF number there are obstacles, namely the time limit for accessing the system, if Customer Service does not fill in all the fields on the CIF number creation menu on the system, Then the system will automatically return to the login screen.

With these problems, researchers use several references to previous research, including: Improvement strategies are provided to overcome gaps that arise based on the COBIT 4.1 framework and are supported by the ITIL V3 framework which has gone through a mapping process using the COBIT 4.1IT process[1]. The role of the job and the complexity of an organization's IT systematically impact the perception of artifacts. A better understanding of the bias of IT artifacts will help organizations better assess information systems [2]. Pattern of results based on respondent's job type and geographic location. This survey of IT professionals highlights the relevance of CobiT's widely used IT governance framework from an organizational internal control perspective [3].Information system contained in PT. Various Technology Solutions still have shortcomings in IT governance [4].The capability level of the XYZ University Academic Information System is currently at 3.95 or at level 4 (predictable). However, this level of capability still does not meet the expectations of the capability of XYZ University for its Academic Information System, where there is still a gap of 1.05 [5].

Implementing the Cobit 4.1 framework for conducting information system audits, evaluations and supervision at the defined process level. This level was obtained based on the results of interviews from several standard domains, namely ME1, ME2, ME3, and ME4 which have been processed by producing an average maturity level value of 2.84 with the expectation of level 4 and having a gap of 1.16.[6]. Using an international standard IT framework. By implementing COBIT you can increase the competitiveness of output and outcomes from good IT governance[7]. Evaluation of IT governance using the COBIT 4.1 framework to determine the state of IT governance at Diskominfo by calculating the level of maturity and providing recommendations for document design [8]. Based on the foundation of previous research, it can be drawn state of the art that ICT performance in information systems must be evaluated and maintained. By using COBIT 4.1, the purpose of this study is expected to support the assessment and maintenance process by measuring the maturity level of its information system and developing services that meet client customer expectations. The concentration domains used in this study were PO, DS and ME domains. Research instruments used to collect questionnaire data were distributed to respondents.

2. MATERIAL AND METHOD
2.1. Research Methods
The research method uses numerical data and emphasizes the research process on measuring objective results using statistical analysis. This study uses quantitative methods, namely information data in the form of number symbols or numbers. Quantitative calculations can be done to produce a valid conclusion.

1. Technically an information system is a set of interconnected components that begin with the collection, storage, processing, and distribution of information to support decision making and monitor organizational implementation [9].Information is data that has been processed or data that has meaning [10].

2. Audit A systematic process to obtain and objectively evaluate evidence related to statements about activities and events with the aim of determining the level of conformity between these statements and predetermined criteria, as well as reporting audit results to stakeholders [11]. The process of collecting and evaluating evidence to determine whether information systems can secure assets, maintain data integrity, drive efficiency of overall organizational goals, and efficient use of resources Some aspects are examined in information system audits such as validity, efficiency, system availability, reliability, confidentiality and integrity, security aspects, process testing, program changes, checking data sources and data files". Collection and evaluation of evidence to determine whether information systems and information technology environments adequately protect assets, maintenance data and system integrity, provide relevant and reliable information, archive organizational objectives effectively [12].The purpose of an information system audit is to assess whether information system control has been able to provide adequate confidence in asset security, data integration, effectiveness and efficiency. In order to create added value and minimize Information Technology (IT) risks, efficient and effective management of all IT resources is needed, among others, through IT Governance [13].

2.2. Population and Sample
Population is a general area consisting of subjects or objects that exhibit a certain number and characteristics identified by researchers for study [14]. The subjects of concern in this study are all subjects who participated in the process of opening savings, especially department and branch managers. A sample is a portion of a whole that represents all the characteristics of a whole [15] To determine the sample, researchers use non-probability sampling techniques and refer more to saturated sampling, where in this study all members of the population are used as samples.

2.3. Testing sample data
1. Validity Test
Validity comes from the word validity which means a number of places where the accuracy and accuracy of a measuring instrument can perform its measuring function. Validity is an opinion regarding the suitability of a measurement for a specific conclusion or decision derived from an existing score. So, the validity test is a scale on which conclusions made based on numerical scores become appropriate, meaningful and useful so that test results are valid in other situations and invalid in other situations [16].

2. Reliability Test
Reliability indicates the extent to which measurement results can be trusted. Reliability refers to the consistency of measurements to the extent that results are the same based on different shapes of the same instrument or time at the time of data collection. A reliability test is a statistical relationship that

compares two sets of scores from the same individual. The scale for reliability coefficient is .00 to .99 [17].

