

ANALYSIS AND DESIGN OF STANDARD OPERATING PROCEDURES IN PT. XYZ SERVER ROOM USING TIA-942 AND ISO/IEC 27002

ANALISIS DAN PERANCANGAN STANDAR OPERASI PROSEDUR PADA RUANG SERVER DI PT.XYZ MENGGUNAKAN TIA-942 DAN ISO / IEC 27002

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Abstract

As a private company engaged in data center services, it should have business process procedures that can facilitate the implementation of tasks and work in the company. However, in the management of existing regulations in the company to support this business process, there are problems that can hinder the work of employees. The cause of this problem is the absence of SOPs that regulate the work of existing employees as a result of which employees become confused about carrying out their activities and experience problems, namely inefficient time which can prevent employees from executing an on-going activity.

Based on these problems, an SOP design is needed to simplify and help make work more efficient, as well as an SOP design that must meet the specified standards, namely TIA-942 and ISO 27002, both of these standards function to optimize business processes and activities in the company, namely focusing on data security as well as the company's data centre infrastructure.

Keywords: Data centre, Standard Operating Procedure, TIA-942, ISO 27002

Abstrak

Sebagai perusahaan swasta yang bergerak di bidang jasa data center harus memiliki prosedur proses bisnis yang dapat memudahkan pelaksanaan tugas dan pekerjaan di perusahaan tersebut. Namun dalam pengelolaan regulasi yang ada di perusahaan untuk mendukung proses bisnis ini, terdapat permasalahan yang dapat menghambat kerja karyawan. Penyebab dari permasalahan tersebut adalah tidak adanya SOP yang mengatur pekerjaan pegawai yang ada akibatnya pegawai menjadi bingung dalam menjalankan aktivitasnya dan mengalami permasalahan yaitu waktu yang tidak efisien yang dapat menghambat pegawai untuk melaksanakan suatu kegiatan yang sedang berlangsung.

Berdasarkan permasalahan tersebut maka diperlukan suatu desain SOP untuk mempermudah dan membantu agar pekerjaan menjadi lebih efisien, serta desain SOP yang harus memenuhi standar yang ditentukan yaitu TIA-942 dan ISO 27002, kedua standar tersebut berfungsi untuk mengoptimalkan proses bisnis dan kegiatan di perusahaan, yaitu fokus pada keamanan data serta infrastruktur pusat data perusahaan.

Kata kunci: Data centre, Standard Operating Procedure, TIA-942, ISO 27002

1. Background

One important aspect in realizing a more efficient and effective business process is having regulations that can help make every job easier. Permenpan No.PER / 21 / M-PAN / 11/2008 it has been explained that it is important for every organization or institution to have SOPs that can make it easier for employees to carry out work so that they are more focused and do not make the wrong decisions if there are obstacles in them. The absence of these guidelines has hampered the implementation of activities within the organization. The guidelines needed are SOPs. One aspect of implementing a better work aspect is the need for SOPs in the company. With the existence of SOPs, the implementation of activities in the company can run well and surely, so that various forms of irregularities can be avoided, or if there are deviations in work, they can be resolved because they already know the location of the error or know the cause.

Standard Operating Procedure (SOP) is regulating software, which regulates the stages of a work process or certain work procedures. Because the work procedures in question are permanent, routine, and do not change, these work procedures are standardized into a written document. This written document is then used as a standard for the application of certain work procedures.^[1] A good SOP is an SOP that is able to create a better workflow as a place for employees in the company, facilitate supervision, and also make good coordination between the parts involved in it. One of them is the data centre space in the company.

Data centre is a place, building, or building that functions to store and operate a server. The data centre also has another room that is useful to help the server stay uptime and avoid other risks^[2]. Many aspects need to be considered in the design of data centres both from air conditioners, humidity, shelves, data centre users, electricity, and others.

Data centre development must meet recognized standards. One of the internationally recognized standards is TIA-942; this standard has been issued by the Telecommunications Industry Association (TIA) in collaboration with the Electronics Industry Association^[3]. The purpose of this standard is to establish for various designs and elements of data centre development both large and small scale. This standard provides requirements and guidelines for data centre design and installation. In Indonesia there is a Draft Technical Guidelines for the Development of Data Centres namely the Regulation of the Minister of Communication and Information about data centre, and this draft still refers to TIA-942 Standards.

