Rancangan Tata Kelola Teknologi Informasi Menggunakan *Framework* COBIT 2019 (Studi Kasus: PT XYZ)

Ahmad Maulana Fikri [1,*], Hesti Shofia Priastika[1], Nadine Octaraisya[1], Sadriansyah[1], Lovinta Happy Trinawati[1]

[1] Sistem Informasi; Institut Teknologi Kalimantan; Jl. Soekarno-Hatta Km. 15, Karang Joang, Balikpapan, Kalimantan Timur, 0542-8530801; e-mail: humas@itk.ac.id.

* Korespondensi: Ahmad Maulana Fikri e-mail: 10171001@student.itk.ac.id

Cara sitasi: Fikri AM, Priastika HS, Octaraisya N, Sadriansyah, Trinawati LH. 2020. Rancangan Tata Kelola Teknologi Informasi Menggunakan Framework Cobit 2019 (Studi Kasus PT.XYZ). Information Management for Educators and Professionals. 5 (1): 1-14.

Abstrak: Tata kelola teknologi informasi fokus pada teknologi informasi, sistem, manajemen kinerja dan resikonya.Kerangka kerja COBIT 2019 digunakan dalam melakukan penerapan tata kelola teknologi informasi. PT XYZ diambil bertujuan mengetahui kualitas layanan, kinerja manajemen, serta resiko pada perusahaan dengan melihat pada referensi dari laporan tahunan PT XYZ dan menganalisis nilai *capability level* serta *maturity level*. Setelah dilakukan analisis terhadap 11 *design factor*, didapatkan bahwa ada 5 proses domain yang memiliki nilai diatas 75% yaitu BAI02, BAI03, BAI06, DSS02, dan DSS04 kemudian dilanjutkan dengan *core model evaluation* dan diperoleh hasil nilai *capability level* masing- masing yaitu BAI02 memiliki nilai capability pada level 2; BAI03 memiliki nilai capability pada level 1; BAI06 memiliki nilai capability pada level 1;). DSS02 memiliki nilai capability pada level 2; dan DSS04 memiliki nilai capability pada level 2, maka nilai *maturity level* keseluruhan dari PT XYZ adalah 1, *capability level* dapat ditingkatkan dengan melakukan aktivitas yang belum dilakukan oleh perusahaan sampai dengan mencapai nilai *fully* untuk tiap level.

Kata kunci: *capability*, COBIT, *maturity*, tata kelola, teknologi.

Abstract: Information technology governance focuses on information technology, systems, performance management and risk. The 2019 COBIT framework is used in implementing information technology governance. PT XYZ was taken to determine the quality of service, management performance, and risk to the company by looking at the references from the PT XYZ annual report and analyzing the capability level and maturity level. After analyzing 11 design factors, it was found that there were 5 domain processes that had values above 75%, namely BAI02, BAI03, BAI06, DSS02, and DSS04 then continued with core model evaluation and the results obtained for each capability level, namely BAI02 had a value. capability at level 2; BAI03 has capability value at level 1; BAI06 has a capability value at level 1;). DSS02 has capability value at level 2; and DSS04 has a capability value at level 2, so the overall maturity level of PT XYZ is 1, the capability level can be increased by doing activities that the company has not done until it reaches the full value for each level.

Keywords: capability, COBIT, governance, maturity, technology.

1. Pendahuluan

Tata kelola teknologi informasi (TI) fokus pada teknologi informasi, sistem, manajemen kinerja dan resikonya. COBIT merupakan *framework* untuk mengukur kematangan pemanfaatan TI yang digunakan dalam sebuah organisasi [1], berdasarkan pada domain, proses, tujuan, serta model kematangan, dan struktur yang logis [2], sehingga dapat memberikan gambaran detail bagi solusi tata kelola TI yang selaras dengan strategi bisnis dan tujuan perusahaan [3]. Tata kelola TI merupakan proses perusahaan membagi wewenang dan pengambilan keputusan dengan

fokus mengenai TI serta pemantauan kinerja dari TI yang telah diinvestasikan. Tata kelola TI ini penting karena tidak hanya sebagai pendukung melainkan menjadi penentu kesuksesan perusahaan [4], agar perusahaan dapat menghindari kerugian bisnis, menghindari biaya yang tinggi dan kualitas rendah, tidak efisiennya proses inti perusahaan dikarenakan rendahnya kualitas penggunaan TI, serta kegagalan investasi TI. Oleh karena itu perusahaan dapat memanfaatkan TI, salah satunya untuk memperoleh keefektifan pelayanan dengan menggunakan TI [5]. Penerapan TI menjadi penting karena kehandalan dengan TI akan memenuhi kebutuhan bisnis bagi perusahaan [6] dan peningkatan terhadap kualitas layanan [7].

Dalam melakukan penerapan tata kelola teknologi informasi, dapat digunakan suatu kerangka kerja COBIT 2019 merupakan evolusi dari COBIT 5. *Framework* COBIT 5 dirilis tahun 2012 [8], pada *framework* COBIT 5 mencakup bermacam jenis kegiatan, struktur organisasi dan layanan yang berbeda [9].

Kerangka kerja COBIT 2019 memiliki berbagai macam prinsip [10], yaitu memenuhi kebutuhan stakeholder, mencakup organisasi secara menyeluruh, menerapkan satu kerangka kerja tunggal yang terpadu, memungkinkan pendekatan holistik, memisahkan antara tata kelola TI dan manajemen, penerapan tata kelola TI yang dinamis, serta dapat disesuaikan dengan kebutuhan organisasi. Dengan menggunakan *framework* COBIT 2019, akan dinilai *capability level* tiap domain proses di perusahaan beserta tingkat kematanganya.

