ASP4134 - Audit Sistem Informasi

Confidential. Terbatas untuk mahasiswa PKN STAN

AGENDA

- Pengenalan Mata Kuliah
- Materi Pertemuan #1: Pengantar Audit Sistem Informasi dan Audit Tata Kelola TI



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Auditor Pertama, Inspektorat Jenderal, Kemenkeu

Education:

- *Master in Computational Analysis and Public Policy, University of Chicago*
- *Bachelor of Applied Science in Accounting, Politeknik Keuangan Negara STAN*

Volunteering:

- *Government Relation and Advocacy Director, ISACA Indonesia Chapter, 2024 - 2026*
- *Reviewer for ISACA Advanced in AI Auditing Certification Review Manual, 2025*

Professional Certifications:

- *Certified Information System Auditor (CISA)*
- *Certified Ethical Hacker (CEH)*
- *Certified in Python Programming (PCAP)*

Getting To Know Everyone

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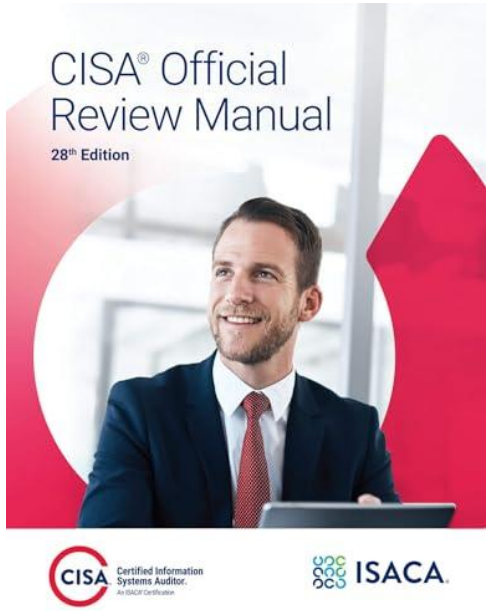
Key objectives:

1. memahami kerangka **konsep audit tata kelola** teknologi informasi berdasarkan standar tata Kelola
2. menyusun **program audit tata kelola** sistem informasi
3. menyusun **laporan audit tata kelola** sistem informasi
4. melaksanakan **pengauditan atas pengoperasian dan pemeliharaan** atas sistem informasi
5. melakukan **audit atas perolehan, pengembangan, dan implementasi sistem informasi**
6. melakukan **pengauditan atas keamanan informasi**
7. menggunakan **Teknik Audit Berbantuan Komputer** dalam pengujian pengendalian dan pengujian substantif
8. menjelaskan dampak kelemahan **pengendalian umum dan pengendalian aplikasi** terhadap peluang terjadinya kecurangan dan kesalahan saji pada laporan keuangan

Referensi



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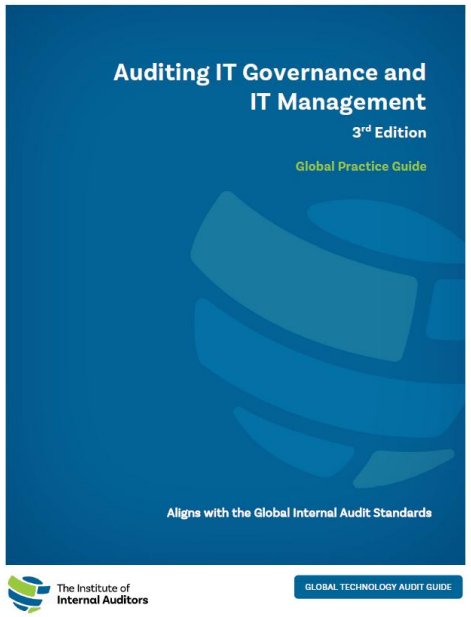

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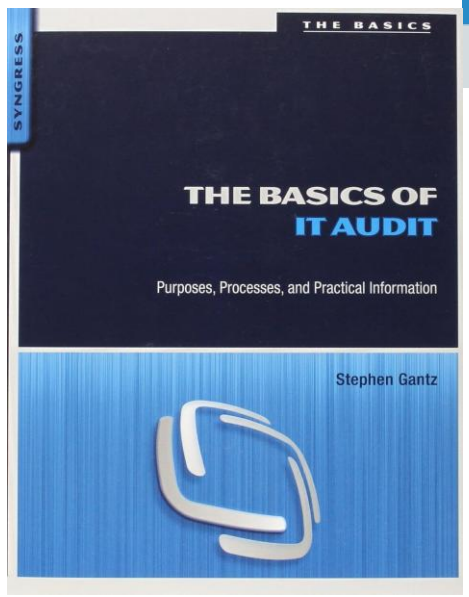

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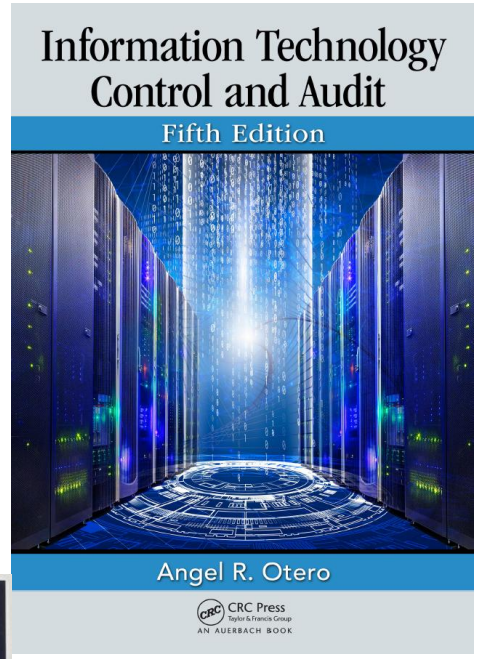

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Susunan Materi (Bagian 1)