2.4. COBIT

COBIT (Control Objectives for Information and Related Technology) is the basis for information systems testing and control established by the Information Systems Audit and Control Association (ISACA) and the IT Governance Institute (ITGI). The Related Control Objectives for Information and Related Technology in its 4.1th edition is a collection of IT governance best practices that can help auditors, management, and users. Used to bridge the gap between business risk, need and control issues. COBIT is a standard that is considered the most complete and comprehensive as an IT audit framework because it is developed continuously by non-governmental professional auditors spread across almost all countries. Where in each country a chapter is built that can manage these professionals.

The COBIT framework is a technique that can help auditors identify IT control issues, while giving IT users confidence in the application systems used and managers in making IT and infrastructure investment decisions. In general, testing using COBIT is based on the basics of business needs, IT resources, and IT processes. By conducting an IT audit, it is expected to have a positive impact on the organization's IT by improving system mechanisms, integrity, effectiveness, and efficiency. Each country built a chapter that could manage these professionals.

1. COBIT Framework
   The COBIT framework consists of several directives/guidelines, namely: Control Objectives, Audit Guidelines, Management Guidelines.

2. COBIT concept
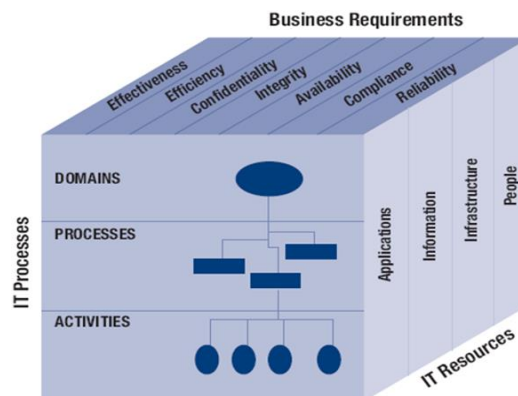   Overall the concept of the COBIT framework can be seen from 3 points of view and can be seen from the Figure1.

Figure 1. COBIT concept

3. Information Criteria
   COBIT issued by the IT Governance Institute (ITGI). COBIT is used to perform IT determinations and improve IT control. COBIT also contains control objectives, audit guidance, performance and result metrics, success factors and maturity models. The scope of information criteria is often a concern in COBIT.

4. IT Resources
   Resources related to information technology. The resources contained in COBIT include: Organizations – People, Application Systems, Technologies, Facilities, Data.

5. IT Process
   COBIT groups all business activities that occur in an organization into 34 processes which are divided into 4 process domains which include some of the things that can be seen in figure 2.

COBIT provides parameters for assessing how high and good IT management is in an organization using maturity models that can be used for management awareness and maturity level assessments. COBIT has maturity models to control IT processes using scoring methods so that an organization can assess its IT processes from non-existent to optimistic scale (from 0 to 5), namely: 0: Non Existent, 1: Initial, 2: Repetable, 3: Defined, 4: Managed and 5: Optimized.
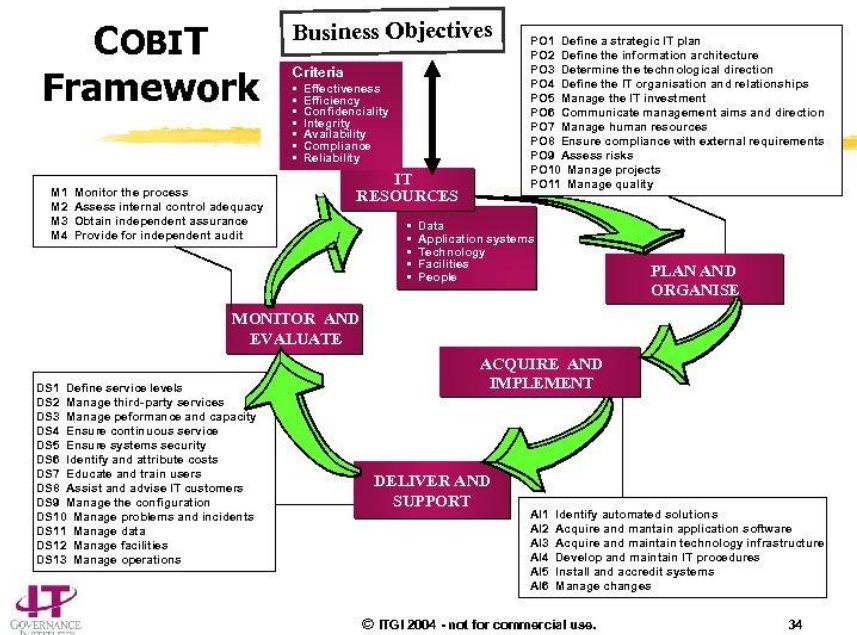
Source: COBIT 4.1 - Assessment Center (assessment-center.co.id)
Figure 2. Domain COBIT