PT XYZ berfokus di bidang *agri-food*, dengan proses bisnis utama antara lain produksi pakan ternak, pengolahan dan pembibitan unggas dan pembudidayaan pertanian. PT XYZ memiliki kelebihan dalam proses integrasi vertikal yang berskala ekonomi. Hal ini dimaksudkan untuk terjalinnya hubungan baik antara operasional yang dilakukan. Proses yang sedang berjalan tersebut kemudian akan dinilai dengan menggunakan COBIT 2019 dengan tujuan untuk mengetahui kualitas layanan, kinerja manajemen, serta risiko pada perusahaan. Dalam studi kasus yang diambil, akan diketahui kinerja terhadap manajemen, kualitas pada pelayanan, dan resiko pada perusahaan dengan melihat pada referensi dari laporan tahunan PT XYZ [11].

2. Metode Penelitian

Penelitian menggunakan metode studi literatur, berdasarkan referensi laporan tahunan perusahaan pada tahun 2019. Adapun rancangan penelitian dilakukan sebagai berikut: **1). *IT Governance Design Factor,*** merancangan *design* factor sesuai COBIT 2019. Pada COBIT 2019, dilakukan pembuatan *design factor* untuk perusahaan sebagai rancangan awal untuk mengevaluasi proses-proses yang berjalan. Terdapat sebelas *design factor* dengan *toolkit* yang telah disediakan. **2). *IT Governance Design Result,*** rangkuman berupa grafik untuk melihat kepentingan semua domain proses. Proses yang memiliki kepentingan lebih dari 75% atau *level* 4 akan dievaluasi. **3). *Core Model Evaluation*,** untuk evaluasi terhadap proses yang dinilai penting untuk PT XYZ, dengan analisis aktivitas pada setiap *capability level*.
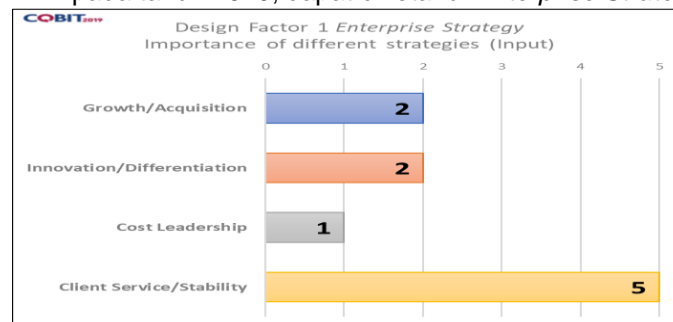
3. Hasil dan Pembahasan

Hasil analisis dilakukan pada PT XYZ berdasarkan laporan tahunan perusahaan pada tahun 2019.

IT Governance Design Factor
DF 1: *Enterprise Strategy*

Setelah dilakukan analisis strategi perusahaan berdasarkan laporan tahunan yang dipublikasi oleh PT XYZ pada tahun 2019, dapat diketahui *Enterprise Strategy* seperti gambar 1.
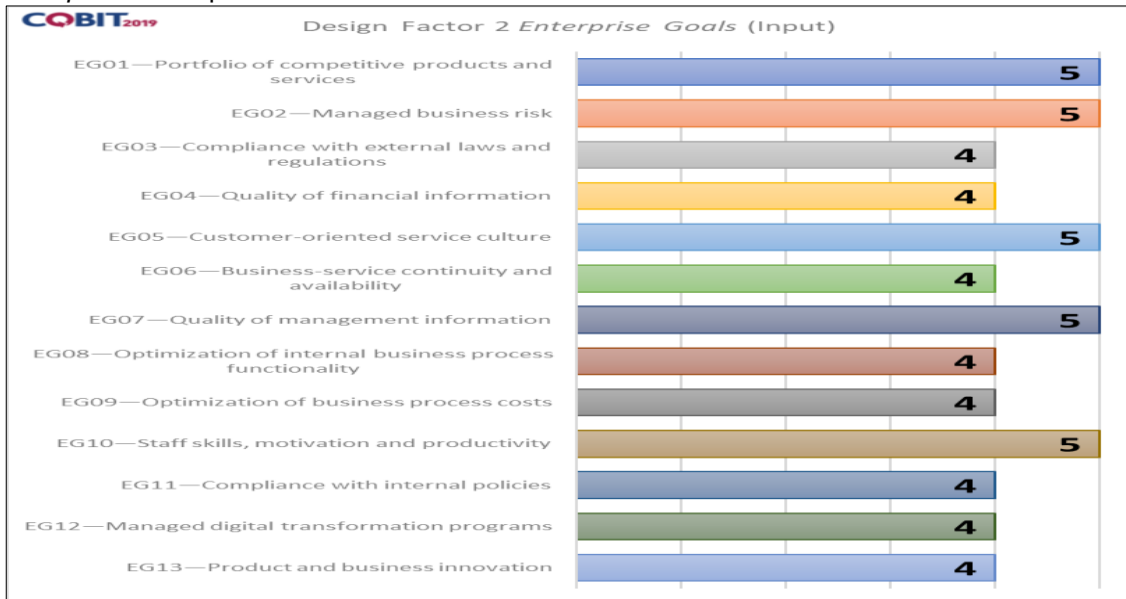