Temu	Materi	Keterangan
1	Konsep audit tata kelola TI	
2	Program audit tata Kelola TI	Tugas individu
3	Audit perolehan, pengembangan, dan implementasi SI	Tugas invidu
4		Kuis 1
5	Audit pengoperasian dan pemeliharaan SI	Tugas kelompok
6	Audit keamanan informasi	Tugas individu
7		Kuis 2
8	Ujian Tengah Semester	

Susunan Materi (Bagian 2)

Temu	Materi	Keterangan
9	TABK dalam pengujian pengendalian & pengujian substantif	Tugas individu
10	pengendalian umum dan pengendalian aplikasi	Tugas kelompok
11	TABK dalam pengujian pengendalian & pengujian substantif	Tugas individu
12		Kuis 3
13		Tugas indivdu
14		Tugas individu
15		Kuis 4
16	Ujian Akhir Semester	

Generative AI

Penggunaan Generative AI (Misalnya ChatGPT, Gimini, dsb**) diperbolehkan** namun h**arus dicantumkan dengan jelas penggunaannya.** Hal ini untuk mendorong Saudara agar dapat berpikir secara kritis tentang cara menggunakan AI dan menunjukan proses belajar dan kontribusi pribadi Anda.

Bagaimana Cara Sitasi?

- **Dalam Sebuah Teks (tambahkan klausul penggunaan AI)**
  - Penggunaan AI: Saya menggunakan ChatGPT untuk menghasilkan ide dalam bagian XYZ.
  - Penggunaan AI: Tidak menggunaan Generative AI dalam bentuk apapun
- **Dalam Sebuah Kode**
  - # AI: I couldn't remember the name of the function here and asked
  - # ChatGPT "how do you compute the mean of a list in Python?"
  - mpg_mean = statistics.mean(vehicles_mpg)

Penggunaan AI **tanpa sitasi yang jelas** akan dianggap sebagai **pelanggaran integritas akademik**.

I appreciate

Punctuality

Interactive learning

Integrity

Fun

What You Appreciate? Let me know

https://www.menti.com/alv98p1napbw

Penilaian

No	Komponen Penilaian	Persentase
1.	**Aktivitas (AKT)**	**50%**
	▪ Kehadiran (HDR)	5%
	▪ Sikap dan partisipasi belajar (SKP)	10%
	▪ Kuis/ujian harian /review test (RT)	15%
	▪ PR / penugasan (mandiri/kelompok) (TGS)	20%
2.	**Ujian Tengah Semester**	**25%**
3.	**Ujian Akhir Semester**	**25%**

Introduction to Information System Auditing

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IS Audit

Definition: Systematic and independent formal **examination** and **evaluation** of an organization's **information technology** policies, infrastructure, and operations.

IT auditing provides reasonable assurance (never absolute)

Objectives: ensure that IT systems are effectively supporting the organization's objectives while optimizing risks and resources associated with IT.

Type of IS audit: application audit, information security audit, system development audit, IT governance audit, IT project management audit, etc

Information Systems vs Information Technology

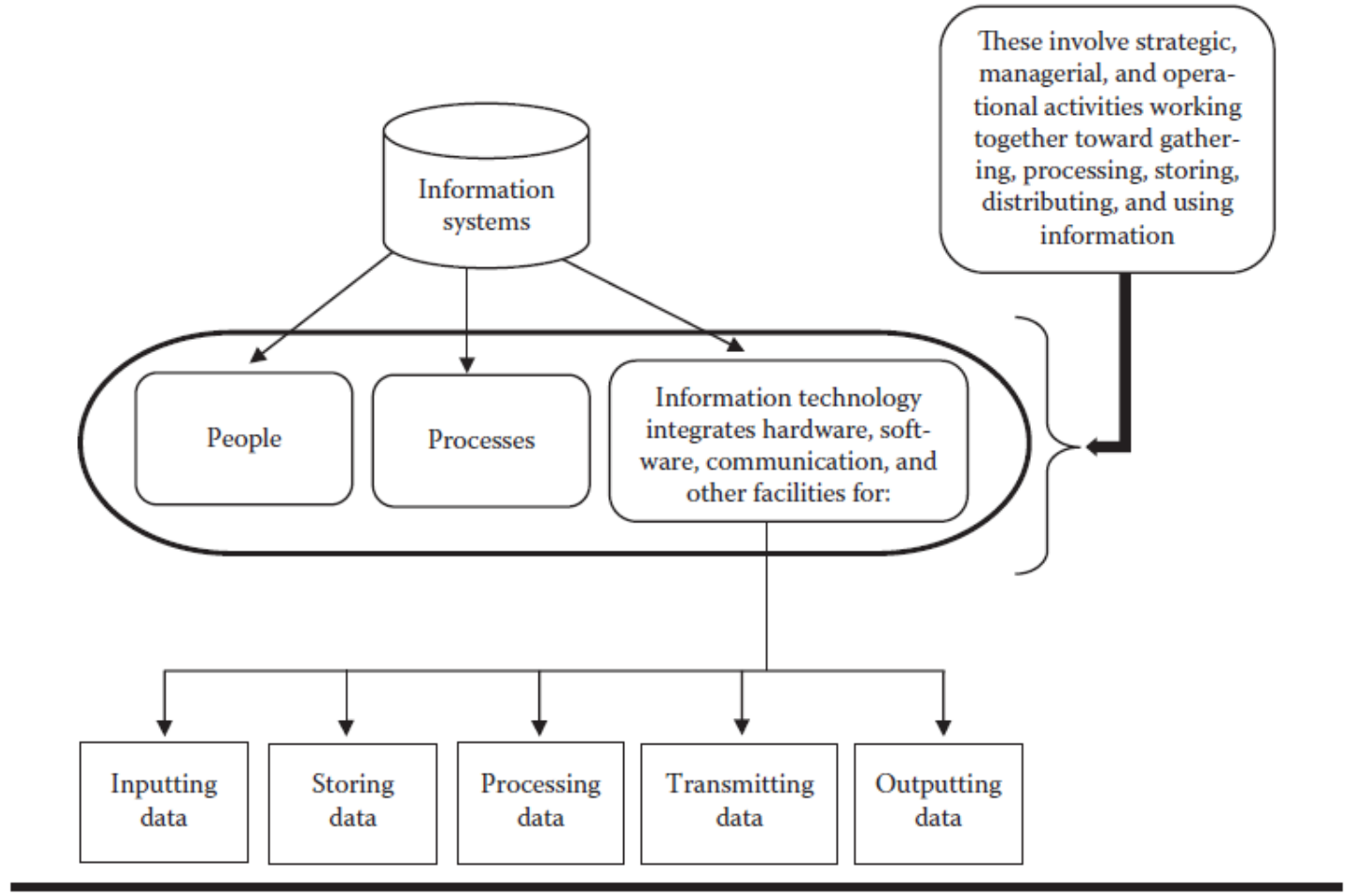


Exhibit 1.2 Information systems versus information technology.

