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# The Measurement Of Corporate IT Security Against The Internal Perspective

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## ABSTRAK

*Teknologi berkembang dampak dari kemajuan teknologi, dunia Teknologi Informasi di perusahaan bersaing untuk melakukan kinerja yang baik bagi perusahaan. Tingkat keamanan dalam sistem di perusahaan menjadi penting untuk diperhatikan karena perusahaan memiliki ribuan data yang berguna bagi perusahaan. Hubungan antara TI dan proses bisnis terkait erat satu sama lain dan saling membutuhkan. Jadi dalam penelitian ini perusahaan farmasi yang berlokasi di Jakarta akan melakukan pengukuran tingkat keamanan TI mereka dan kinerja kinerja perusahaan menggunakan COBIT 4.1. Domain Delivery Support (DS) berkaitan dengan deliver aktual dari layanan yang dibutuhkan meliputi pelayanan, pengelolaan keamanan dan kontinuitas. Hasil tingkat kematangan yang didapat pada DS5 adalah 1,4, DS7 adalah 1, DS10 adalah 1,7, DS11 adalah 2, dan DS13 adalah 1,8. TI dapat disimpulkan bahwa DS5 dan DS7 masih awal / ad-Hoc sementara DS10, DS11, & DS13 masih dapat diulang tetapi intuisi. Tingkat yang diharapkan adalah Level 3 untuk perusahaan. TI dapat disimpulkan bahwa tata kelola TI di perusahaan ini dalam hal keamanan memiliki efektivitas tetapi belum maksimal dalam tujuan proses bisnisnya, maka penelitian ini dilakukan untuk menjadi perusahaan evaluasi untuk meningkatkan tata kelola TI mereka.*

*Kata Kunci: COBIT 4.1, BSC, Tingkat Kematangan, DS, Teknologi Informasi*

## ABSTRACT

*Technology is growing the impact of this technological advances, the Information Technology world at the company is competing to perform a good performance for the company. The level of security in the system in the company becomes important to note because the company has thousands of useful data for the company. The relationship between IT and business processes is closely related to each other and need each other. So in this study pharmaceutical companies located in Jakarta will make measurements of their IT security level and performance of the company's performance using COBIT 4.1. Domain Delivery Support (DS) is related to the actual deliver of services needed including service,*

*security and continuity. Results maturity level obtained on the DS5 is 1.4, DS7 is 1, DS10 is 1.7, DS11 is 2, and DS13 is 1.8. TI can be concluded that DS5 and DS7 are still initial / ad-Hoc while DS10, DS11, & DS13 are still repeatable but intuTIive. Expected level is Level 3 for the company. IT can be concluded that IT governance in this company in terms of security has effectiveness but not yet maximally in the purpose of its business process, hence this research done to become evaluation company to improve their IT governance.*

*Keywords: COBIT 4.1, BSC, Maturity Level, DS, TI*

## INTRODUCTION

Information technology is rapidly growing at this time, information technology can present accurate information and can be proven according to the collection of information obtained [1]. Information technology is very important in the company area because information technology is considered as one of the resources and as a strategic foundation in the development of a company [2]. The design of information technology governance at the company symbolizes the achievement of the business process goals of corporate strategy in improving performance within the organization [3]. Companies now understand the importance of IT governance, companies are now continuing to improve their IT quality to achieve effective and efficient organizational goals and performance [4]. From efficient and effective IT development IT is important to note that the main problem is how the IT system in the company can maintain data security in the organization of the company, company has thousands of data that is very important information, therefore a data security on the system should be improved so that companies can minimize the scope of the problems that occur [5].

Data security is a company privacy, data security can diliat from corporate IT governance whether IT is in accordance with the prevailing standard or not [6]. Information security in the company can be seen from one's factor, organization, system, or natural disaster incident [7]. IT managers and teams must work together to solve data security in the company, so that the company's performance can run effectively [8].

## PROBLEM

For local pharmaceutical companies Jakarta that we do research, have applied information technology on their business processes, vision and goals of the organization is dependent withh technology. The company is a pharmaceutical company to manufacture drugs and distribute IT, the company was founded in 1970. In the problems contained in this company is in the security of information data. So this company has made a system for the distribution of data to each department, but often misplaced data that we do not know who send the data and data often collide between other data when logged into the server so that data diserver there are double and can not opened. The security of an information is a matter that must also be considered, because if the data information is misused for the interests outside the company then IT is very detrimental to the company [9].