Sumber: COBIT 2019 *Design Toolkit*

Gambar 1. Grafik DF1: *Enterprise Strategy*

DF2: *Enterprise Goals*

Untuk mencapai tujuan perusahaan, dapat ditentukan melalui penyusunan strategi guna mencapai *suatu goal*. Berdasarkan laporan tahunan dan strategi perusahaan, dapat diketahui *Enterprise Goals* perusahaan adalah:
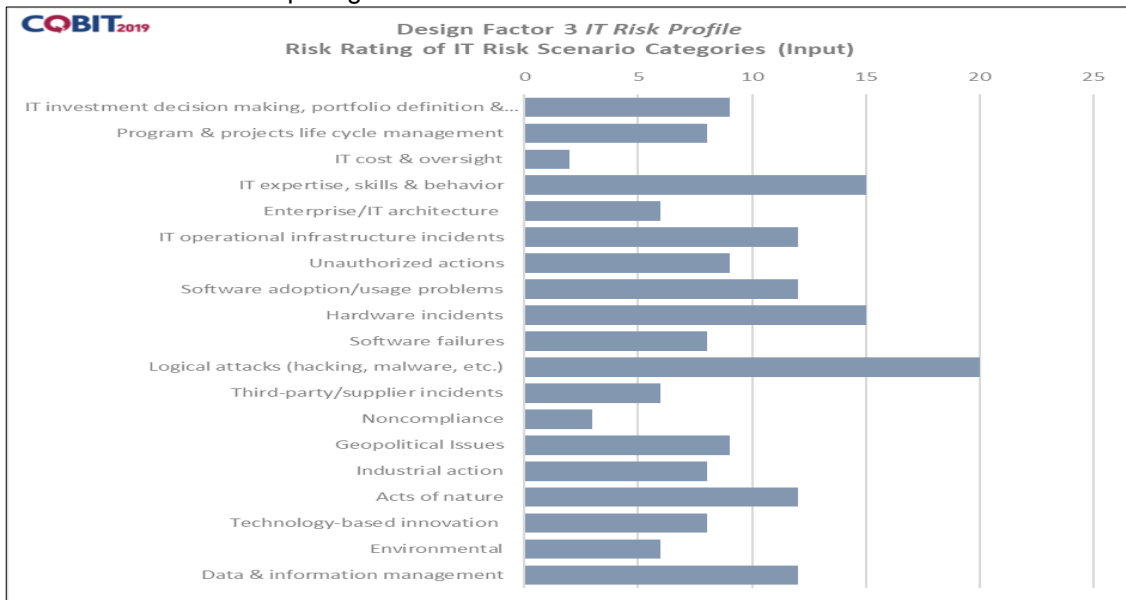

Sumber: COBIT 2019 *Design Toolkit*

Gambar 2. Grafik DF2: *Enterprise Goals*

DF3: *Risk Profile*

Berdasarkan laporan tahunan yang dipublikasi oleh PT XYZ pada tahun 2019, dapat diketahui *Risk Profile* seperti gambar 3.
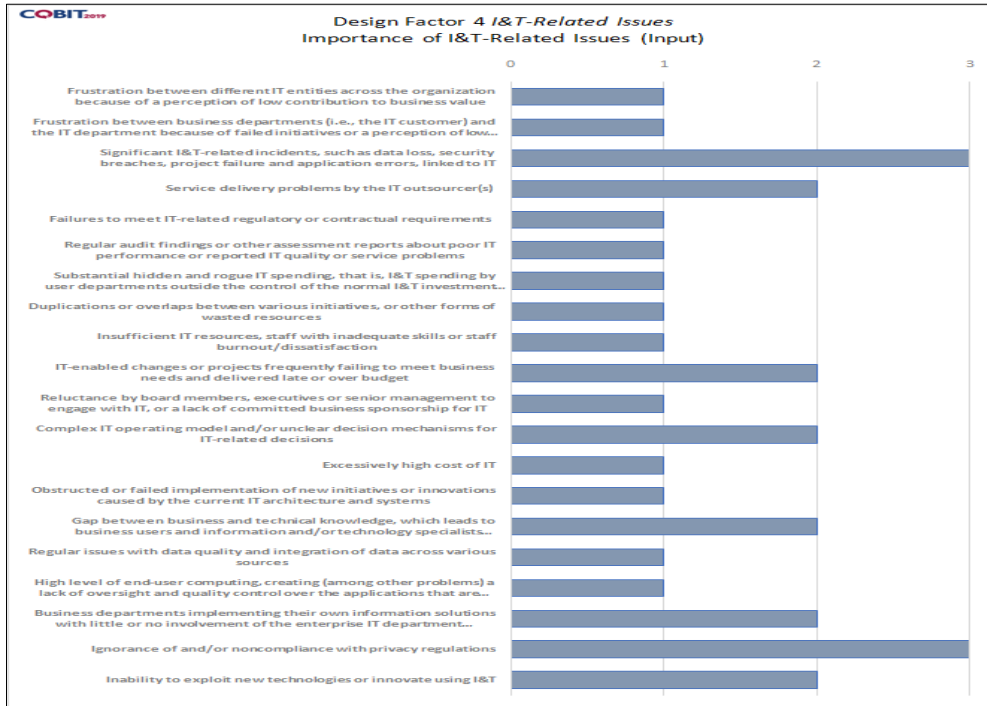

Sumber: COBIT 2019 *Design Toolkit*

Gambar 3. Grafik DF3: *Risk Profile*

DF4: *I&T Related Issues*

Berdasarkan laporan tahunan yang dipublikasi oleh PT XYZ pada tahun 2019, dapat diketahui *I&T Related Issues* seperti gambar 4.
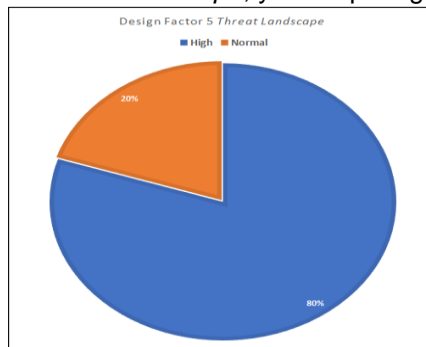
Sumber: COBIT 2019 *Design Toolkit*

Gambar 4. Grafik DF4: *I&T Related Issues*

DF5: *Threat Landscape*

Setelah dilakukan analisis terkait Bentang ancaman terhadap PT XYZ beroperasi, dihasilkan grafik *Design Factor Threat Landscape*, yaitu seperti gambar 5.
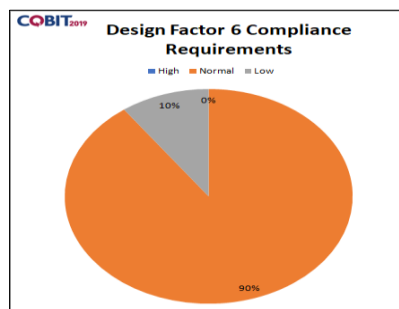