Source: Otero, Angel R. 2019. Information Technology Control and Audit, Fifth Edition. CRC Press.

Information Systems vs Information Technology

Aspect	Information Technology (IT)	Information Systems (IS)
Definition	Refers to the hardware, software, and network infrastructure used to store, process, and transmit data.	Refers to a system that integrates people, processes, data, and technology to support decision-making and organizational goals.
Focus	The technology itself: computers, servers, applications, databases, and networks.	The use of technology within a business context: how technology supports operations, management, and strategy.
Components	- Hardware (e.g., computers, servers) - Software (applications, OS) - Network (LAN, WAN, Internet)	- People (users, managers, IT staff) - Processes - Technology (IT infrastructure)
Goal	To build, operate, and maintain the technical environment.	To enable business objectives through effective use of technology and information.
Example	Implementing a new database system or upgrading network security.	Using that database system to analyze financial transactions or improve decision-making in an organization.
Audit Focus	IT Audit focuses on evaluating the technical controls, e.g., access controls, change management, and system configurations.	IS Audit focuses on evaluating how information and technology are used to achieve business objectives, includes governance, risk, and process effectiveness.

Impacts of IS

Then



Paper-based reports and transaction evidences

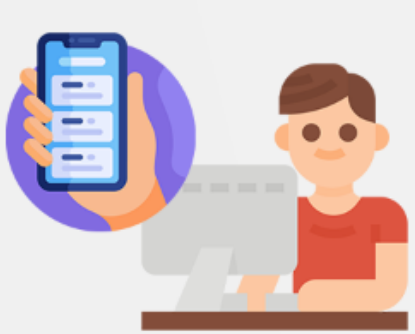


Handwritten approval



Manual inspection

Now



Transaction via app



Electronic-based evidence



Digital approval

IS Created New Risks

Infrastructure Risk
hardware, software, and data









Audit Trails

Segregation of Duties

Demand for new competencies

Urgency of IS Audit



The backbone of the business processes

- ✓ Business processes effectivity and efficiency
- ✓ Business continuity



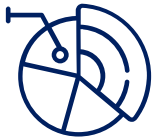
IT investment

- ✓ *Benefit Realization*



Compliance

- ✓ Perpres Nomor 95/2018 tentang SPBE
- ✓ Perpres Nomor 47/2023 tentang Strategi Keamanan Siber Nasional dan Manajemen Krisis Siber
- ✓ UU No 27/2022 tentang Pelindungan Data Pribadi



IT risks

- ✓ Information security
- ✓ *Fraud*
- ✓ Legal
- ✓ Reputation

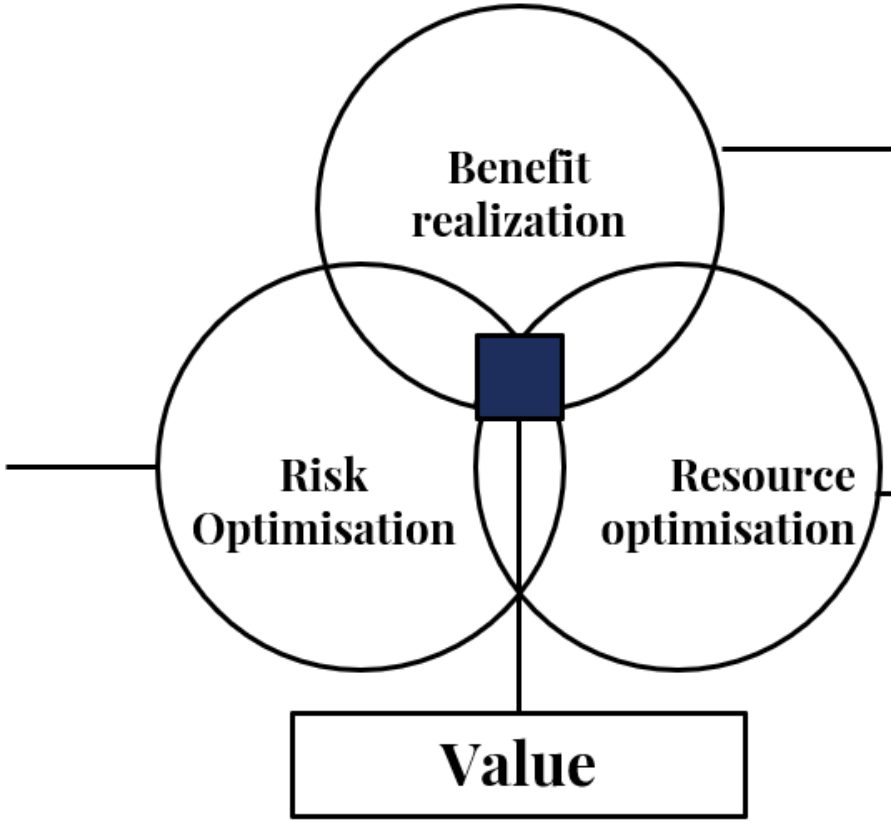


Stakeholder value

- ✓*Strategic Alignment*
- ✓*Organizational performance*

IS Audit – Why?