IT managers and teams must anticipate in the development of security systems in the

organization in order to avoid things that harm and create an efficient and effective company performance [10]. Evaluated the problems that occur then this research is done by using COBIT 4.1 and BSC, where the BSC is important for the assessment of a company. The COBIT 4.1 domain used in this study is DS5, DS7, DS10, DS11, and DS13. This DS domain addresses the process of fulfilling information technology services and security as well as training and fulfillment of data processes that are running. This research also uses BSC where the perspective used is internal business process. The purpose of this BSC is to assess the company while COBIT 4.1 is assessing in terms of corporate IT. BSC and COBIT 4.1 are interconnected with each other and have a common purpose for the good of the company in overcoming a problem.

## METHOD
## 1.1 STUDY LITERATURE

### A. COBIT 4.1

COBIT 4.1 consists of 4 sub domains namely domain planning and organization, acquire and implementation, delivery and support, and monitoring and evaluate. These 4 domains are used to achieve effective and efficient corporate strategy stages in their application [11]. COBIT can be regarded as an information technology framework published by ISACA (Information System Audit Control Association) the detail is show in Figure 1 The COBIT cube. COBIT is designed to solve a problem in understanding and managing risk in the company [12]. COBIT is a guideline that applies to IT measurement in harmony with business, IT and business have a balance in terms of benefits and goals. In selecting the process on COBIT on TI has a matrix that has been established COBIT such as IT goals and business goals [13].
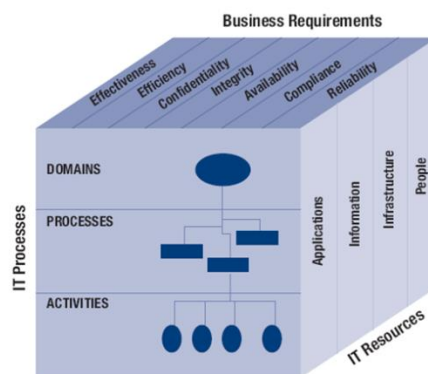


**Figure 1.** The COBIT Cube [14]
Source: (ISACA: COBIT 4.1,"Framework Control Objectives Management Guidelines Maturity Models)

IT resources are managed by IT processes to achieve IT goals that respond to the business requirements. This is the basic principle of the COBIT framework, as illustrated by the COBIT cube.

### B. BSC

BSC is a mechanism of a company management system whose content aims to implement the company's vision and strategy into the implementation of the organization [15]. BSC is also a benchmark management to assess performance in the organization, in BSC measurement using 4 perspectives, among others, financial perspective, customer, internal business processes, learning and growth [16]. These four perspectives include the company's vision and strategy. With the assessment of BSC on the company's management, the company will become more accurate, balanced, effective and efficient in designing the company's strategy system [17]. BSC used in this study in this perspective measurement component used is innovation, to know the number of new products / services offered by the company compared with existing products / services, the higher the value produced the better the innovations made by the company [18].

### C. IT Security

Many organizations utilize information technology tools based on both local and global network to support the organizational development goals [19]. However, unwittingly implement the computer network system without the security system that should be considered as well. Companies pay less attention to the security system to their network system. Information security aims to achieve confidentiality, availability, and integrity within enterprise information resources [20]. The security management of the network system in the company must be implemented in a balanced manner according to the standard of IT governance applied by COBIT 4.1. Information security management is important to be applied so that information circulating in the company can be managed properly so that there is no error communicate data among fellow departments [21].

### D. Maturity Level

Maturity Level is a method for measuring development level in IT management in company. In the level measurement at the company, the TI management gives the expected level 3 (Defined Level). Which can be seen from management capabilTIy aspect and business process of company, assessment phase is divided into 6 that is Level 0 (Non-existent), Level 1 (Initial Level), Level 2 (Repeatable Level), Level 3 (Defined Level), Level 4 (Managed Level), Level 5 (Optimized Level) [22].

## 1.2 DATA ANALYSIS

After the data collected, the data will be analyzed in order to determine the content of what issues occur in the company, managing the data into information so that the characteristics of the data is easy to understand and useful for solution problems, especially related to the research. Descriptive techniques selected to analyze data by describing or describing the data already collected sober. Included in the technique of descriptive statistical data analysis such as the presentation of data into graphs, tables, and percentage.