Sumber: COBIT 2019 *Design Toolkit*

Gambar 5. Grafik DF5: *Threat Landscape*

DF6: *Compliance Requirement*

Analisis terhadap persyaratan kepatuhan sebagai dasar perusahaan yang dapat diklasifikasikan, dihasilkan grafik *Design Factor* I&T *Compliance Requirement*, yaitu seperti gambar 6.
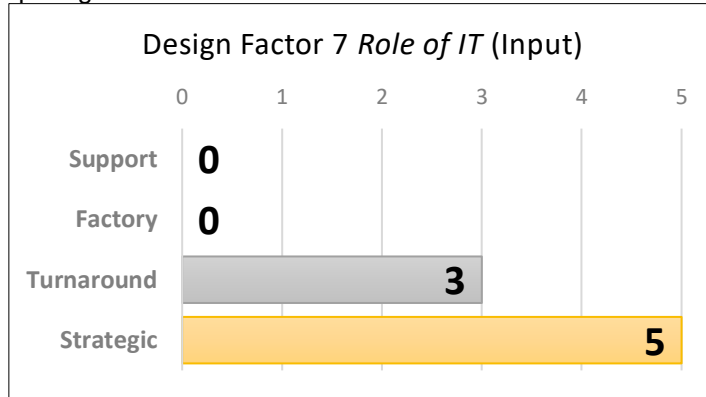

Sumber: COBIT 2019 *Design Toolkit*

Gambar 6. Grafik DF6: *Compliance Requirement*

DF7: *Role of IT*

Setelah dilakukan analisis peran TI terhadap perusahaan, dihasilkan grafik *Design Factor Role of IT*, yaitu seperti gambar 7.
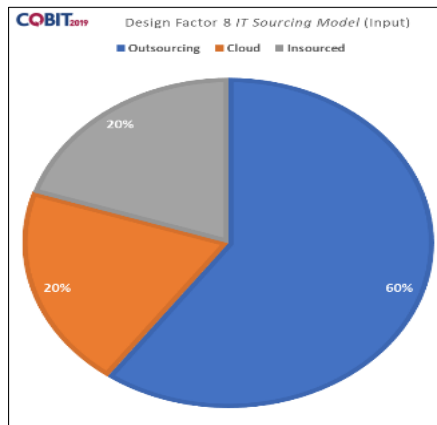

Sumber: COBIT 2019 *Design Toolkit*

Gambar 7. Grafik DF7: *Role of IT*

DF8: *Sourcing Model of IT*

Setelah dilakukan analisis model sumber perusahaan, berikut adalah *Design Factor Sourcing Model for IT*.
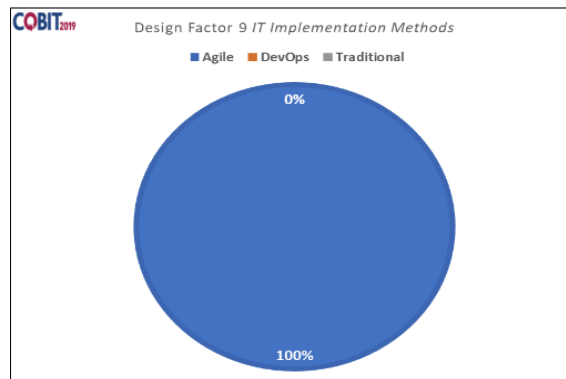

Sumber: COBIT 2019 *Design Toolkit*

Gambar 8. Grafik DF8: *Sourcing Model of IT*

DF9: *IT Implementation Methods*

Analisis terhadap metode implementasi TI yang diterapkan PT XYZ, *Design Factor Sourcing Model for IT* seperti gambar 9.
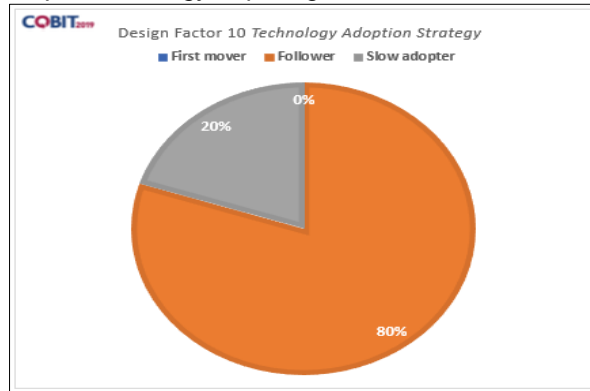

Sumber: COBIT 2019 *Design Toolkit*

Gambar 9. Grafik DF9: *IT Implementation Methods*

DF10: *Technology Adoption Strategy*

Berdasarkan laporan tahunan yang dipublikasi oleh PT XYZ pada tahun 2019, dapat diketahui *Technology Adoption Strategy* seperti gambar 10.

Sumber: COBIT 2019 *Design Toolkit*

Gambar 10. Grafik DF10: *Technology Adoption Strategy*

DF11: *Enterprise Size*

Berdasarkan jumlah karyawan yang ada sebanyak 27,972 karyawan, dapat disimpulkan bahwa PT XYZ memiliki *sourcing model* bertipe *Large Enterprise* karena memiliki lebih dari 250 karyawan.

IT Governance Design Result

Sumber: COBIT 2019 *Design Toolkit*

Gambar 11. Grafik *Governance and Management Objectives Importance*

Berdasarkan gambar 11, dilihat bahwa proses yang memiliki nilai diatas 75% sebagai berikut (ISACA, 2018). 1). BAI02 – *Managed Requirements Definition,* 2). BAI03 – *Managed Solutions Identification and Build,* 3). BAI06 – *Managed IT Changes,* 4). DSS02 – *Managed Service Requests and Incidents,* 5). DSS04 – *Managed Continuity.*

PT XYZ mendapat skor 75 terhadap sasaran tata kelola berarti bahwa kepentingannya setidaknya 75% lebih tinggi dibandingkan dengan situasi tolok ukur, akan membutuhkan tingkat kemampuan 4, sehingga dilanjutkan ke evaluasi model inti.

Core Model Evaluation
BAI02 – Managed Requirements Definition

Pengukuran level proses kapabilitas PT XYZ, berdasarkan domain BAI02. Pada Tabel 2 merupakan proses identifikasi per level kapabilitas.