- Capitalizing IT upside risks
- Minimalizing IT downside risks



- Stakeholders' needs
- Business alignment
- IT investment
- Compliance

- Competing needs
- Priorities
- Streamlining process
- Eliminate redundancy

Adapted from COBIT 5 (ISACA, 2012)

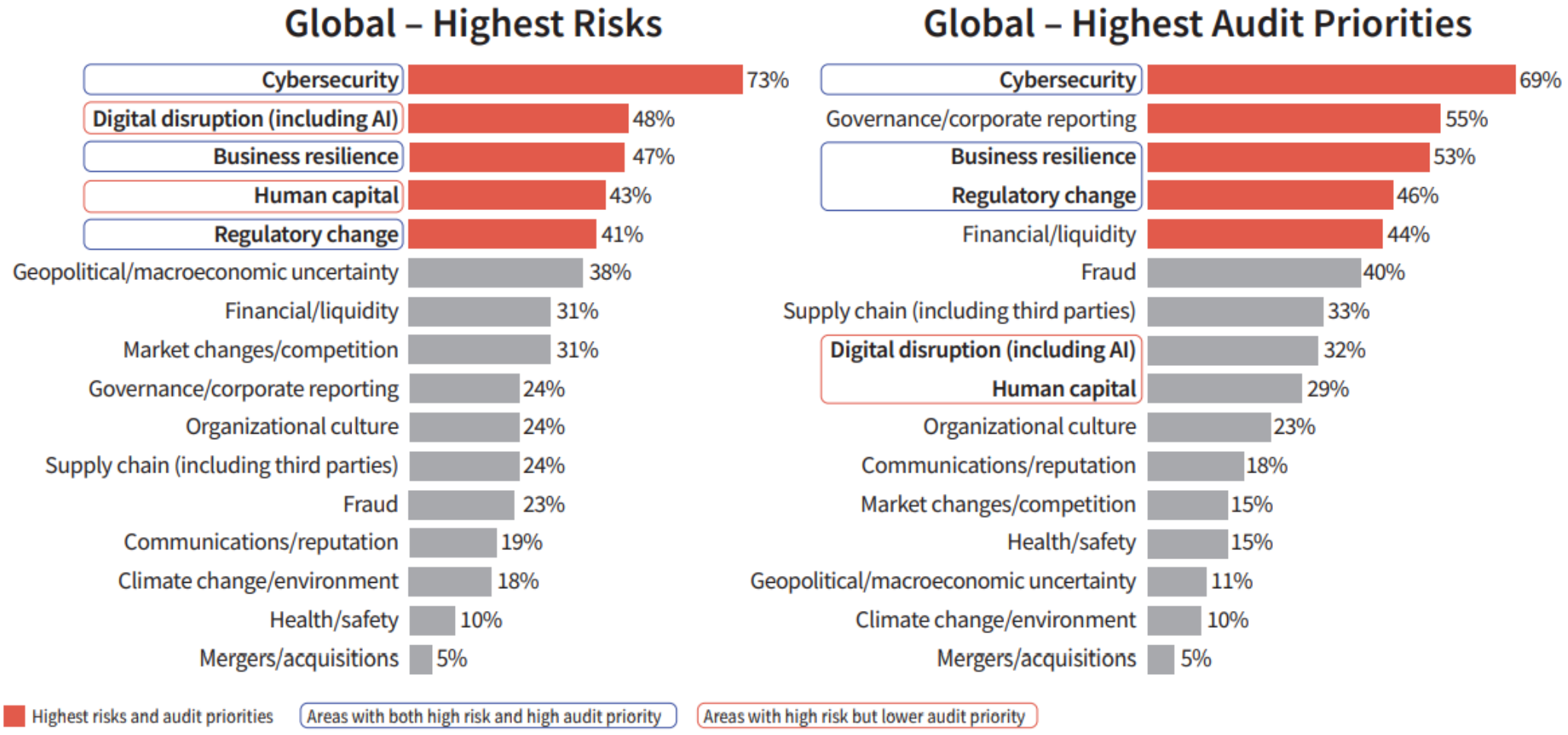
Why IS Audit Has Become More Important







IT Risks are The Highest Risks



Note: Risk in Focus survey conducted online from April 28 to June 6, 2025, by the Internal Audit Foundation and partners. *n* = 4,073 for global.

Source: Risk in Focus 2026, The IIA (2025)