## 1.3 SPECIFLYING DOMAIN COBIT 4.1 AND BSC

On this method of research to determine the domain of COBIT 4.1 which will be used as a benchmark of the problems that occur. For the determination of this domain is based on the perspective of supporters of companies related to the domain. In this research we use 5 subdomain on DS domain. The company has confirmed that the domain used there 5. BSC and COBIT are mutually related to each other, BSC provides the direction of strategy for the company while COBIT leads to IT systems in the company. The specified BSC is a perspective on internal corporate processes.

## 1.4 INTERVIEW

A conversation between two or more people and takes place between the speaker and the interviewer. The purpose of the interview is to obtain appropriate information from trusted sources. Interviews are done by way of delivering a number of questions from the interviewer to the resource person to obtain information. Interviews conducted in this study is structured interviews because IT is on schedule determined. The purpose of this interview is to verify, test, and collect information on whether or not the procedures are in place. Interviews became the meeting point for the assessment of COBIT and BSC in the company. The details of this research method are found in Figure 2. Method COBIT 4.1, start from specifying a problem of a company, next reviewing & search literature, then state domain COBIT 4.1 with domain DS, collect data TI related business process, if data collected are yes, then continue to interview, next step is analysis of data, and the final is reporting. Figure 3. Method BSC, start the same with COBIT until collect data, then determine the BSC perspective, analysis with BSC, next step is related with IT Goals, and finally make reports.
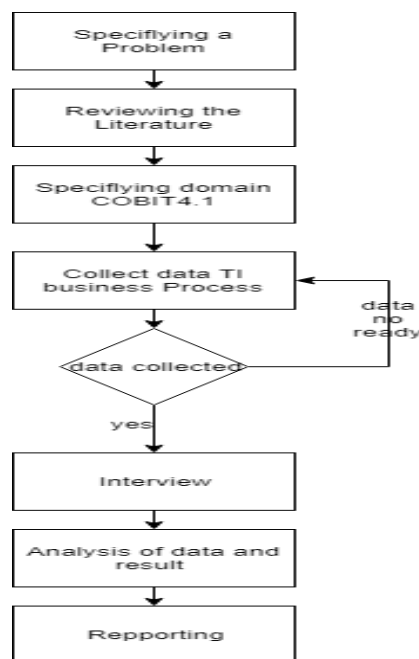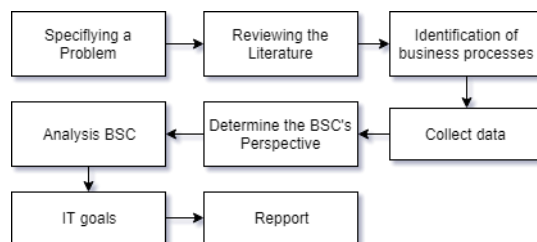
**Figure 2.** Method COBIT 4.1



**Figure 3.** Method BSC

## RESULT

| No | Domain | Control Objective | Maturity Level | Expected Level |
|----|--------|-------------------|----------------|----------------|
| 1 | DS 5 | Ensure System Security | 1.4 | 3 |
| 2 | DS 7 | Educate and train users | 1 | 3 |
| 3 | DS 10 | Manage Problems | 1.7 | 3 |
| 4 | DS 11 | Manage data | 2 | 3 |
| 5 | DS 13 | Manage Operations | 1.8 | 3 |

**Table.1** Maturity Level DS

Can be seen from Table 1. Current Maturity Level DS5, DS7, DS10 and DS13 to show maturity level are 1.4, its mean initial level, maturity level DS11 in level 2, its mean repeatable level. Over all company expected maturity level is 3, its mean defined level.

**Delivery and Support (DS)**

System security is important to manage, especially in information systems running on information systems must be able to provide information quickly and effectively, with the security, information provided and stored free from manipulation both from internal and external parties. IT can be seen that DS 5 and DS 7 get pretty good value among other DS subdomains. DS 5 and DS 7 get the value of 1.4 and 1 which means the level of maturity level is *Initial / Ad Hoc* which means there is evidence that the company has realized there is a problem and must be evaluated but there is no standardization. There is an Ad-Hoc approach that tends to be applied accordingly. Unstructured management approach and unbalanced organizational management. The company must observe and conduct special evaluations and training on users in the organization so that in case of security problems the

user can handle IT wisely. For DS10, DS11, and DS13 have obtained Repeatable but intuitive maturity level which means the process has been developed at the stage where the procedure has been done well by the organization. The detail is show in Table.1.