Tabel 1. Aktivitas BAI02 pada *capability level* 2 (ISACA, 2018)

Activity bersumber dari COBIT 2019	Check box
Ensure that all stakeholder requirements, including relevant acceptance criteria, are considered, captured, prioritized and recorded in a way that is understandable to all stakeholders, recognizing that the requirements may change and will become more detailed as they are implemented	☒
Express business requirements in terms of how the gap between current and desired business capabilities need to be addressed and how the user (employee, client, etc.) will interact with and use the solution.	☒
Specify and prioritize information, functional and technical requirements, based on the user experience design and confirmed stakeholder requirements.	☒
Identify required actions for solution acquisition or development based on the enterprise architecture. Take into account scope and/or time and/or budget limitations.	☒
Review the alternative solutions with all stakeholders. Select the most appropriate one based on feasibility criteria, including risk and cost.	☒

Sumber: Hasil Penelitian (2020)

Setelah itu dilakukan proses perhitungan nilai untuk Capability level 2 sebagai berikut**:**

$$\frac{jumlah\ activity\ yang\ telah\ dilakukan\ (dichecklist)}{jumlah\ activity} \times 100\%$$

……………………………….………(1)

$$\frac{5}{5} \times 100\% = 100\%$$

Dikarenakan telah mencapai 100% (*Fully*), dapat dilanjutkan ke perhitungan Capability level 3 (ISACA 2018).

Tabel 2. Aktivitas BAI02 pada *capability level* 3 (ISACA, 2018)

Activity bersumber dari COBIT 2019	Check box
Ensure requirements meet enterprise policies and standards, enterprise architecture, strategic and tactical I&T plans, inhouse and outsourced business and IT processes, security requirements, regulatory requirements, people competencies, organizational structure, business case, and enabling technology.	☐
Include information control requirements in the business processes, automated processes and I&T environments to address information risk and to comply with laws, regulations and commercial contracts.	☒
Confirm acceptance of key aspects of the requirements, including enterprise rules, user experience, information controls, business continuity, legal and regulatory compliance, auditability, ergonomics, operability and usability, safety, confidentiality, and supporting documentation.	☐
Track and control scope, requirements and changes through the life cycle of the solution as understanding of the solution evolves.	☒
Define and implement a requirements definition and maintenance procedure and a requirements repository that are appropriate for the size, complexity, objectives and risk of the initiative that the enterprise is considering undertaking.	☒
Validate all requirements through approaches such as peer review, model validation or operational prototyping.	☐
Translate the preferred course of action into a high-level acquisition/development plan that identifies resources to be used and stages requiring a go/no-go decision.	☐
Identify quality, functional and technical requirements risk (due to, for example, lack of user involvement, unrealistic expectations, developers adding unnecessary functionality, unrealistic assumptions, etc.).	☒
Determine appropriate risk response to requirements risk.	☒
Ensure that the business sponsor or product owner makes the final choice of solution, acquisition approach and high-level design, according to the business case. Obtain necessary approvals from affected	☐

Activity bersumber dari COBIT 2019	Check box
stakeholders (e.g., business process owner, enterprise architect, operations manager, security, privacy officer).	

Sumber: Hasil Penelitian (2020)

Setelah itu dilakukan proses perhitungan nilai untuk *Capability level* 3 sebagai berikut:

$$\frac{jumlah\ activity\ yang\ telah\ dilakukan\ (dichecklist)}{jumlah\ activity} \times 100\%$$ …………………………………………(2)

$$\frac{6}{10} \times 100\% = 60\%$$

Dikarenakan hanya mencapai 60% (*Largely*), maka tidak dapat dilakukan penilaian *capability level* 4. Berdasarkan tabel 2 disimpulkan domain BAI02 diperoleh nilai *capability* yang berada pada level 2.

BAI03 – *Managed Solutions Identification and Build*
        Dalam mengukur level proses kapabilitas yang dicapai oleh PT XYZ, dilakukan identifikasi aktivitas berdasarkan domain BAI03. Tabel 3 merupakan proses identifikasi per level kapabilitas.

Tabel 3. Aktivitas BAI03 pada *capability level* 2 (ISACA, 2018)

Activity bersumber dari COBIT 2019	Check Box
Establish a high-level design specification that translates the proposed solution into a high-level design for business processes, supporting services, workflows, applications, infrastructure, and information repositories capable of meeting business and enterprise architecture requirements.	☒
Involve appropriately qualified and experienced user experience designers and IT specialists in the design process to make sure that the design provides a solution that optimally uses the proposed I&T capabilities to enhance the business process.	☒
Create a design that complies with the organization's design standards. Ensure that it maintains a level of detail that is appropriate for the solution and development method and consistent with business, enterprise and I&T strategies, the enterprise architecture, security/privacy plan and applicable laws, regulations and contracts.	☒
After quality assurance approval, submit the final high-level design to the project stakeholders and the sponsor/business process owner for approval based on agreed criteria. This design will evolve throughout the project as understanding grows.	☒
Design progressively the business process activities and work flows that need to be performed in conjunction with the new application system to meet the enterprise objectives, including the design of the manual control activities.	☒
Design the application processing steps. These steps include specification of transaction types and business processing rules, automated controls, data definitions/business objects, use cases, external interfaces, design constraints, and other requirements (e.g., licensing, legal, standards and internationalization/localization).	☒
Classify data inputs and outputs according to enterprise architecture standards. Specify the source data collection design. Document the data inputs (regardless of source) and validation for processing transactions as well as the methods for validation. Design the identified outputs, including data sources.	☐
Design the system/solution interface, including any automated data exchange.	☒
Design data storage, location, retrieval and recoverability	☒
Design appropriate redundancy, recovery and backup.	☒
Within a separate environment, develop the proposed detailed design for business processes, supporting services, applications, infrastructure and information repositories.	☒
When third-party providers are involved with the solution development, ensure that maintenance, support, development standards and licensing are addressed and adhered to in contractual obligations.	☒
Track change requests and design, performance and quality reviews. Ensure active participation of all impacted stakeholders.	☒