Based on the correspondence table between the company's business objectives and COBIT's business objectives map, the domains used in this study are PO, ME and DS, each of which has a number of subdomains can be seen in table 1 and table 2.

Table 1. Concept Framework

Company Business Objectives	COBIT Business Objectives	Process
Improve onboarding and customer service	Respond to governance requirements in accordance with board directives.	- PO1 (implementing IT strategy plan). - PO4 (implementing IT organization and its relationships) - ME1I(supervise and evaluate IT performance) - ME4I(provides IT governance)
	Make sure IT services are available as needed.	- DS3I(manage capacity and performance) - DS4I(guarantee continuous service) - DS8I(Manage services and incidents) - DS13I(manage operations)

Table 2. Indicators on sub domains

Sub Domain	Indicator
PO1	- IT value management - how to align IbusinessIIT - assessment of current capabilities and performance - planIIT strategy - IT portfolio management
PO4	- IT process framework - placementIorganizationIIT function - structureIIT organization - Establishment of IperanIdan responsibilities - responsibility forIqualityIIT - separation of tasks
ME1	- monitoring data collection - monitoring methods - Performance appraisal - Improvements - pendekatan monitoring

Sub Domain	Indicator
ME4	- Establishment of the Governance Framework - managementIresourceIdaya - Risk Management - measurementIperformance
DS3	- performance planningIdanIcapacity - current performance and capacity - performanceIand capacity Future - availability of IT resources - monitoringIdan reporting
DS4	- IT continuity framework - IT continuation plan - IT continuity plan maintenance - test IT sustainability plans - IT plan continuation training - IT sustainability plan development - restoration of IT services - conduct a review
DS8	- registration of customer requests - Closing incident - service desk
DS13	- prosedur operasi dan instruksi - jadwal pekerjaan - pemantauan infrastruktur IT - perawatan preventif untuk perangkat keras

Audits are intended to test the internal controls of information systems and how people use those systems. The audit is carried out in the form of evaluation of inputs, outputs and system processes. Security system backup and recovery plan and information system settings. Audits can be performed on existing or newly developed systems [18]. Data analysis methods used in processing existing data and then compared with existing theories. This research is descriptive. These data can be obtained by making observations, direct interviews on the object of research and making a questionnaire. The primary data source in qualitative data analysis is obtained from the place of research which will later be processed according to the needs of the analysis. To get accurate results or data in this study, researchers conducted the testing phase using test, reliability test; by using SPSS, if in the validity test there is an invalid questionnaire, then there is a choice that needs to be done, namely eliminating the invalid questionnaire [19].

3.   RESULT AND DISCUSSION

In research ini the characteristics of respondents are divided based on position and length of work. The requirements as respondents are as follows:
1. The respondent is an employee at Bank "XYZ" Muara Karang branch where the employees are operational division and branch leader
2. Respondents were involved in the process of opening a savings account using the system.
3. Respondents have been working for at least 1 year.

Table 3. Characteristics of Respondents

Department	Length of Work	Amount
Branch Leaders	6 years	1
Head of Operations	5 years	3
Customer Service	2 years	5
Teller	2 years	7
Total		16

Source: Researcher, 2023

3.1.   Validity Test

In this study, the results of the validity test using SPSS are as follows. Based on the output results in the table above, it can be known whether the data is valid or not by looking for r calculate. In this study, researchers used 16 respondents with a signification level of 5%, so the r table can be obtained, which is 0.497. In the data above, the value of calculate table then the data can be declared VALID.

3.2. Reliability Test

Table. 4. Reliability Statistics

Cronbach's Alpha	N of Items
0,984	100

Source: Data processing results, 2023

Based on Table 5, it can be seen that Cronbach's Alpha number is 0.984. So the value of the questionnaire is 0.984 > 0.6_therefore it can be concluded that the questionnaire can be said to be reliable, reliable and consistent as a data collection tool in research.

