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Implementation Analysis of Information Technology Infrastructure Using Cobit 4.1 and ITIL V.3 Framework in PT. Sunrise Bumi Textiles

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Abstract:

PT. Sunrise Bumi Textiles has utilized Information Technology (IT) to support the company's business, but the IT applied in reality has not provided maximum results. Data loss process,network downtime, and other IT problems, resulting in significant losses to Performance Company. Harmony between business goals and IT Goals is still a big issue. This study uses the COBIT 4.1 Framework in the DS (Delivery and Support) and Framework domains ITIL v3 in the Service Operation domain. The reason for using COBIT 4.1 rather than COBIT 5 is research aims to determine the extent to which the capabilities of IT services are running, while at COBIT 5 each level requires the fulfillment of the previous level first. The ITIL Framework is used for provide recommendations for IT services after measurement using COBIT 4.1. Research result this shows that the level of IT process maturity at PT. Sunrise Bumi Textiles shows level 3 (defined), that is the condition in which an organization has standardized documented. This research too produce a tool to calculate the COBIT and ITIL process maturity models in the form of web applications.

***Keywords* — IT Governance, COBIT 4.1, ITIL v3.**

I. INTRODUCTION

If you see the current conditions at PT. Sunrise Bumi Textiles, there are fundamental problems what makes IT governance less influential is the performance of IT organizations. The problem of human resources who have extensive knowledge in the IT field, the lack of IT personnel in supporting the company's business operations, even though PT. Sunrise Bumi Textiles is a spinning mill that has an area of more than Hectares, and computers are spread in factory areas in various angles.

Inadequate IT infrastructure, lack of training for users, and lack of user awareness regarding internet security, the incident regarding Phishing Mail that sends malware to employees of PT. Sunrise, and tapping email communication between Marketing staff and customers abroad, so that an attack occurs as the buyer is communicating with one of the Marketing PT. Sunrise (Man in the Middle Attack), a bank account that is changed in an email header, which makes buyers transfer payments to accounts, which do not belong to the company.

Thing the next is, bandwidth requirements that are not appropriate, which users often complain about the slow access to SAP, internet, e-mail and so on.

Besides that there are problems with dead network connections on VPN provided by ISPs, there is no backup path solution or redundant link prepared from the company side or ISP, the VPN line is very critical, so where the VPN is dead, all SAP access to the data center in Mumbai, India, cannot be used.

Furthermore, there is also a technical problem in the backup process, where data is stored by the user, no backup process is carried out by an IT staff, where when the server hard drive is damaged and cannot be read, it is not easy to restore data using RAID 5 on server.

Next is about IT services, where one problem is often solved with time for longer, besides the above problems, employees as IT service users often complained about the slow resolution of problems related to the IT infrastructure at PT. Sunrise, as an

example of frequent occurrence, is slow to repair network problems, problems with users or in repairing and providing PCs / laptops. In line with that a framework is needed to ensure that IT services are implemented, requires companies to maximize profits, so that the risk of information technology can be managed properly and used responsibly.

II. RELATED WORK

In order to make it easier to understand the material related to the writing of scientific articles, the writer presents it simply as follows.

A. COBIT

COBIT was first developed in the year 1996 by the IT Governance Institute (ITGI) is part of Information Systems Audit and Control Association (ISACA). COBIT component that contains a response framework for management needs for measuring and controlling IT with provide tools to assess and measuring organizational IT capabilities.

The concept of the framework can be seen from three point of view, namely:

1. Information Criteria
2. IT resources (IT Resources)
3. IT Process (IT Process)

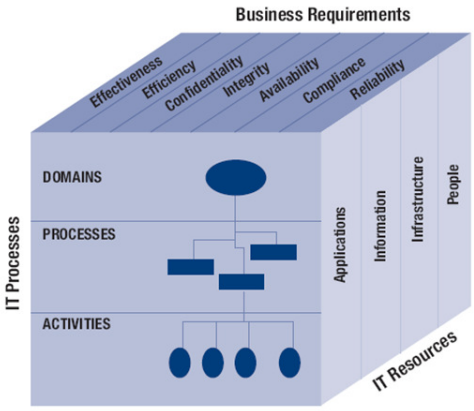

Fig 1. Cobit Framework

The COBIT framework identifies 34 IT processes are grouped into 4 main domain, namely domain:

1. Planning and Organization (PO) is a domain that emphasizes to the IT implementation planning process and its harmony with that goal want to be achieved by the company in general. This domain includes tactics and identify the best technology strategies information to be able to contribute towards achieving business goals.
2. Acquisition and Implementation (AI) this domain focuses on the process selection of technology to be used and the application process.
3. Delivery and Support (DS) this domain concerns problems fulfillment of IT services, system security, continuity of services, training and user training, and data management that is running.
4. Monitoring and Evaluation (ME) all information technology processes need to be assessed periodically from time to time for quality and fulfillment of requirements. This domain addresses performance management, monitoring control internally, compliance with regulations and governance.