**Recommendations for DS5 Ensure System Security**
The recommendations given for DS5 are
1. Improve system security by creating data protection by creating cryptography on sensitive data.
2. Conduct planning activities to improve the security of information systems and make documentation on the planning. By adding Login feature when want to take data and transfer data to other places
3. Create a documentation of each account and the permissions of each account listed in the information system.

**Recommendations for DS7 Educate and train users**
The recommendations given for DS7 are
1. Increasing the frequency of training.
2. Make documentation when training and finished, such as registration list of participants who come, training schedule, report on the training conducted.
3. Make evaluation of the training, so the implementer can find out whether the training is carried out useful.

**Recommendations for DS 10 Manage Problems**
The recommendations given for DS10 are
1. Improving and making standard procedures on problems that have occurred and how alternative solutions to the problem.
2. Make the documentation after the problem is finished executed so that problems that ever happened can be made lessons and can be made prevention.

**Recommendations for DS11 Manage data**
The recommendations given for DS11 are
1. Improved security for backup data.
2. Make requirements about who can access or process data.

**Recommendations for DS13 Manage Operations**
The recommendations given for DS13 are
1. Establish procedures on detail of activities that all staff should perform.
2. Create written procedures on and use of IT infrastructure
   Pay more attention to sensitive documents issued such as transaction documents and financial reports, so that the security of documents and information contained in it more awake.

| No | IT Goals | Process | Effectiveness | Efficiency | Confidentiality | Integrity | Availability | Compliance | Reliability |
|----|----------|---------|---------------|------------|-----------------|-----------|--------------|------------|-------------|
| 1 | Ensure satisfaction of end users with service offerings and service levels. | DS7, DS10, DS13 | P | P | | S | S | | |
| 2 | Optimize the use of information | DS11 | | S | | P | | | S |
| 3 | Ensure proper use and performance of the applications and technology solutions. | DS7 | P | S | | | | | |
| 4 | Account for and protect all IT assets | DS5 | S | S | P | P | P | S | S |
| 5 | Optimize the IT infrastructure, resources and capabilities. | DS7 | S | P | | | | | |
| 6 | Reduce solution and service delivery defects and rework. | DS10 | P | P | | S | S | | |
| 7 | Protect the achievement of IT objectives. | DS10 | P | P | S | S | S | | S |
| 8 | Ensure that critical and confidential information is withheld from those who should not have access to it. | DS5 DS11 | | | P | P | S | S | S |
| 9 | Ensure that automated business transactions and information exchanges can be trusted. | DS5 | P | | | P | S | S | |
| 10 | Ensure that IT services and infrastructure can properly resist and recover from failures due to error, deliberate attack or disaster. | DS5, DS13 | P | S | | S | P | | |
| 11 | Make sure that IT services are available as | DS13 | P | P | | P | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | required. | | | | | | |
| 12 | Maintain the integrity of information and processing infrastructure. | DS5 | | S | S | P | S |
| 13 | Ensure IT compliance with laws, regulations and contracts. | DS13 | P | S | | P | |

**Table 2.** IT GOALS

**IT Goals**

In this study the balanced scorecard standard is used to measure key performance indicators, the details of this research method are found in Table. 2. The key performance indicators used to help companies to effectively organize and guide their progress. Key Performance Indicators have an important role for the company's progress. Because, the company eventually prosecuted to have a clear vision and mission and practical steps to realize the goal. And not only can that, with companies, key performance indicators measure performance achievement. BSC has its own strategic targets in its measurement. IT goals in this study there are 13 IT goals because the domains used are DS5, DS7, DS10, DS11, and DS13. Each of these IT goals has COBIT criteria where there are 7 effectiveness, efficiency, confidentiality, integrity, availability, compliance, and reliability. The internal business process perspective is one of four perspectives in the Balanced Scorecard. The focus in this perspective is the internal process that should be done by the organization's management, relating to the creation of products / services to attract and retain customers as well as to provide value enhancement for shareholders. The process can be done through an evaluation of what the customer expected in accordance with the needs of his business on the internal process of the organization, such as: the quality of products / services produced, response time and product introduction.