Activity bersumber dari COBIT 2019	Check Box
Document all solution components according to defined standards. Maintain version control over all developed components and associated documentation.	☒
Integrate and configure business and IT solution components and information repositories in line with detailed specifications and quality requirements. Consider the role of users, business stakeholders and the process owner in the configuration of business processes.	☒
Complete and update business process and operational manuals, where necessary, to account for any customization or special conditions unique to the implementation.	☐
Consider all relevant information control requirements in solution component integration and configuration. Include implementation of business controls, where appropriate, into automated application controls such that processing is accurate, complete, timely, authorized and auditable.	☐
Create an integrated test plan and practices commensurate with the enterprise environment and strategic technology plans. Ensure that the integrated test plan and practices will enable the creation of suitable testing and simulation environments to help verify that the solution will operate successfully in the live environment and deliver the intended results and that controls are adequate.	☒
Create a test environment that supports the full scope of the solution. Ensure that the test environment reflects, as closely as possible, real-world conditions, including the business processes and procedures, range of users, transaction types, and deployment conditions.	☐
Undertake testing of solutions and their components in accordance with the testing plan. Include testers independent from the solution team, with representative business process owners and end users. Ensure that testing is conducted only within the development and test environments.	☐
Use clearly defined test instructions, as defined in the test plan. Consider the appropriate balance between automated scripted tests and interactive user testing.	☒
Undertake all tests in accordance with the test plan and practices. Include the integration of business processes and IT solution components and of nonfunctional requirements (e.g., security, privacy, interoperability, usability).	☐
Identify, log and classify (e.g., minor, significant and mission-critical) errors during testing. Repeat tests until all significant errors have been resolved. Ensure that an audit trail of test results is maintained.	☒
Record testing outcomes and communicate results of testing to stakeholders in accordance with the test plan	☒
Develop and execute a plan for the maintenance of solution components. Include periodic reviews against business needs and operational requirements such as patch management, upgrade strategies, risk, privacy, vulnerabilities assessment and security requirements.	☐

Sumber: Hasil Penelitian (2020)

Setelah itu dilakukan proses perhitungan nilai untuk *Capability level* 2 sebagai berikut:

$$\frac{jumlah\ activity\ yang\ telah\ dilakukan\ (dichecklist)}{jumlah\ activity} \times 100\% \quad \dots\dots\dots\dots\dots\dots\dots(3)$$

$$\frac{18}{25} \times 100\% = 72\%$$

Dikarenakan hanya mencapai 72% (*Largely*), maka tidak dapat dilakukan penilaian *capability level* 3. Berdasarkan tabel 3 disimpulkan domain BAI03 diperoleh nilai *capability* yang berada pada level 1.

BAI06 – *Managed IT Changes*

Dalam mengukur level proses kapabilitas yang dicapai oleh PT XYZ, dilakukan identifikasi aktivitas berdasarkan domain BAI06. Tabel 4 merupakan proses identifikasi per level kapabilitas.

Tabel 4. Aktivitas BAI03 pada *capability level* 2 (ISACA, 2018)

Activity bersumber dari COBIT 2019	Check Box
Use formal change requests to enable business process owners and IT to request changes to business process, infrastructure, systems or applications. Make sure that all such changes arise only through the change request management process	☒
Categorize all requested changes (e.g., business process, infrastructure, operating systems, networks, application systems, purchased/packaged application software) and relate affected configuration items	☒

Activity bersumber dari COBIT 2019	Check Box
Prioritize all requested changes based on the business and technical requirements; resources required; and the legal, regulatory and contractual reasons for the requested change	☒
Formally approve each change by business process owners, service managers and IT technical stakeholders, as appropriate. Changes that are low-risk and relatively frequent should be pre-approved as standard changes	☒
Plan and schedule all approved changes	☒
Define what constitutes an emergency change	☒
Ensure that a documented procedure exists to declare, assess, approve preliminarily, authorize after the change and record an emergency change.	☐
Include changes in the documentation within the management procedure. Examples of documentation include business and IT operational procedures, business continuity and disaster recovery documentation, configuration information, application documentation, help screens, and training materials.	☐

Sumber: Hasil Penelitian (2020)

Setelah itu dilakukan proses perhitungan nilai untuk Capability level 2 sebagai berikut:

$$\frac{jumlah\ activity\ yang\ telah\ dilakukan\ (dichecklist)}{jumlah\ activity} \times 100\%$$ ……………………..…..…………….(4)

$$\frac{6}{8} \times 100\% = 75\%$$

Dikarenakan mencapai 75% (largely), maka tidak dapat dilakukan penilaian capability level 3. Berdasarkan tabel 4 disimpulkan domain BAI06 diperoleh nilai capability yang berada pada level 1.

DSS02 – Managed Service Requests and Incidents

Dalam mengukur level proses kapabilitas yang dicapai oleh PT XYZ, dilakukan identifikasi aktivitas berdasarkan domain BAI06. Tabel 5 merupakan proses identifikasi per level kapabilitas.

Tabel 5. Aktivitas DSS02 pada capability level 2 (ISACA, 2018)

Activity bersumber dari COBIT 2019	Check box
Verify entitlement for service requests using, where possible, a predefined process flow and standard changes.	☒
Obtain financial and functional approval or sign-off, if required, or predefined approvals for agreed standard changes.	☒
Identify and describe relevant symptoms to establish the most probable causes of the incidents. Reference available knowledge resources (including known errors and problems) to identify possible incident resolutions (temporary workarounds and/or permanent solutions).	☒
If a related problem or known error does not already exist and if the incident satisfies agreed criteria for problem registration, log a new problem.	☒
Assign incidents to specialist functions if deeper expertise is needed. Engage the appropriate level of management, where and if needed.	☒
Select and apply the most appropriate incident resolutions (temporary workaround and/or permanent solution).	☒
Record whether workarounds were used for incident resolution.	☒
Perform recovery actions, if required.	☒
Document incident resolution and assess if the resolution can be used as a future knowledge source.	☒
Verify with the affected users that the service request has been fulfilled satisfactorily or the incident has been resolved satisfactorily and within an agreed/acceptable period of time.	☒
Close service requests and incidents.	☒
Monitor and track incident escalations and resolutions and request handling procedures to progress toward resolution or completion.	☒

Sumber: Hasil Penelitian (2020)

Setelah itu dilakukan proses perhitungan nilai untuk Capability level 2 sebagai berikut:

$$\frac{jumlah\ activity\ yang\ telah\ dilakukan\ (dichecklist)}{jumlah\ activity} \times 100\%$$ ……………………………………………(5)

$$\frac{12}{12} \times 100\% = 100\%$$

Dikarenakan mencapai 100% (*largely*), maka dilakukan penilaian *capability level* 3.