The picture below illustrates more complete information about the process in COBIT.

Fig 2. Process in Cobit

COBIT has a maturity model (Maturity Model) to control IT processes by using the scoring methodso that an organization can assess processes IT that it has from scale 0 to 5.

Following translation from level Maturity Model:

Fig 3. Maturity Model COBIT

B. ITIL Framework

IT Infrastructure Library (ITIL) is a series of documents used for help implementation of a framework work for managing technology services information (ITSM, IT Service Management).This framework defines how integrated service management, based on processes and best practices applied in the organization.

ITIL takes a practical approach to service management, and adapt to practical framework that unites all the provision of IT services to one the goal, which is to give value to the business. Following this is a key characteristic the success of ITIL that contributed to global success:

1. Neutral Vendors
   ITIL service management practices apply at every IT organization because it is not based on technology platforms or industrial types certain.
2. Non-Prescriptive
   ITIL offers a very strong practice, mature and time-tested that has application for all types of organizational services service.
3. Best Practices
   ITIL describes learning experiences and leadership thinking from service providersbest in class.

ITIL works because it describes practice which allows organizations to provide benefits, Return of investment (ROI) and ongoing success. CLITORIS adopted by the organization to make it possible they are for:

a. Providing value for customers throughservice
b. Integrate strategies for services with business strategy and needs customer
c. Measuring, monitoring and optimizing IT services and service provider performance
d. Manage IT investments and budgets
e. Managing risk
f. Managing knowledge
g. Managing capabilities and resources to provide services effectively and efficient
h. Enables the adoption of a standard approach for service management throughout company
i. Changing organizational culture to support the achievement of success sustainable
j. Increase interaction and relationships with customers
k. Optimizing and reducing costs.

ITIL Framework from 2001 to even now it continues to grow, starting from only 2 modules, up to 5 modules with minor revision. The core of ITIL v3, contains 5 publications or modules, which are each give direction at that stage specific in the cycle of managing services (Service Management Lifecycle), which is illustrated in the schematic. Next module ITIL V3:

Fig 4. ITIL process

The following is an explanation of the process on CLITORIS:

1. Service Strategy
   Service strategy provides guidance to ITSM implementers on how view the concept of ITSM not onlyas an organizational capability (in providing, managing and operate IT services), but also as a strategic asset of the company. This guide is presented in the form of principles basic fromconcept ITSM, references and the core processes that operate at all stages of the ITIL Service Lifecycle.
2. Service design

Service Design provides guidance to IT organizations to get systematically and best practice designing and building IT services and ITSM implementation own. Service Design contains principlesand design methods for convert goals strategic IT and business organizations become portfolio / collection of IT services and assets services, such as servers, storage and so.

3. Transition Service
   Service Transition provides guidance to IT organizations to get it develop and ability tochange the results of good IT service design new and modified IT services specifications intoenvironment
4. OperationalService
   Operation Service operation is the phase of all lifecycle associated with the user. For most IT users services, service operation is IT own. Service operation is the only one phase in the service lifecycle can define itself function at inside it. In this phase there are four kinds of functions: service desk, technical management, application management, and IT operation management.

C. Technology Governance Information

There are several definitions of IT (IT) management Governance) according to different sources:

1. According to Sambamurthy, IT Governance refers to a pattern of power for core IT activities, policy building and Infrastructure IT management, usage IT by end-users efficiently, effectively and safe, as well as the IT Project Management process effective.
2. According to Haes; IT Governance is an organizational capacity by leaders, executive management and IT management to control formulation and IT strategy implementation and guarantee business and IT smelting.
3. According to Wilkin; IT Governance is a mutual structure or architecture related (and the pattern of power that is related), implemented for perfecting very IT activities important with success in responding corporate environment and strategy very important.
4. According to Weill & Ross, Governance information technology is a framework specific in decision making and accountability to support company habits in using information technology.
5. According to Surya, an expert in Tata Manage IT, IT Governance is a commitment, awareness and process management control organization covering IT resources starting from computer resources (software, brainware, database etc.) up to to Information and Network Technology LAN / Internet.