3.3. Maturity Level Analysis

Maturity analysis was carried out by distributing questionnaires to respondents. Determination of maturity level describes the measurement of the extent to which the company has met standards of a good information technology management process. The following is the rounding scale of the maturity level index:
1. 0.00 – 0.50 pada_tingkat_0 None (non exixtent).
2. 0.51 – 1.50 pada_tingkat_1 Initialization.
3. 1,51 – 2,50 pada_tingkat_2 Dapat diulang (repeatable but intuitive).
4. 2.51 – 3.50 pada_tingkat_3 Defined (define).
5. 3.51 – 4.50 pada_tingkat_4 Managed and measurable.
6. 4,51 – 5,00 pada_tingkat_5 Sempurna (optimized)

Table 5. Maturity Level Results

Process		Maturity Level		
		Now	Expected	Gap
ME1	(Supervise and evaluate IT performance)	1,95	3	1,05
ME4	(Provide IT governance)	1,75	3	1,25
PO1	(Implement IT strategy plan)	1,95	3	1,05
PO4	(Implementing IT organizations and their relationships)	1,79	3	1,21
DS3	(Manage capacity and performance)	1,95	3	1,05
DS4	(Guarantee continuous service)	1,94	3	1,06
DS8	(Manage service and incidents)	1,83	3	1,17
DS13	(Manage operations)	1,87	3	1,13
Average Index		1,88		1,13

Source: Data processing results

Table 5 above proves that the maturity level of the savings opening system at Bank "XYZ" which is 1.88 is at level 2 (repeatable but intuitive). While the value expected by the company is at level 3 (defined process). From this comparison, an average gap of 1.13 can be obtained, which means that the maturity level has not been reached as expected. To improve the achievement of the performance of the information system for opening savings, the researcher made a recommendation for improvement. And can be given conclusions for each sub domain, which is as follows:
1. In the ME1 domain, the current maturity model level value is 1.95 and is at level 2 repeatable but intuitive), while the company expects the evaluation process and supervises the IT performance process that runs at level 3 (defined process). So that ME1 has a gap value of 1.05 because the process of opening a savings account at Bank "XYZ" does not run effectively and efficiently so that business processes are hampered and the company still has no documented procedures containing evaluation and supervision of good IT performance.

2. In the ME4 domain, the current maturity model level value is 1.75 and is at 2 (repeatable but intuitive) while the company expects the provision of IT governance to be at level 3 (defined process). So that ME4 has a gap value of 1.25 because Bank "XYZ" has carried out the process of opening savings repeatedly but there are still time constraints in the system used so that business processes do not run smoothly.

3. In the PO1 domain, the current maturity model level value is 1.95 and is at 2 (repeatable but intuitive) while the company expects the process of implementing the IT strategy plan to be at level 3 (defined process). So that PO1 has a gap value of 1.05 because there is no establishment of procedures in the company so that IT strategy plans are only distributed to company management if only needed and decision making is carried out based on individual knowledge.

4. In the PO4 domain, the current maturity model level value is 1.79 and is at level (repeatable but intuitive) while the company expects the process of implementing an IT organization and relationships to be at level 3 (defined process). So that PO4 has a gap value of 1.21 because there is no consistency in the company regarding the understanding of IT functions on customer needs and vendor relationships. The decision still depends on the knowledge and skills of the individual.

5. In the DS3 domain, the current maturity model level value is 1.95 and is at level (repeatable but intuitive) while the company expects the process of managing capacity and performance to be at level 3 (defined process). So that DS3 has a gap value of 1.05 because the system used at Bank "XYZ" for the savings making process still has insufficient capacity so that performance has decreased.

6. In the DS4 domain, the current maturity model level value is 1.94 and is at 2 (repeatable but intuitive) while the company expects the process to guarantee continuous service to be at level 3 (defined process). So that DS4 has a gap value of 1.06 because the company has implemented system maintenance but it is not carried out consistently so that it becomes an obstacle in the continuous service process.

7. In the DS8 domain, the current maturity model level value is 1.83 and is at level 2 (repeatable but intuitive), while the company expects the process of managing services and incidents to be at level 3 (defined process). So that DS8 has a gap value of 1.17 because Bank "XYZ" already has a fairly good service carried out when running business processes, but if there are problems in the business process, decision making to solve them is based on individual knowledge and has not been documented.