IS Audit Activities

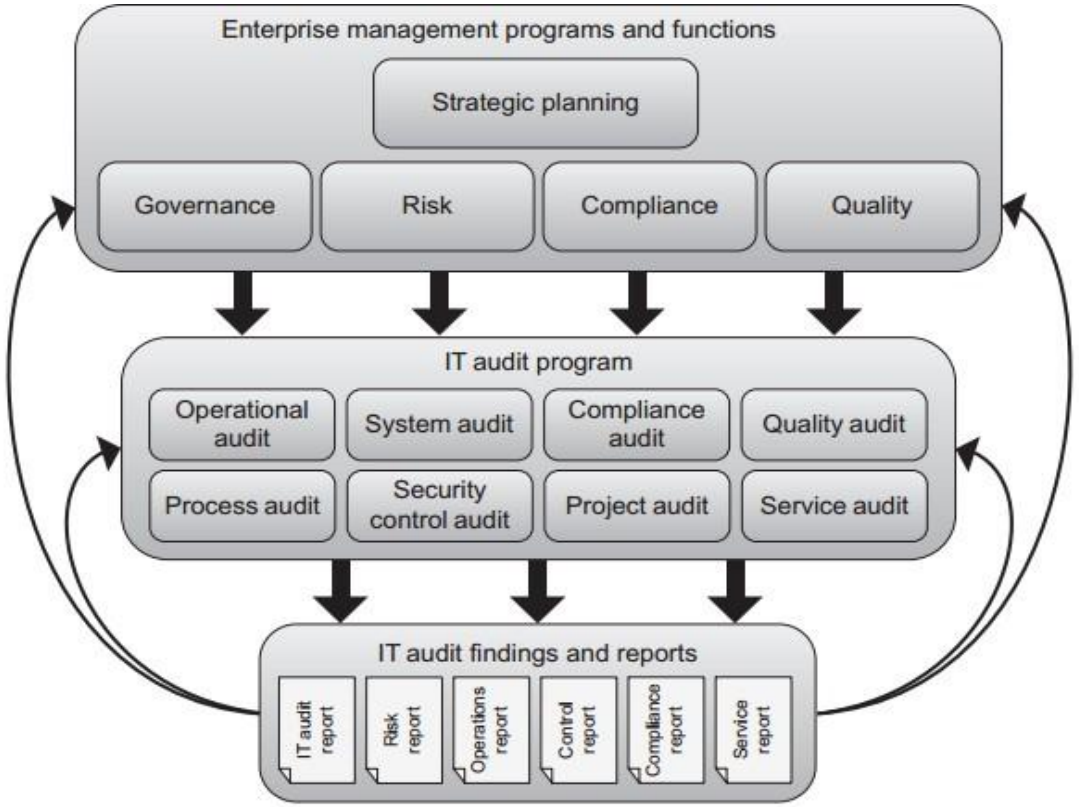


FIGURE 2.1

IT audit activities represent an integral part of several key enterprise management functions, which collectively contribute to the scope of the IT audit program and receive input from the output of audit processes.

Source: Gantz, Stephen D., 2014, The Basics of IT Audit: Purposes, Processes, and Practical Information, Elsevier Inc., Waltham, USA

IS Audit Activities

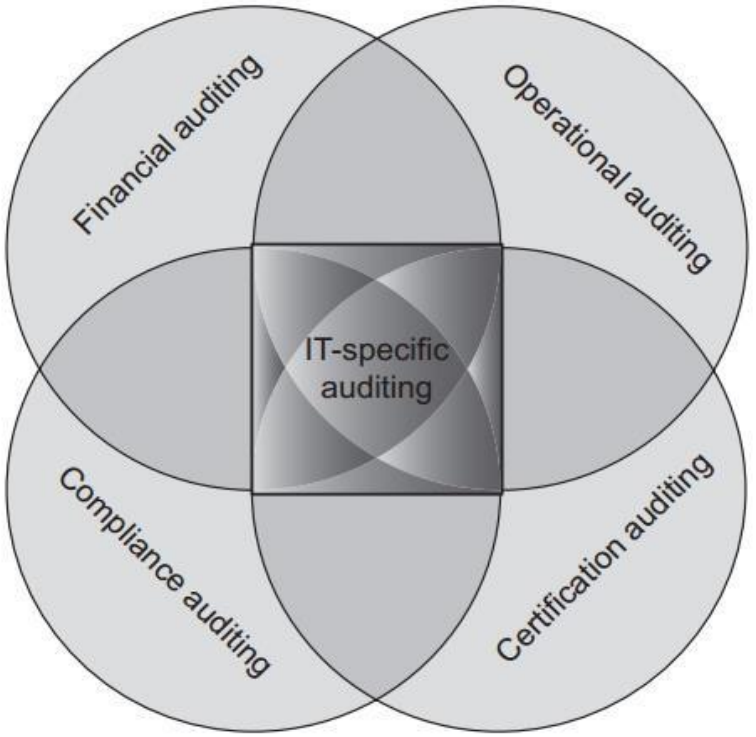
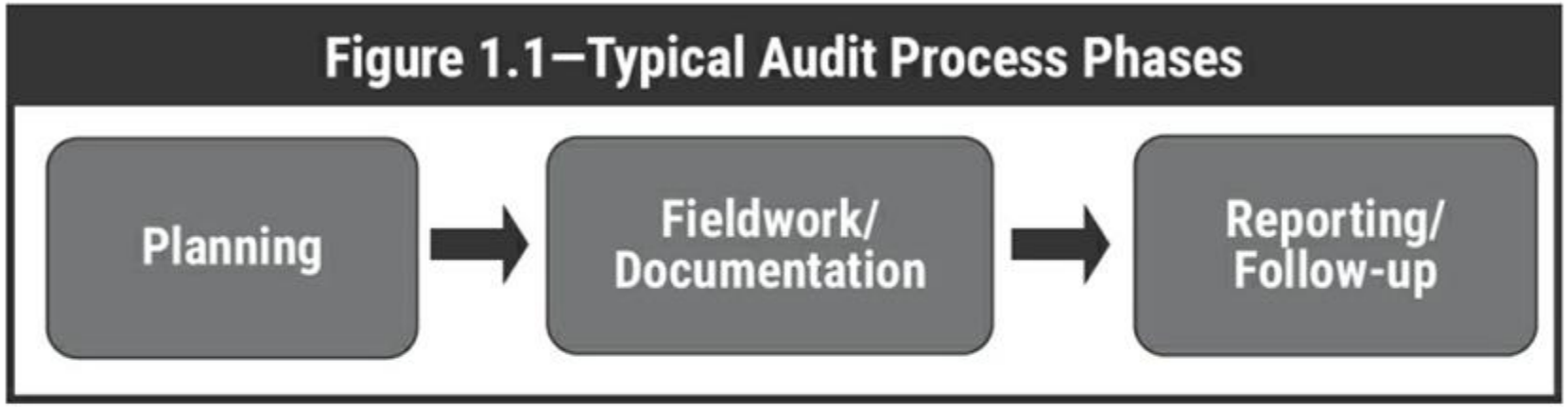


FIGURE 5.1

IT auditing has a role in financial, operational, certification, and compliance audits, but also constitutes a specific auditing domain on its own, focusing on IT-specific assets, processes, and controls.