IT Governance objectives are in accordance with ITGI, among others:

1. IT goals are aligned with business goals
2. IT is capable of running a business and maximize profits.
3. IT is used responsibly.
4. IT Risk is managed well.

D. IT Infrastructure

According to Williams, information technology is general term that explains what technology is even one who helps humans in making, change, save, communicate and or disseminating information.According to Turban, technology infrastructure information is physical facilities, information technology components, information technology services, and information technology managementsupport the entire company. Component information technology is hardware computers, software, and technology communication used by IT personnel to produce IT services. IT services includes data management, system development, and security issues. IT infrastructure includes these various resources and integration, operations documentation, maintenance and management. IT infrastructure also tells how computational resources certain set, operated, and managed.

IT Infrastructure consists of all components which plays a role in IT operations as a whole, usually Infrastructure Information Technology consists of components following:

a. Harware: Server, Computer, Data Center,Hubs, Switches, Routers and other equipment.
b. Software: ERP, CRM, Sales Force and other productivity applications.

c. Network: Network enablement, internetconnectivity, firewall and security.
d. Brainware: human users, like, network administrators, developers, designer, and end users with access to every IT tool or service is also part of the IT infrastructure.

III. METHODOLOGY

All paragraphs must be indented. All paragraphs must be justified, i.e. both left-justified and right-justified.

A. Data Analysis Technique

1. Maturity Level Analysis

COBIT has a Maturity Model for control the IT process by using scoring method so that one organizations can assess IT processes it has on a scale of 0 to 5.

Table I
COBIT Maturity Level

Indeks	Level Kematangan
0 – 0,49	0 – Non Existent
0,50 – 1,49	1 – Initial/ Ad Hoc
1,50 – 2,49	2 – Repeatable but intuitive
2,50 – 3,49	3 – Defined Process
3,50 – 4,49	4 – Managed and measurable
4,50 – 5,00	5 - Optimized

2. GAP Analysis

After knowing the actual condition regarding level of maturity and level of expectationregarding management, then stage the next is gap analysis (Gap Analysis). This gap analysis is carried out to identify any activities what needs to be done by the company so that the actual state of the level as-is maturity can reach expected level (to-be).

B. Design Techniques

1. Software development model

The software development model used in this study is with object oriented method (Object Oriented) Programming).

2. Software design

As for the interface design on this study the author will make a model prototype using MicrosoftVisio Professional 2016, Sublim Text as text editor for PHP, HTML5, CSS3 programming and JQuery. Database Design use MySql.

3. Software testing

The stages of testing are explained about planned testing model used namely using UAT testing techniques (User Acceptance Test).

C. Sample Selection Method

The number of samples taken using Purposive Random Sampling technique, writer randomly select respondents' representatives, by reason, the selection of respondents samples already has representation from the Top side Management, Middle Management, and Low Management and also the IT team on duty at PT. Sunrise Bumi Textiles. Reason Another sample selection is experiencework> 8 years from each respondent, this signifies experience and expertise from each respondent. Population at PT. Sunrise Earth Textiles is numbered 86 people.

Table II
Research sample

No	Jabatan	Position	Jumlah
1	CEO	Top	1
2	CMO		1
3	Vice President		1
4	Expatriat Manager	Middle	2
5	Local Manager		2
6	Staff Local	Low	3
7	Staff IT	IT Team	4
	Total		14

IV. RESULT AND DISCUSSION

A. Analisys Result

The author makes a direct observation at field, to specify any IT servicesavailable at the company. From the results of observationsfound the service criteria as follows:

Table III
Process of Mapping IT services with COBIT

No	Proses COBIT	Layanan TI	Permasalahan
1	DS3 *Manage performance and capacity*	Aplikasi SAP	Lamanya waktu penanganan gangguan
	DS4 *Ensure Continuous Service*		Tidak adanya jalur *VPN Backup* menuju *Data Center* di Mumbai, India
2	DS8 *Manage Service Desk & Incidents*	Aplikasi *IT Support*	Kurangnya kesadaran dari *user*
3	DS3 *Manage performance and capacity*	*Email External*	Lamanya respon penanganan gangguan
4	DS3 *Manage performance and capacity*	*Email Internal*	Konfigurasi tidak lengkap
5	DS3 *Manage performance and capacity*	*Video Conference*	Menurunnya tingkat ketersediaan layanan
6	DS3 *Manage performance and capacity*	*Internet*	Lamanya waktu penanganan gangguan
7	DS3 *Manage performance and capacity*	*VPN*	Tidak adanya jalur *Backup* selain dari Jalur VPN Telkom.
8	DS12 *Manage Physical Environment*	Jaringan *Wireless*	masalah pada celah keamanan
9	DS11 *Manage Data*	*File Sharing* (FSRM)	Menurunnya tingkat ketersediaan layanan
10	DS13 *Manage Operations*	*Backup NAS*	Menurunnya tingkat ketersediaan layanan
11	DS13 *Manage Operations*	Akses CCTV	Lamanya waktu penanganan gangguan
12	DS5 *Ensure System Security*	Konsultasi TI	Tidak meratanya pemahaman permasalahan dalam internal IT Dept.
13	DS8 *Manage Service Desk & Incidents*	Pemeliharaan *Hardware*	Lamanya waktu penanganan gangguan
14	DS8 *Manage Service Desk & Incidents*	Perbaikan *Hardware*	Lamanya waktu penanganan gangguan

From the results of the questionnaire on 14 IT servicesmapped into 10 COBIT Processes, then obtained the actual conditions at PT. Sunrise Earth Textiles, as follows:

Table IV
Value and level of capability of PT. Sunrise Earth"Current" Textiles

Nilai dan Tingkat Kapabilitas			
Area Proses		Nilai	Level
DS1	*Define and manage service level*	2.94	3.0
DS2	*Manage Third-party services*	2.63	3.0
DS3	*Manage performance and capacity*	2.84	3.0
DS4	*Ensure Continuous Service*	2.46	2.0
DS5	*Ensure System Security*	3.06	3.0
DS8	*Manage Service Desk & Incidents*	2.33	2.0
DS10	*Manage Problem and incidents*	2.37	2.0
DS11	*Manage Data*	2.88	3.0
DS12	*Manage Physical Environment*	2.86	3.0
DS13	*Manage Operations*	2.53	3.0

Datain tables can be represented in graphical form as follows:

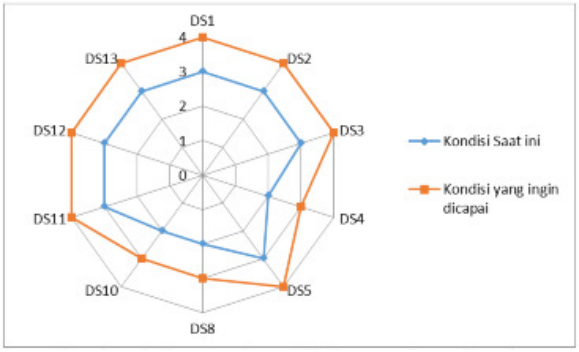

Fig 5. Gap Analysis PT. Sunrise Bumi Textiles

B. Action Requirements

Here are some action referencessubmitted by the author to the ManagementPT. Sunrise Bumi Textiles. Here are a fewaction, in the levelachievement grouplevel 2 capability, which needs to be done inorder of improvement can be seen in the tablebelow this.

Table V
Actions to improve capability level 2 becomecapability level 3

No	Area Proses	Rujukan Tindakan
1	DS04 *Ensure Continuous Service*	▪ Pembuatan dokumentasi mengenai perencanaan pada tingkat yang kritis, dan dampaknya pada bisnis. ▪ Pengadaan komponen *High Availaibility* dan *Redudancy system*. ▪ Pengelolaan yang baik dan ketat mengenai inventarisasi sistem yang *critical*
2	DS08 *Manage Service Desk & Incidents*	▪ Adanya dokumentasi mengenai prosedur dan pelatihan bagi staff IT. ▪ Adanya panduan mengenai *FAQ* (*Frequently Asked Question*) untuk *user*. ▪ Dimulainya proses eskalasi masalah
3	DS10 *Manage Problem and incidents*	▪ Pengadaan anggaran untuk pelatihan *IT Support team*. ▪ Pembuatan standarisasi proses pemecahan masalah ▪ Perbanyak komunikasi kepada user mengenai bagaimana melaporkan masalah dan insiden ▪ Dimulainya proses pelacakan dan pendokumentasian masalah *user*.