8. In the DS13 domain, it gets a current maturity model level value of 1.87 and is   level   (repeatable but intuitive) while the company expects the process of managing operations to be at level 3 (defined process). So that DS13 has a gap value of 1.13 due to the lack of consistency and unstructured monitoring process of computers in the company so that there will be greater occurrence of errors when operating computers
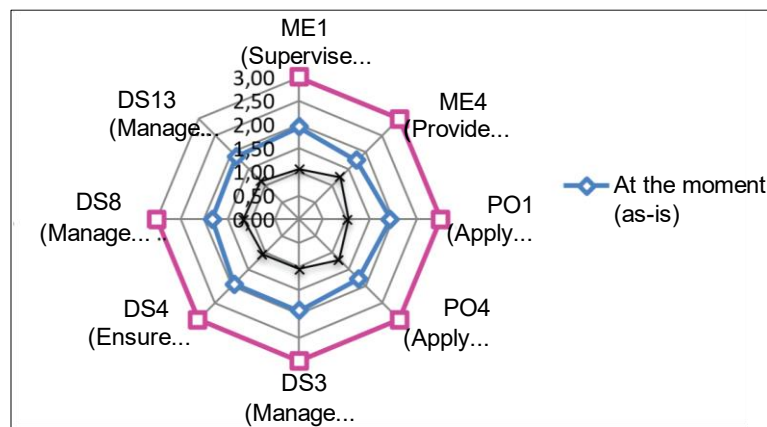
Source: Data processing results, 2023

Figure 3. Maturity Spider Chart

In Figure 3, it can be explained that pink represents the expected value, blue represents the current value and black represents the gap value. That value expected by the company i.e. at level 3. (defined process) where the company expects that there are documented and standard procedures in carrying out existing business processes, but in each sub-domain only reaches level 2 (repeatable but intuitive) that is, the company has done business processes well and already has solutions that are done repeatedly but still based on individual knowledge and have not been documented.

4. CONCLUSION

Based on the results of the analysis of measuring the maturity level of the savings opening information system at Bank " This happened. problem. occurs but there is still no documented procedure. The maturity level of the savings opening information system at Bank "XYZ" is still less than the expected value at level 3 due to the lack of standard procedures and consistency from the company so that in the business process there is still a high level of problems. . Validity Test: There is data with a value <0.497, namely q34, q38, q77, q78 and q79 which can be declared invalid, so the researcher eliminates the data and tests it again using SPSS. In the reliability test, the questionnaire used is declared reliable and is used regularly and consistently from time to time. Further research development can be improved on domain division, work process activities,

improvements and governance guarantees IT companies are based on the strategic objectives and associated risks of the company.

REFERENCES

[1] I. Ketut And A. Purnawan, "Audit Of Accounting Information System Using Cobit 4.1 Focus On Deliver And Support Domain 1 Ni Putu Sri Merta Suryani, 2 Gusti Made Arya Sasmita," *J Theor Appl Inf Technol*, Vol. 31, No. 3, 2015, Accessed: Nov. 09, 2023. [Online]. Available: Www.Jatit.Org

[2] M. Curry, B. Marshall, And P. Kawalek, "It Artifact Bias: How Exogenous Predilections Influence Organizational Information System Paradigms," *Int J Inf Manage*, Vol. 34, No. 4, 2014, Doi: 10.1016/J.Ijinfomgt.2014.02.005.

[3] D. S. Kerr And U. S. Murthy, "The Importance Of The Cobit Framework It Processes For Effective Internal Control Over Financial Reporting In Organizations: An International Survey," *Information And Management*, Vol. 50, No. 7, 2013, Doi: 10.1016/J.Im.2013.07.012.

[4] Fenny And J. F. Andry, "Audit Sistem Informasi Menggunakan Framework Cobit 4.1 Pada Pt. Aneka Solusi Teknologi," *Prosiding Semnastek*, Vol. Vol. 3, No, No. 0, 2017.

[5] Nurisa Rahma Shantika, A. Oktaviana Syafira, And S. Mukaromah, "Evaluasi Kematangan Tata Kelola Sistem Informasi Akademik Universitas Xyz Menggunakan Cobit 5," *Jurnal Informatika Dan Sistem Informasi*, Vol. 3, No. 1, 2022, Doi: 10.33005/Jifosi.V3i1.427.