Tabel 6. Aktivitas DSS02 pada capability level 3 (ISACA, 2018)

Activity bersumber dari COBIT 2019	Check box
Define incident and service request classification and prioritization schemes, and criteria for problem registration. Use this information to ensure consistent approaches for handling and informing users about problems and conducting trend analysis.	☒
Define incident models for known errors to enable efficient and effective resolution.	☒
Define service request models according to service request type to enable self-help and efficient service for standard requests.	☐
Define incident escalation rules and procedures, especially for major incidents and security incidents.	☒
Define knowledge sources on incidents and requests and describe how to use them.	☒
Fulfill the requests by performing the selected request procedure. Where possible, use self-help automated menus and predefined request models for frequently requested items.	☐
Identify information stakeholders and their needs for data or reports. Identify reporting frequency and medium.	☒

Sumber: Hasil Penelitian (2020)

Proses perhitungan dilakukan untuk nilai Capability level 3 sebagai berikut**:**

$$\frac{jumlah\ activity\ yang\ telah\ dilakukan\ (dichecklist)}{jumlah\ activity} \times 100\%$$ ……………………………...……….(6)

$$\frac{5}{7} \times 100\% = 71\%$$

Dikarenakan hanya mencapai 71% (*Largely*), maka tidak dapat dilakukan penilaian *capability level* 4. Berdasarkan tabel 6 disimpulkan domain DSS02 diperoleh nilai capability yang berada pada level 2.

DSS04 – *Managed Continuity*

Dalam mengukur level proses kapabilitas yang dicapai oleh PT XYZ, dilakukan identifikasi aktivitas berdasarkan domain BAI06. Tabel 7 merupakan proses identifikasi per level kapabilitas.

Tabel 7. Aktivitas DSS04 pada capability level 2 (ISACA, 2018)

Activity berumber dari COBIT 2019	Check Box
Identify internal and outsourced business processes and service activities that are critical to the enterprise operations or necessary to meet legal and/or contractual obligations.	☒
Identify key stakeholders and roles and responsibilities for defining and agreeing on continuity policy and scope.	☒
Define and document the agreed minimum policy objectives and scope for business resilience.	☒
Identify essential supporting business processes and related I&T services.	☒
Identify potential scenarios likely to give rise to events that could cause significant disruptive incidents.	☒
Conduct a business impact analysis to evaluate the impact over time of a disruption to critical business functions and the effect that a disruption would have on them.	☒
Establish the minimum time required to recover a business process and supporting I&T, based on an acceptable length of business interruption and maximum tolerable outage.	☒
Determine the conditions and owners of key decisions that will cause the continuity plans to be invoked.	☒
Define the incident response actions and communications to be taken in the event of disruption. Define related roles and responsibilities, including accountability for policy and implementation.	☒
Ensure that key suppliers and outsource partners have effective continuity plans in place. Obtain audited evidence as required.	☒
Define the conditions and recovery procedures that would enable resumption of business processing. Include updating and reconciliation of information databases to preserve information integrity.	☒

Activity berumber dari COBIT 2019	Check Box
Develop and maintain operational BCPs and DRPs that contain the procedures to be followed to enable continued operation of critical business processes and/or temporary processing arrangements. Include links to plans of outsourced service providers.	☒
Define and document the resources required to support the continuity and recovery procedures, considering people, facilities and IT infrastructure.	☒
Define and document the information backup requirements required to support the plans. Include plans and paper documents as well as data files. Consider the need for security and off-site storage.	☒
Determine required skills for individuals involved in executing the plan and procedures.	☒
Define objectives for exercising and testing the business, technical, logistical, administrative, procedural and operational systems of the plan to verify completeness of the BCP and DRP in meeting business risk.	☒
Define and agree on stakeholder exercises that are realistic and validate continuity procedures. Include roles and responsibilities and data retention arrangements that cause minimum disruption to business processes.	☒
Assign roles and responsibilities for performing continuity plan exercises and tests.	☒
Roll out BCP and DRP awareness and training.	☐
Back up systems, applications, data and documentation according to a defined schedule. Consider frequency (monthly, weekly, daily, etc.), mode of backup (e.g., disk mirroring for real-time backups vs. DVD-ROM for long-term retention), type of backup (e.g., full vs. incremental), and type of media. Consider also automated online backups, data types (e.g., voice, optical), creation of logs, critical end-user computing data (e.g., spreadsheets), physical and logical location of data sources, security and access rights, and encryption.	☒
Define requirements for on-site and off-site storage of backup data that meet the business requirements. Consider the accessibility required to back up data.	☒
Periodically test and refresh archived and backup data.	☒
Ensure that systems, applications, data and documentation maintained or processed by third parties are adequately backed up or otherwise secured. Consider requiring return of backups from third parties. Consider escrow or deposit arrangements.	☒

Sumber: Hasil Penelitian (2020)

Setelah itu dilakukan proses perhitungan nilai untuk Capability level 3 sebagai berikut**:**

$$\frac{jumlah\ activity\ yang\ telah\ dilakukan\ (dichecklist)}{jumlah\ activity} \times 100\%$$ ....(7)

$$\frac{22}{23} \times 100\% = 96\%$$

Dikarenakan hanya mencapai 96% (*Fully*), maka dapat dilakukan penilaian *capability level* 3.