Table VI
Actions to improve capability level 3 becomecapability level 4

No	Area Proses	Rujukan Tindakan
1	DS01 *Define and manage service level*	▪ Adanya survey mengenai kepuasan pengguna secara rutin ▪ Pengukuran kinerja semakin mencerminkan kebutuhan end user, bukan tujuan TI ▪ Adanya otomasi sistem pelaporan layanan TI
2	DS02 *Manage Third-party services*	▪ Adanya verifikasi detail spesifikasi vendor mengenai, ruang lingkup pekerjaan, layanan yang akan diberikan, hasil, asumsi, skala dan waktu projet, biaya penagihan, tanggung jawab vendor serta syarat-syarat dan ketentuan bisnis. ▪ Adanya proses untuk meninjau SLA terhadap ketentuan kontrak. ▪ Adanya penentuan *transfer pricing* dalam proses pengadaan
3	DS03 *Manage performance and capacity*	▪ Adanya informasi update, mengenai statistik kinerja layanan TI dan dapat menjadi peringatan akan adanya insiden. ▪ Pengadaan alat otmomatis untuk memantau penyimpanan disk, network dan gateway jaringan. ▪ User dapat memahami tingkat layanan TI melalui laporan kinerja secara statistic di dalam proses bisnis.
4	DS05 *Ensure System Security*	▪ Penetapan tanggung jawab untuk *IT Security* secara jelas. ▪ Adanya analisa dampak resiko keamanan TI secara berkala. ▪ Pemberlakuan identifikasi, otentifikasi dan otorisasi user. ▪ Adanya pelaporan keaman TI terkait tujuan bisnis.
5	DS11 *Manage Data*	▪ Menganggap data sebagai sebuah *asset* perusahaan. ▪ Adanya penetapan tanggung jawab yang jelas untuk kualitas data di dalam organisasi. ▪ Adanya survey kepuasan pengguna mengenai kualitas data. ▪ Adanya integritas data dan keamanan data.
6	DS12 *Manage Pyhisical Environment*	▪ Adanya dokumentasi mengenai keamanan lingkungan dan lingkungan fisik, yang hak aksesya secara ketat diawasi dan dikontrol. ▪ Adanya pelatihan staff TI dalam keadaan darurat ▪ *Recovery* sumber daya komputasi sudah dimasukkan ke dalam proses manajemen risiko.
7	DS13 *Manage Operations*	▪ Penetapan tanggung jawab *IT Support* sudah ditetapkan dengan jelas ▪ Adanya kepemilikan penggunaan computer user. ▪ Adanya dukungan anggaran untuk belanja modal TI ▪ Adanya pelatihan staff TI secara formal dan berkelanjutan ▪ Adanya SLA dari pemantauan kinerja sehari hari

In accordance with the limitations of the research problem, thatthis study focused COBIT 4.1 on Delivery & Support (DS) and ITIL v3 domainsin the Service Operation domain. Then mappingpreviously carried out by COBIT 4.1 DS domains will only be mapped that have link to ITIL v3's SO domain.