Source: Gantz, Stephen D., 2014, The Basics of IT Audit: Purposes, Processes, and Practical Information, Elsevier Inc., Waltham, USA

The Phases (ISACA version)



The scope of IT audit encompasses the evaluation of:

- ❑ IT infrastructure
- ❑ information security
- ❑ IT governance
- ❑ software development processes

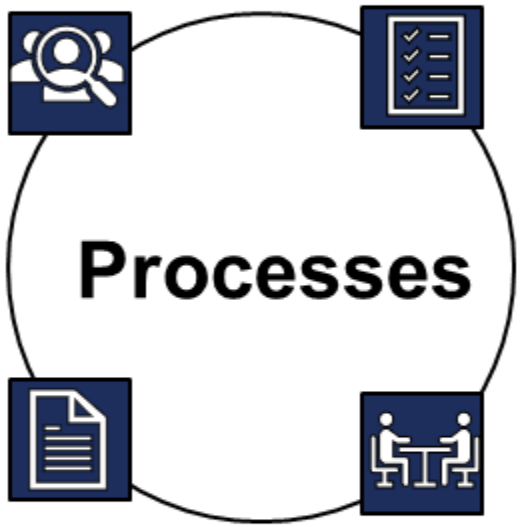
etc based on audit charter

Source: ISACA, 2016

The Phases

Follow Up

Confirmatory audit



Planning

- Understanding business objectives
- Risk assessment
- Scope definition
- Formulating audit program

Reporting and Communicating

- Documenting results
- Formulating recommendation
- Closure meeting
- Disseminating reports

Fieldwork

- Entry meeting
- Data collection
- Performing test
- Performing analysis

Yes, the processes are similar with other audits'

Trends in IS Audit

Continuous audit	Data analytics
ongoing assessment of IT systems, processes, and controls	analyzing large volumes of data quickly and accurately

Cybersecurity audit	Data governance
assessing an organization's cybersecurity posture	Evaluate the policies and processes of managing data

IS Audit in Real Life

A government office recently implemented a new Budget Management System (BMS) to help regional offices record and monitor spending in real time. Every transaction, from travel expenses to procurement, is entered into this system.

After a few months, the internal audit team noticed inconsistencies between:

- the total expenses recorded in BMS, and
- the reports sent manually by regional offices.

The difference reached hundreds of millions of rupiah.

After the preliminary survey, auditors found that:

1. Some transactions were missing from the central database.
2. Several user accounts had unusual access privileges, for example, a staff member could both create and approve transactions.
3. Backup procedures were not performed regularly, meaning data might be lost if a system crash occurred.

IS Audit in Real Life

You are part of the Information Systems Audit Team assigned to investigate what went wrong.

Your audit objectives:

1. Evaluate whether the system controls are adequate to ensure data integrity and accuracy.
2. Assess the effectiveness of access controls.
3. Review the IT operations related to data backup and recovery.

What will you do?

IS Audit in Real Life

Audit Stage	What You Do	Purpose
Planning	Understand how the BMS works, identify risks (e.g., data loss, unauthorized access).	Know where to focus your audit.
Fieldwork / Testing	- Review user access lists. - Test backup and recovery process. - Trace sample transactions from regional offices to the central database.	Verify whether controls actually work.
Reporting	Summarize findings such as: - "Segregation of duties not implemented." - "Backup not performed daily." - "Data mismatch between system and report."	Communicate weaknesses to management.
Follow-up	Recommend improvements: - Review user roles. - Implement automatic backup policy. - Add reconciliation control between local and central data.	Ensure corrective actions are done.

IS Audit in Real Life

Discussion Questions

1. What risks do you identify from this case?
2. Which audit evidence would you collect to confirm the issues?
3. If you were the system owner, what improvements would you prioritize?
4. How would you explain to management why these controls matter?

Introduction to IT Governance Auditing

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IT Governance



"IT Governance ensures that IT supports and extends the organization's strategies and objectives."
It focuses on value delivery, risk management, performance measurement, and resource optimization.

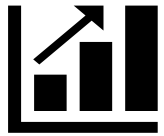


IT Governance is about how technology decisions and activities are guided and monitored so that IT supports the organization's goals.

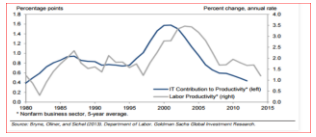
IT Governance = making sure IT does the right things, the right way, for the right reasons.