To maintain the security of existing data at the company, it needs a standard that can help in the security system. ISO 27002 is a procedure related to information security and control that enables a company to implement appropriate security. This standard is complemented by ISO 27001 which details tasks such as risk assessment and security review. ISO 27002 contains details about controls and procedures to keep information safe.

As one form of support in maintaining information security, what can be implemented at this company is to create a standard operational procedure that is made in the form of SOP (Standard Operational Procedure) documents about server space in order to reduce any risk. By documenting a good work process can improve time efficiency and work that is more structured in the company, therefore making this SOP can help every business process in the company to be better than before.

The company has implemented several TIA-942 and ISO 27002 standards in several parts of its business processes, but from the results of research into place it is known that not all business processes comply with existing rules. So the purpose of making this SOP is that the SOP applied in the company can be in order to avoid information leakage or disruption that will occur in the future.

The results of the study resulted in the design of SOP (standard operational procedure) proposals for server rooms that were in accordance with TIA-942 and ISO 27002 standards which could later be used as guidelines for company activities. This SOP will cover server room access, maintenance, data backup systems, system data restore and disaster and fire management.

2. Theory

2.1 Standard Operating Procedure (SOP)

In the world of work, it is familiar with the term SOP or standard operating procedure. SOP is a guide used to ensure operational activities of an organization or company run effectively, efficiently, systematically, and well managed^[4]. SOPs are usually in the form of written documents containing work instructions that must be carried out and also in accordance with standards set by a company or organization. With the SOP can help the work of each unit in the organization or company more precisely, quickly, effectively, and efficiently and is expected to avoid mistakes.

2.2 Data Centre

Data centre, which literally means data centre, is a facility to place computer systems and related equipment, such as data communication systems and data storage. These facilities include redundant power supplies, redundant data communication connections, environmental controls, fire prevention and physical security devices^[5]. In planning a

data centre, there are things that must be consider with the aim of getting the data centre in accordance with the following criteria that is availability, scalability and flexibility, and the last is security.

2.3 TIA-942

In April 2005, the TIA-942 data centre standard was published by the Telecommunications Industry Association (TIA). TIA-942 is a standard developed by TIA to establish guidelines for data centre planning and construction. In TIA-942, there are things to consider such as reliability, infrastructure, construction structures, electrical facilities, and different mechanical facilities. Power management

The purpose of this standard is to establish guidelines for various designs and elements of data centre development both on a large scale and small scale. This guide provides guidance in designing data centres. This standard is also intended for designers who need an understanding of data centre design including facility design, cable systems and network design [6].

TIA-942 discusses procedures regarding network architecture, electrical design, file storage, backup and archiving, system redundancy, network access control and security, database management, web hosting, application hosting, content distribution, environmental control, protection against physical hazards (fire, flood, windstorm), and power management [7].

2.4 ISO/EIC 27002

ISO / EIC 27002 provide guidelines for organizational information security standards and information security management practices. This standard includes controls which are an important part of management for all organizations. Every organization that stores and manages information must have controls to deal with information security risks. Although the specific requirements for handling information security may vary by organization, there are many controls that can be applied by organizations in securing data.

This standard is often compared to ISO 27001. It is true that both of these standards are standards required for information security, but in ISO 27002 it is intended to cover all institutions that need information security. ISO 27002 contains details about controls and procedures used to keep information safe. This standard contains many ways to handle information security and has many chapters on how to safeguard information. ISO 27002 has several sections related to human resources and their interactions with information, while others contain ways for a business to control business access and sustainability with security procedures.

3. Research Methodology

Research methodology is a way to obtain results from a problem, where the problem is a research problem. In this study the authors used qualitative methods. Qualitative research comes from field data and uses existing theories as support.

The conceptual model in this study has three important elements, namely input, process and output. This model explains how to solve problems from the beginning to the end of the study.