Table VII
Recommended IT Support Services

Layanan Aplikasi IT Support	
Incident Management	
Categories Management, priority, and incident diagnose	
Kondisi Existing	**Rekomendasi**
Belum ada pencatatan tertulis dalam *work order* identifikasi kemungkinan penyebab terjadinya insiden	▪ Pembuatan katalog untuk identifikasi penyebab terjadinya insiden.
Collect and analyze and resolve incident	
Kondisi Existing	**Rekomendasi**
Belum ada pencatatan solusi untuk penyelesaian insiden secara tertulis sebagai standar pengukuran kerja	▪ Dibuatkan dokumentasi atau katalog pemecahan insiden dan solusi pemecahan yang paling solutif(efektif dan efisien) sehingga dalam penangan insiden kedepan bisa mengacu pada katalog ini.
Pemecahan rata-rata sudah dilakukan dengan cepat dan tepat namun belum ada laporan pengukuran berupa batas waktu penyelasaian insiden yang digunakan sebagai laporan bagi pihak managerial.	▪ Dibuatkan laporan pemecahan insiden beserta durasi penyelesaiannya sebagai laporan bagi pihak managerial terkait dengan pinalti pada dokumen KPI. ▪ Mengalokasikan penanggung jawab yang harus mengerjakan pada suatu incident di dalam work order dan job order pada *IT Support* sehingga saat terjadi insiden maka dapat di handle oleh teknisi ahli sehingga penyelesaian insiden dapat dilakukan secara cepat dan tepat.
Recovery action to incident	
Kondisi Existing	**Rekomendasi**
Telah dilakukan pemecahan insiden beserta dokumentasinya yang diiputkan pada *workorder IT Support*. Namun belum dicatat solusi penyelesaiannya terhadap pemecahan insiden	▪ Dibuatkan dokumentasi atau katalog pemecahan insiden dan solusi pemecahan yang paling solutif (efektif dan efisien)
Belum ada pencatatan solusi untuk penyelesaian insiden secara tertulis sebagai standar pengukuran kerja.	▪ Dibuatkan dokumentasi atau katalog pemecahan insiden dan solusi pemecahan yang paling solutif (efektif dan efisien)
Management closure incident (service desk)	
Kondisi Existing	**Rekomendasi**
Verifikasi insiden selain dilakukan dengan menggunakan form verifikasi *closing* insiden konfirmasi dilakukan dengan menggunakan e-mail sehingga kurang efisien untuk informasi bagi pihak managerial.	▪ Setiap incident yang sudah selesai akan dilakukan penutupan incident atau close incident dengan notifikasi. ▪ Menindaklanjuti aturan dan kebijakan dari dokumen KPI dengan menambahkan poin batas waktu penutupan insiden
Request Fulfillment	
Management menu selection for user request	
Kondisi Existing	**Rekomendasi**
Tidak ada *interface* untuk pilihan layanan untuk *user*. Bentuk layanan hanya berupa form *request* untuk *maintenance* dan *preventive action*.	▪ Ada modul permintaan layanan secara integrasi menggunakan *web*
Pelaksana permintaan layanan *user* merupakan pihak teknisi yang sudah memiliki hak dalam penyelesaian permintaan layanan namun tidak ada dokumentasi verifikasi secara tertulis dalam bentuk *hardcopy* dan *softcopy*	▪ Dibuatkan form verifikasi bagi pelaksana permintaan layanan dari *user* sebagai *evidence* dan dokumentasi pelaksanaan *request fulfillment*.
Ensuring user satisfaction (Service Desk)	
Kondisi Existing	**Rekomendasi**
Verifikasi kepuasan user selain dilakukan dengan menggunakan tanda tangan pada form verifikasi kepuasan user dan informasi kepada managerial dilakukan dengan menggunakan e-mail sehingga kurang efisien untuk informasi bagi pihak managerial.	▪ Setiap verifikasi kepuasaan *user* dilakukan dengan tanda tangan *form job order* dan notifikasi
Problem Management	
Problem identification (detection and logging)	
Kondisi Existing	**Rekomendasi**
Identifikasi masalah langsung dilakukan oleh *supervisor* atau teknisi dan belum ada *support group* khusus identifikasi dan analisis akar masalah	▪ Dibuatkan *support group expert* untuk identifikasi dan analisis akar masalah agar identifikasi masalah dapat dilakukan cepat dan tepat
Level prioritas dilakukan berdasarkan level pada sesuai identifikasi dan analisis *Manager IT*.	▪ Dilakukan konsultasi untuk menentukan *level* prioritas masalah beserta dokumentasi dan konfirmasi dari pihak *managerial*.
Management	▪ Ditambahkan informasi pada