[6] H. Stmik Royal, "Penerapan Domain Monitor And Evaluate Framework Cobit 4.1 Dalam Pelaksanaan Audit Sistem Informasi," *Journal Of Science And Social Research*, Vol. 4, No. 2, Pp. 205–211, Jun. 2021, Accessed: Nov. 09, 2023. [Online]. Available: Https://Www.Jurnal.Goretanpena.Com/Index.Php/Jssr/Article/View/608

[7] M. Nur Luthfi Azis, T. Lestariningsih, And U. Amikom Yogyakarta, "Analisis Tatakelola Sistem Informasi Pada Pt. Duta Kartika Agro Lestari Menggunakan Cobit 4.1 (Studi Kasus: Pt. Duta Kartika Agro Lestari)," *Jurnal Aksi (Akuntansi Dan Sistem Informasi)*, Vol. 3, No. 1, Pp. 2528–6145, 2018, Accessed: Nov. 09, 2023. [Online]. Available: Https://Pnm.Or.Id/Ejournal/Index.Php/Aksi/Article/View/62

[8] F. Adityo, S. Suprapto, And A. D. Herlambang, "Implementasi Kerangka Kerja Cobit 4.1 Domain Acquire And Implement (Ai) Terhadap Tata Kelola Teknologi Informasi (Studi Kasus: Dinas Komunikasi Dan Informatika Kota Bukittinggi)," *Jurnal Pengembangan Teknologi Informasi Dan Ilmu Komputer*, Vol. 3, No. 2, Pp. 2010–2019, 2019, Accessed: Nov. 09, 2023. [Online]. Available: Https://J-Ptiik.Ub.Ac.Id/Index.Php/J-Ptiik/Article/View/4444

[9] K. C. Laudon And C. G. Traver, *E-Commerce 2017: Business, Technology, Society (13th Edition) Global Edition*. 2017.

[10] Dan M. Oktafianto And Muslihudin, "Analisis Dan Perancangan Sistem Informasi Menggunakan Model Terstruktur Dan Uml - Muhamad Muslihudin, Oktafianto - Google Buku," *Analisis Dan Perancangan Sistem Informasi Menggunakan Model Terstruktur Dan Uml*. 2016.

[11] U. Yudatama, K. Guste, Komalasari. Rita, And R. H. Purabaya, *Audit Sistem Informasi: Teori, Framework Dan Studi Kasus Menggunakan Framework*, No. January. 2022.

[12] M. K. I Putu Agus Swastika, S. P. M. T. I Gusti Lanang Agung Raditya Putra, A. Pramesta, C. V. A. Offset, And S. Primakara, "Audit Sistem Informasi Dan Tata Kelola Teknologi Informasi: Implementasi Dan Studi Kasus," *Andi*, 2016.

[13] H. Setiawan And K. Mustofa, "Metode Audit Tata Kelola Teknologi Informasi Di Instansi Pemerintah Indonesia," *Jurnal Iptekkom : Jurnal Ilmu Pengetahuan & Teknologi Informasi*, Vol. 15, No. 1, 2013, Doi: 10.33164/Iptekkom.15.1.2013.1-16.

[14] S. Siyoto And M. A. Sodik, "Dasar Metodologi Penelitian By Dr. Sandu Siyoto, Skm, M.Kes M. Ali Sodik, M.A (Z-Lib.Org)," In *Literasi Media Publishing*, 2015.

[15] "Dasar Metodologi Penelitian - Sandu Siyoto, Muhammad Ali Sodik - Google Buku." Accessed: Nov. 09, 2023. [Online]. Available: Https://Books.Google.Co.Id/Books?Id=Qphfdwaaqbaj&Printsec=Frontcover&Hl=Id#V=Onepage&Q &F=False

[16] A. S. Hamdi And E. Bahrudin, *Metode Penelitian Kuantitatif Aplikasi Dalam Pendidikan - , E. Bahruddin - Google Books*. 2014.

[17] "Metode Penelitian Kuantitatif Aplikasi Dalam Pendidikan - Asep Saepul Hamdi, E. Bahruddin - Google Buku." Accessed: Nov. 09, 2023. [Online]. Available: Https://Books.Google.Co.Id/Books?Id=Nhwacgaaqbaj&Printsec=Frontcover&Hl=Id#V=Onepage&Q &F=False

[18] F. Zamzami, I. A. Faiz, And Mukhlis, *Audit Internal: Konsep Dan Praktik - Google Books*. 2018.

[19] J. Arifin, *Spss 24 Untuk Penelitian Dan Skripsi*. 2017.