The first element is input. Input describes the problems that occur in the company. Then the second element is process. This element describes the processing of data inputted at the initial stage of the research which is then expected to produce the desired information output. The last element is output. This output illustrates the design results generated from the input to the data processing. It is hoped that this output will later become information that can be used as a solution to the problems experienced by the company.

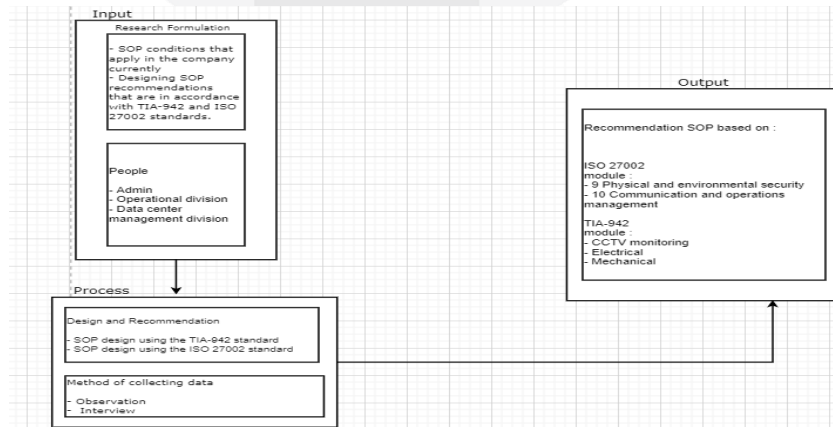


Figure 3. 1 Research methodology

4. Discussion and results

4.1 Analysis of Current Conditions

Based on the results of research conducted on the company, it can be seen at this time that this company does not yet have an SOP that is suitable to sustain the existing business processes at the company. Because there is no SOP, the company's performance is considered to be less effective and efficient if it does not have an SOP. Therefore, a standard operating procedure will be recommended that can be used later by the company to assist its business processes, and this standard operating procedure complies with the TIA-942 and ISO 27002 standards.

4.2 SOP for Access Server Room

In the SOP to access the server room an improvement was made which previously only had 6 activities in this recommendation having 7 activities. It is important to implement this SOP because in TIA-942 the application of physical security is to avoid the occurrence of unwanted events in the server room and the devices contained therein.

Figure 4. 1 SOP for access server room

No	Activity	Executing				Standard Quality	
		Admin	Server Room Management Officer	Server Room Management Manager	Guest	Completeness	Time
1	Guests apply for permission to enter the server room					Identity card (KTP/SIM)	15 minutes
2	Admin accepts requests for permission to enter the server room					Application form for access to server room	15 minutes
3	Admin allows guest to access the server room accompanied by a server room officer					Application form for access to server room	10 minutes
4	The server room management officer accompanies the guest while in the server room					Application form for access to server room	30 minutes
5	The server room officer ensures that as long as the client is in the server room, he is always accompanied and monitored so that the client does not do things outside of their license						45 minutes
6	The server room officer reports to the server room management manager if in making a decision requires permission from the manager						15 minutes
7	After the client has finished then the admin records the hours out					Report on the results of guest access to the server room	10 minutes

The application of this SOP was adopted using the TIA-942 standard which is important in the application of physical security and one of them is in terms of accessing server space. This SOP has 7 activities and there are 4 people who carry out executions namely Admin, Server room management officer, server room management manager, and the last guest. And the difference between this SOP and the previous one is the addition of time needed to be applied in carrying out each activity.

4.3 SOP for back-up data

It is important to have an SOP if you want to back up data, this is done so that each process is carried out in accordance with the provisions to avoid data leakage or other interruptions. The proposed SOP uses the ISO 27002 standard, because both this standard and the TIA-942 standard require that every organization regularly back up data. If this SOP is not carried out, the results of the backup will not run well and may cause risks to the company's business processes. In this data backup is done once every 3 months.