masalah yang baru didefinisikan di-*input*-kan langsung pada *IT Support* namun tidak ada informasi yang berisi poin-poin seperti penyebab dan penanganan masalah. Sehingga belum ada katalog *management problem* secara terdokumentasi.	IT Support dalam modul *work order* poin-poin penyebab dan solusi
Categorize and assign priority problem	
Kondisi Existing	**Rekomendasi**
Dilakukan identifikasi masalah yang kemungkinan adalah known error sehingga pada penentuan kategoru dan level penyeelesaian menggunakan data record yang telah ada sebelumnya.	▪ Dibuatkan laporan tertulis atau terdokumentasi masalah yang merupakan known error
Identifikasi masalah yang merupakan *known error* belum tercatat pada IT Support. Data *known error* hanya menjadi catatan personal teknisi.	▪ Dibuatkan modul untuk mengalokasikan items yang yang terkena dampak problem.
Laporan penyelesaian problem dibuat ketika problem selesai dikerjakan. Pencatatan ini dilakukan langsung di modul *Job order* dan *Work Order IT Support*	▪ Perlu dibuatkan informasi kategori atau *level error* untuk informasi penanganan masalah kedepan.
Review problem identification and problem solving for future	
Kondisi Existing	**Rekomendasi**
Sudah dilakukan penutupan masalah setiap masalah selesai dilakukan. Namun belum ada pengukuran mengenai batas waktu penutupan sebagai indikator kerja.	▪ Menindaklanjuti aturan dan kebijakan dari dokumen KPI dengan menambahkan poin batas waktu penutupan masalah
Dilakukan monitoring impact yang masih berlangsung namun belum dibuatkan laporan *progress impact*	▪ Dibuatkan laporan *progress report* mengenai *impact* yang sedang dipantau
Pemberitahuan konfirmasi penutupan masalah pada pihak managerial menggunakan e-mail	▪ Setiap *problem* yang sudah selesai akan dilakukan penutupan problem dengan notifikasi.
Melakukan pengoptimalan resources dari sisi pekerja maupun tools untuk menangani masalah. Namun belum terdefinisi penanggung jawab *problem solving*.	▪ Mengalokasikan penanggung jawab siapa yang harus melakukan problem solving beserta pemanfaatan *resources* di dalam *work order* dan *job*

C. Implementation System

Next is the display of the system designedin this study.

Fig 6. System interface

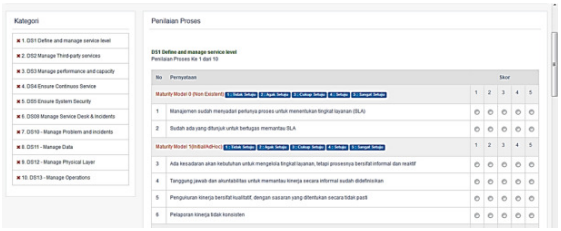

Fig 7. Quesioner interface

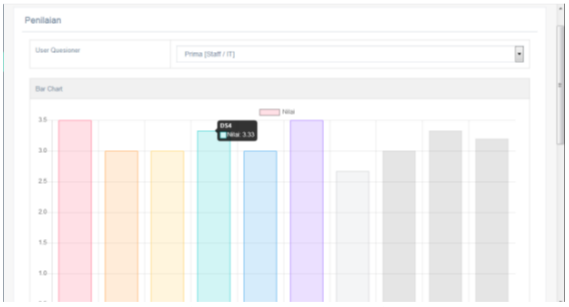

Fig 8. Bar chart result

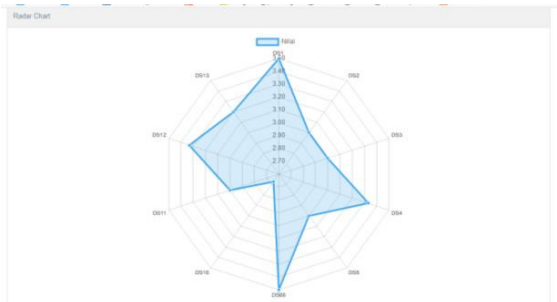

Fig 9. Radar chart result

V. CONCLUSIONS

In this study, some conclusions were made can be taken as follows:

1. Based on the research conducted, found the fact that the COBIT Framework 4.1 can map all IT services at PT. Sunrise Bumi Textiles, marked with 6 Service Categories IT and 14 IT Services that are running, can be mapped into 10 Processes COBIT Activity on Domain Delivery & Support (DS).
2. COBIT 4.1 domain DS (Delivery & Support) proven to be able to provide guidance and directives for making IT governance that both at PT. Sunrise Bumi Textiles. Based on the assessment maturity level at the Domain DS process with the maturity value at range 3.0 (Defined), which means that PT. Sunrise Bumi Textiles, has implement management standards IT services, but not yet fully supported by good IT services accompanied by a documentation process reliable. To reach inside level 4 (Managed), several are needed improvement efforts from the Management ranks and the IT Department and also support from the executive to reach the level better. Recommendations are on DS-10 process (managing constraints), this closely related to technical capabilities from IT Staff itself, ability a senior IT Staff, no guarantee have skills and capabilities qualified, to deal with problems varied daily, needed understanding, deep analysis, and also the ability to adapt keep up with the development of IT knowledge.
3. Recommendations and Best Practices given by ITIL v3, on the domain Service Operation, Artificial features Intelligence (AI), so the system can provide recommendations directly, where the measurement results are obtained, canbe directly given a recommendation by system.

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