**BSC and COBIT 4.1**

IT can be concluded that BSC with COBIT is an integral part, IT measurement with COBIT becomes more accurate and effective by using BSC.

| Perspective | Improvement and maintenance of business process functionality. |
|---|---|
| Business Process / Internal | |
| | Decrease in process costs. |
| | Provision of propriety to external law, regulation and contract. |
| | Provision of propriety to internal policies. |
| | Management of business change. |

| Improvement and management of operational and staff productivity. |
|---|

**Table 3.** BSC Perspective Goals business in COBIT [23].

Companies are able to evaluate the results of the assessments made in the perspective taken and according to the selected domains. BSC also plays an important role in various aspects in the company, especially the financial aspects, customer, internal process, and Evaluation.

| No | Goals IT |
|---|---|
| 1. | Response to business needs that align with business strategy. |
| 2. | Response to governance needs in accordance with directors directives. |
| 3. | Certainty of end-user satisfaction with supply and service levels. |
| 4. | Optimization of information usage. |
| 5. | Creation of agile information technology (IT Agility). |
| 6. | Defining how business functional requirements and controls are translated into effective and efficient automated solutions. |
| 7. | Obtaining and maintaining a standard and integrated application system. |
| 8. | Acquisition and maintenance of a standardized and integrated information technology infrastructure. |
| 9. | Acquisition and maintenance of information technology mixing in response to information technology strategy. |
| 10. | Guarantees of mutual satisfaction with third parties. |
| 11. | Guarantee the consistency of application integration into business processes |

**Table 4.** Goals IT in COBIT [24]

The emergence of BSC is due to the shifting level of business competition from industrial competition to information competition, thus changing the measuring instruments used by the company to measure its performance. Structured information in the company strongly reflects whether the company is progressing or retreating. Collaboration of every 4 aspects contained in the BSC can't run if the company does not have an IT information system that can sustain the overall information in the company. In other words, Entrepreneurship Strategic Planning is needed to determine the company's managerial indicators. The internal process perspective sets the process in a financial perspective that sets financial goals to be achieved to satisfy shareholders, and improves corporate cash as well as in its implementation. This COBIT and BSC alignment applies the Balanced Scorecard to translate their strategy into action and align TI to their business strategy and translate their mission and vision into reality. The details of this research method are found in Table.3 BSC Perspective Goals business in COBIT and Table.4 Goals IT in COBIT. Its mean Table 3 to show business goals must be align with IT, so

Company is required to continue to innovate in the face of its development [25]. Table 4 to show goals in IT align with business strategy.

## CONCLUSION

The conclusion that can be taken from this research is, that company in using IT governance still not maximal in maturity level obtained by company, marked with average value of level of maturity which still in level 1, while level desired by company is 3. DS5 and DS7 domains have an average of 1.4 and 1. Domains DS10, DS11, and DS13 have the value of maturity model to 2 (Repeatable but Intuitive) so still need improvement efforts to reach level 3. Companies must evaluate and develop the formation of business goals that run by the IT foundation. And also the IT team also added features to improve security in data transmission traffic between departments in the company. IT governance in the company has not been consistent in the performance of the company in accordance with applicable IT objectives. The first step that a company should take to improve Its IT governance especially improves IT security, training, and Infrastructure systems, prepares adequate human resources, and transfers knowledge from experts to other staff through training or courses covering areas that use information technology in business processes. The Manager each month conducts evaluations and summons one by one staff to evaluate their performance within the 1st month, documenting each planning activity, documentation of information technology activities, and documentation of information technology strategy related to business. That every company must have authority in building an organization. Companies need to review the findings of the problem. For companies in applying Information Technology is in accordance with IT procedures, but not maximal and lack of documentation on the applicable procedures. Therefore, this research is conducted by measuring COBIT 4.1 and BSC as an appraisal assistant to be more accurate and efficient.

## SUGGESTION

Suggestions given for further research are as follows the first step that must be done by the company improve IT governance especially improve system security, training, and IT Infrastructure. Prepare adequate human resources, transfer knowledge from experts to other staff through training or courses covering areas that use information technology in business processes. Manager each month to evaluate and summon one by one staff to evaluate their performance within 1 month. To document every planning activity, documentation of information technology activity, and documentation of information technology strategy related to business.

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