Urgency of IT Governance

IT *as Business Enabler*



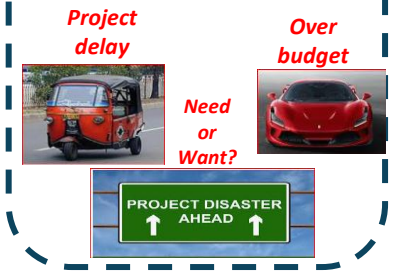
IT *Productivity Paradox*



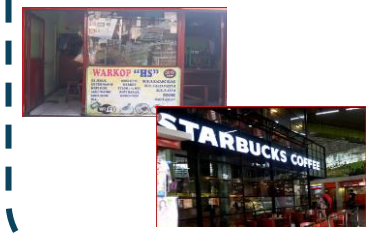
Business Alignment



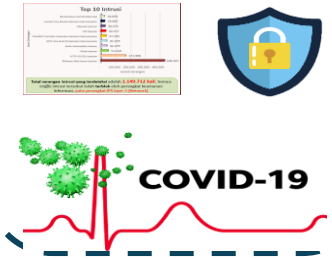
IT *Project Fail*



IT *Service Performance*

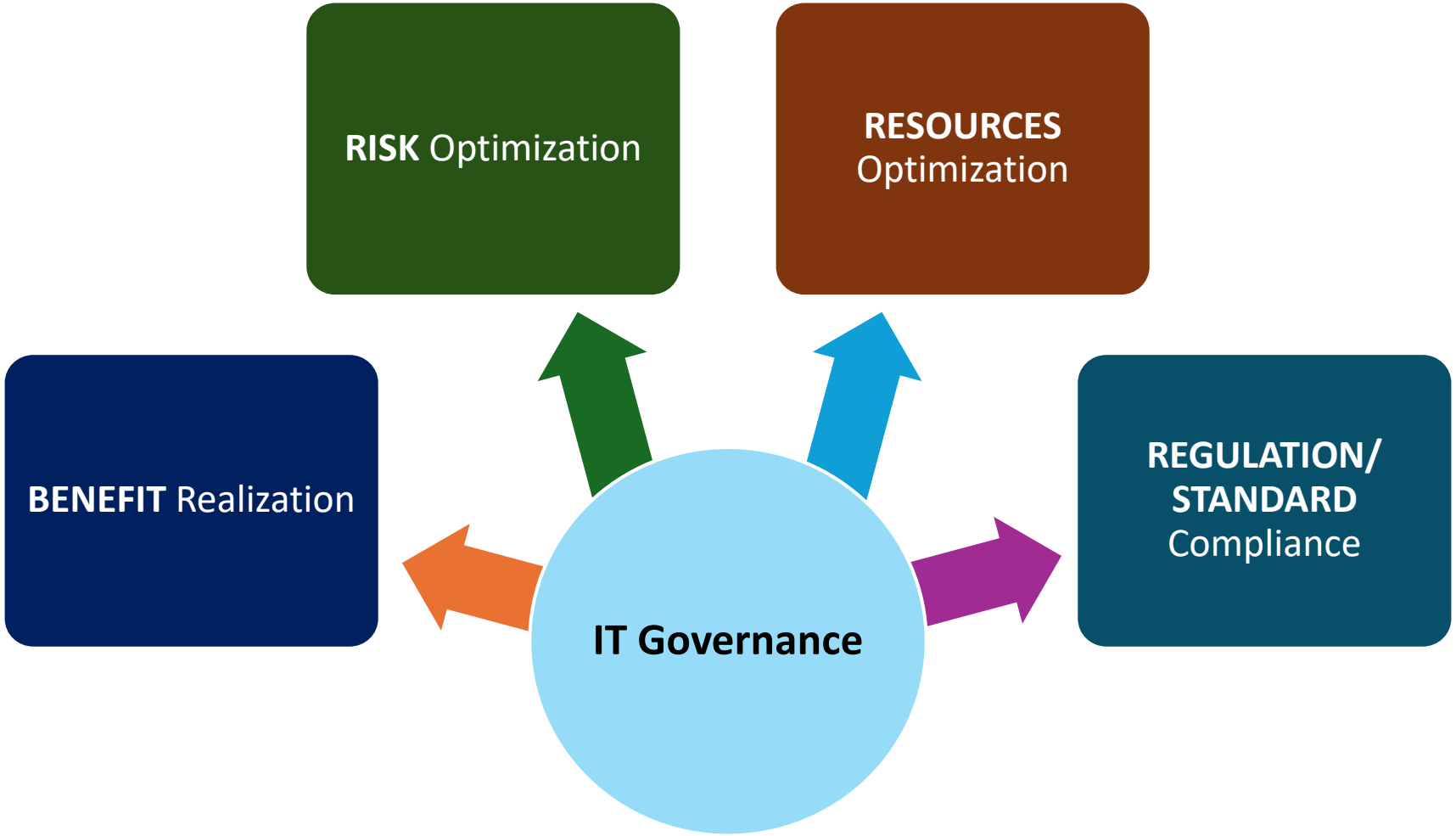


IT *Security & Continuity*



Good IT Governance is necessary

Good IT Govenance?



IT Governance in Real Life

A government agency create several systems to ensure that financial data across Indonesia, from regional offices to headquarters, is accurate, integrated, and timely.

Over the past few years, the agency launched several digital transformation projects:

1. A new financial reporting system.
2. A data warehouse for analytics.
3. An employee self-service portal.

However, after three years, none of the projects are fully operational.

IT Governance in Real Life

An internal review found:

1. No clear ownership: each project runs separately with no central coordination.
2. Frequent scope changes: systems are redesigned mid-project due to unclear requirements.
3. Overlapping systems: different units build similar applications for the same function.
4. Lack of performance monitoring: no KPIs to measure project success.
5. No structured IT governance framework: IT decisions are made ad hoc.

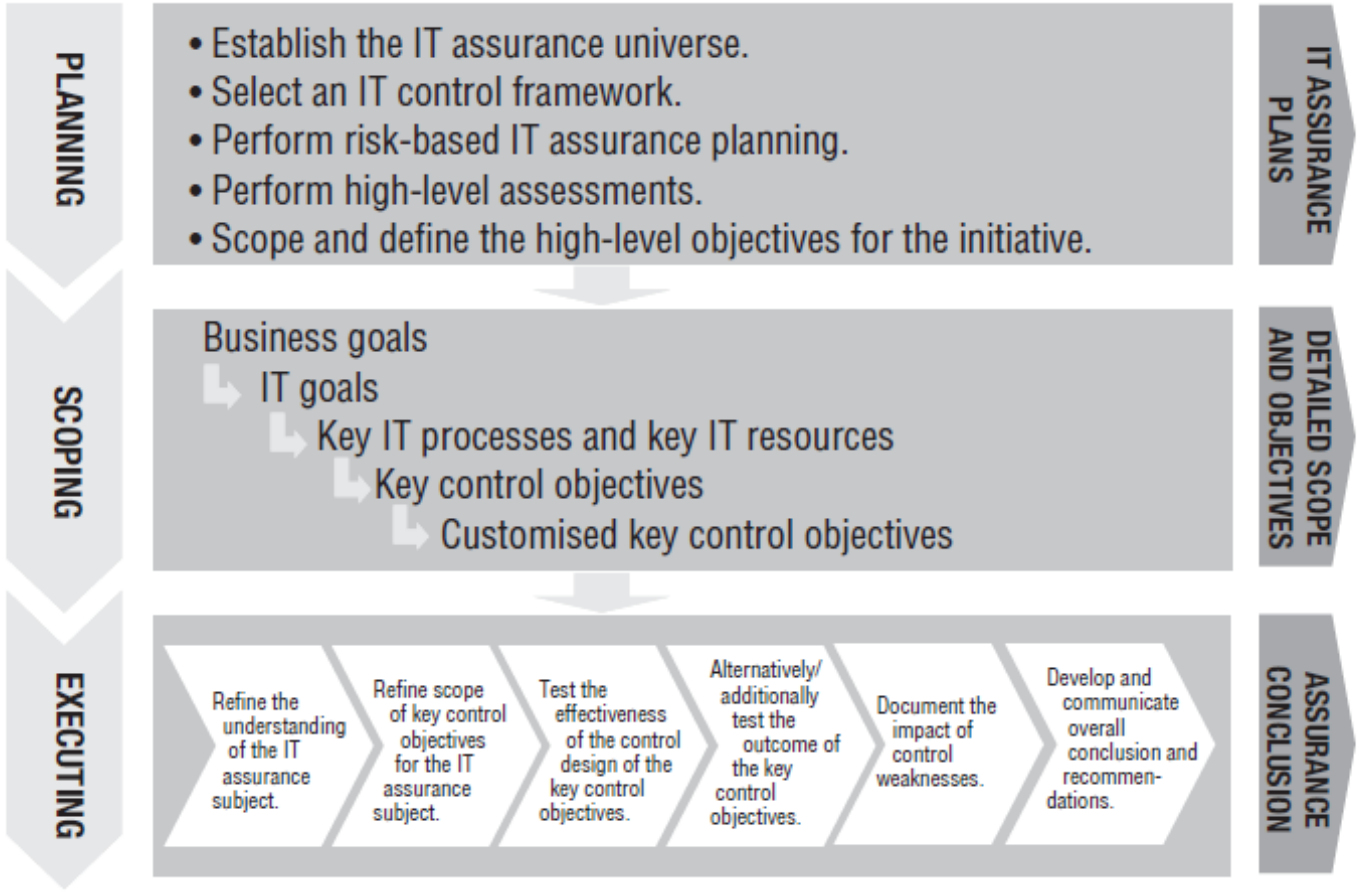
Meanwhile, the agency keeps investing heavily in IT infrastructure, but the benefits are not visible.