Figure 4. 2 SOP for backup data

No	Activity	Executing		Standard Quality	
		Admin	Operator	Completeness	Time
1	Fill out the form every time you want to backup data			Operator identity card	5 minutes
2	Log on the backup system			Data backup form	30 minutes
3	Do a data backup test			Data backup form	45 minutes
4	Analyze log backup data			Data backup form	45 minutes
5	Retry the data backup trial	SUCCESS		Data backup form	45 minutes
6	Conduct data suitability checking backed up successfully			Data backup form	1 hour
7	Monitor periodically to be sure successful backup data			Data backup form	30 minutes
8	Do a backup report	 		Data backup form	15 minutes

The results of this SOP recommendation were adopted using 2 standards, TIA-942 and ISO 27002. In TIA-942 data backup must be carried out routinely and the topology proposed in the TIA-942 document must meet the standards in terms of data backup. And ISO 27002 requires that every backup process must always be checked and tested regularly. There are 8 activities that must be carried out, and 2 officers play an important role in this section, namely the admin and the operator.

4.4 SOP for data restore

Not only data backup that requires SOP, but for data restore it also requires SOP. The purpose of adding data restore is to restore data or files or the system in its original state. When damage or disruption occurs, restoring data or files or the system is very necessary so an SOP is made with the aim as described.

Figure 4. 3 SOP for data restore

No	Activity	Executing		Standard Quality	
		Admin	Operator	Completeness	Time
1	Check the database to be done restore				30 minutes
2	Do data restore	FAILED			1 hour
3	Analyze the results of data restore				45 minutes
4	Do a report on the results of data restore		SUCCESS	Restore results	15 minutes
5	Monitor periodically	 		Data restore report	15 minutes

The results of this SOP recommendation were adopted using ISO 27002. ISO 27002 requires that every backup process must be checked and tested periodically. There are 5 activities that must be carried out, and 2 officers play an important role in this section, namely the admin and the operator. Unlike the previous procedure, there was no time to determine each activity, and this SOP recommends the time for each activity. The time stated in this SOP is the estimated time for completion of each activity and is possible if additional time occurs at the suggested time. The addition of this time is important because with this timing, it can help every activity run according to the provisions and avoid distractions.

4.5 SOP for Maintenance

After the server room complies with the TIA-942 standard, and to accommodate the server and supporting equipment, of course it is also necessary to pay attention to the maintenance department. Maintenance of server rooms and equipment must be equipped with standard air conditioning, neat network cabling. Rules such as not being able to eat or drink while near a server, are not permitted to smoke in the server room of course also need to be considered, but the maintenance section of this server does not have written documents. Therefore, it is advisable to make SOPs for server maintenance and for TIA-942 staff responsible for maintenance are always in place, and if the staff is not there the admin can immediately make a call if there is an interruption. The time indicated in this SOP is the estimated time of completion of each activity and is possible if additional time occurs at the recommended time.

Figure 4. 4 SOP for maintenance

No	Activity	Executing		Standard Quality	
		Server room staff	Staff Maintenance	Completeness	Time
1	Assign staff in charge of the server room to carry out maintenance				15 minutes
2	Conduct regular monitoring processes				15 minutes
3	Perform analysis of interference or damage to the device				30 minutes
4	Report on maintenance staff				10 minutes
5	Maintenance staff do maintenance				2 hours
6	Check maintenance results				1 day
7	Make maintenance report				1 hour

This SOP has 7 activities and is carried out by 2 parts, namely admin and operator. The difference in the previous procedure is that there is an additional time that is explained for each activity, and also each activity that is in it is clearer. Each activity is also important to implement documentation so that each activity carried out can be part of the responsibility of the operator or the person responsible for this section.

5. Conclusions

Based on research that has been done in the Analysis and Design of Standard Operating Procedures in PT. XYZ Server Room Using TIA-942 and ISO / EIC 27002 can be concluded that:

1. The results of the analysis carried out on the company show that the company has not implemented SOPs in accordance with the established standards, namely TIA-942 and ISO 27002. Even though they have their own regulations, the results are not effectively applied and there are several SOPs that have not been defined and implemented in the business processes company.
2. From the results of the analysis, it will be recommended that SOP comply with the TIA-942 and ISO 27002 standards so that in carrying out any existing activities, disturbances and related problems can be avoided.

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