Tabel 8. Aktivitas DSS04 *pada capability level* 3 (ISACA, 2018)

Activity (Sumber: COBIT 2019)	Checkbox
Assess the likelihood of threats that could cause loss of business continuity. Identify measures that will reduce the likelihood and impact through improved prevention and increased resilience.	☒
Analyze continuity requirements to identify possible strategic business and technical options.	☒
Identify resource requirements and costs for each strategic technical option and make strategic recommendations.	☒
Obtain executive business approval for selected strategic options.	☒
Distribute the plans and supporting documentation securely to appropriately authorized interested parties. Make sure the plans and documentation are accessible under all disaster scenarios.	☒
Schedule exercises and test activities as defined in the continuity plans.	☒
On a regular basis, review the continuity plans and capability against any assumptions made and current business operational and strategic objectives.	☒
On a regular basis, review the continuity plans to consider the impact of new or major changes to enterprise organization, business processes, outsourcing arrangements, technologies, infrastructure, operating systems and application systems.	☒
Consider whether a revised business impact assessment may be required, depending on the nature of the change.	☒
Recommend changes in policy, plans, procedures, infrastructure, and roles and responsibilities. Communicate them as appropriate for management approval and processing via the IT change management process.	☒

Activity (Sumber: COBIT 2019)	*Checkbox*
Define and maintain training requirements and plans for those performing continuity planning, impact assessments, risk assessments, media communication and incident response. Ensure that the training plans consider frequency of training and training delivery mechanisms.	☐
Develop competencies based on practical training, including participation in exercises and tests.	☐

Sumber: Hasil Penelitian (2020)

Proses perhitungan terhadap nilai pada Capability level 3 sebagai berikut**:**

$$\frac{jumlah\ activity\ yang\ telah\ dilakukan\ (dichecklist)}{jumlah\ activity} \times 100\%$$
....(8)

$$\frac{10}{12} \times 100\% = 83\%$$

Berdasarkan perhitungan rumus 8 diperoleh nilai 83% (*Largely*), sehingga tidak dilakukan penilaian terhadap *capability level* 4. Berdasarkan tabel 8 disimpulkan domain DSS04 diperoleh nilai capability yang berada pada level 2.

4. Kesimpulan

Berdasarkan analisis tata kelola PT XYZ yang telah dilakukan, maka didapat nilai *capability level* untuk tiap domain dan nilai *maturity level* PT XYZ. Selanjutnya, juga akan dilakukan analisis terkait nilai *maturity level* pada PT XYZ. 1). BAI02 memiliki nilai capability pada level 2, 2). BAI03 memiliki nilai capability pada level 1, 3). BAI06 memiliki nilai capability pada level 1, 4). DSS02 memiliki nilai capability pada level 2, 5). DSS04 memiliki nilai capability pada level 2. Oleh karena itu, dapat disimpulkan dari nilai capablity level didapatkan nilai *maturity level yaitu 1*. *Capability level* dapat ditingkatkan dengan melakukan aktivitas yang belum dilakukan oleh perusahaan sampai dengan mencapai nilai *fully* untuk tiap level. *Maturity level* dapat ditingkatkan dengan mengelola proses secara sistematis dengan kombinasi optimasi proses serta meningkatkan proses berkelanjutan pada PT XYZ.

Referensi

[1] R. R. Suryono, D. Darwis, and S. I. Gunawan, "Audit Tata Kelola Teknologi Informasi Menggunakan Framework Cobit 5 (Studi Kasus: Balai Besar Perikanan Budidaya Laut Lampung)," *J. Teknoinfo*, vol. 12, no. 1, p. 16, 2018.

[2] K. P. D. Dharmayanti, I. P. A. Swastika, and I. G. L. A. R. Putra, "Tata Kelola Sistem Informasi Sanken Menggunakan Framework COBIT 5," *MATRIK J. Manajemen, Tek. Inform. dan Rekayasa Komput.*, vol. 18, no. 1, pp. 29–38, 2018.

[3] H. M. Kurnia, R. N. Shofa, and Rianto, "Audit Tata Kelola Teknologi Informasi Menggunakan Framework Cobit 5 Berdasarkan Domain APO12," *J. Sist. Inf. dan Teknol.*, vol. 1, no. 2, pp. 1–6, 2018.

[4] K. Rizki and N. Bahtiar, "Analisis Tata Kelola Teknologi Informasi (IT Governance) Menggunakan COBIT 5 (Studi Kasus di UPT Puskom Universitas Diponegoro)," *J. Masy. Inform.*, vol. 8, no. 1, pp. 561–565, 2017.

[5] K. Devanti, W. G. S. Parwita, and I. K. B. Sandika, "Audit Tata Kelola Teknologi Informasi Menggunakan Framework COBIT 5 Pada PT Bisma Tunas Jaya Sentral," *J. Sist. Inf. dan Komput. Terap. Indones.*, vol. 2, no. 2, pp. 65–76, 2019.

[6] C. A. Wahyuningtyas, I. K. A. Purnawan, and N. M. I. M. Mandenni, "Audit Tata Kelola TI Perusahaan X Dengan COBIT 5," *J. Ilm. Merpati (Menara Penelit. Akad. Teknol. Informasi)*, vol. 7, no. 3, pp. 244–252, 2019.

[7] Maskur, N. Adolong, and R. Mokodongan, "Implementasi Tata Kelola Teknologi Informasi Menggunakan Framework COBIT 5 Di BPMPTSP Bone Bolango," *J. Masy. Telemat. dan Inf.*, vol. 8, no. 2, pp. 109–126, 2017.

[8] H. Hilmawan, O. D. Nurhayati, and I. P. Windasari, "Analisis Tata Kelola Teknologi Informasi menggunakan Kerangka Kerja COBIT 5 pada AMIK JTC Semarang," *J. Teknol.*

dan Sist. Komput., vol. 3, no. 2, p. 247, 2015.

[9]   E. Ekowansyah, Y. H. Chrisnanto, Puspita, and N. Sabrina, "Audit Sistem Informasi Akademik Menggunakan COBIT 5 di Universitas Jenderal Achmad Yani," in *Prosiding Seminar Nasional Komputer dan Informatika (SENASKI)*, 2017, vol. 2017, pp. 201–206.

[10]   ISACA, *COBIT 2019 Framework: Governance and Management Objectives*. USA: ISACA, 2018.

[11]   PT XYZ, "Annual Report," Jakarta, 2019.