How would you audit this?

IT Governance Audit Will Be Discussed Next Week

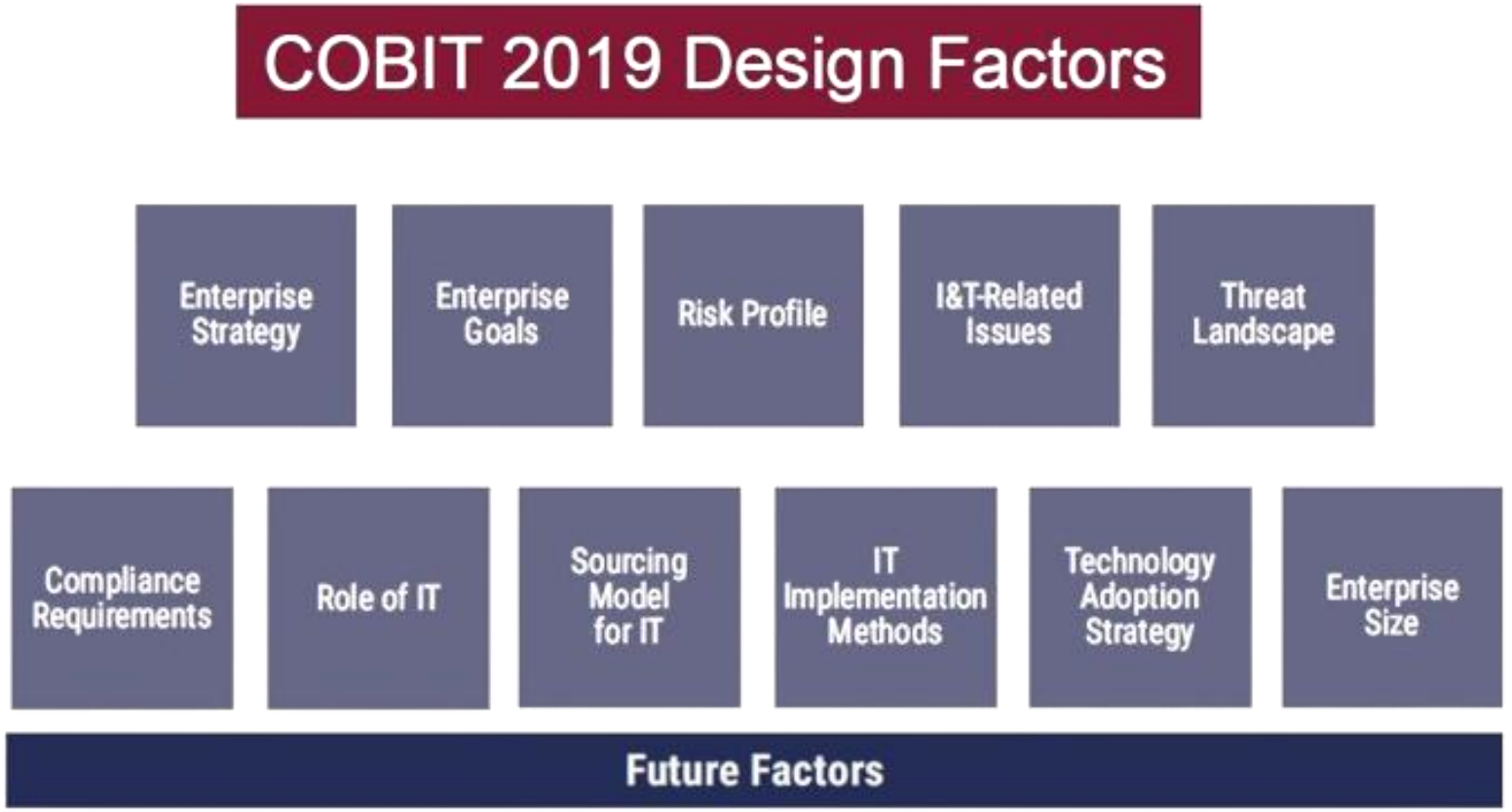
Performing IT Governance Audits

The steps



Source: isaca, 2014

What To Assess



Source: isaca, 2019

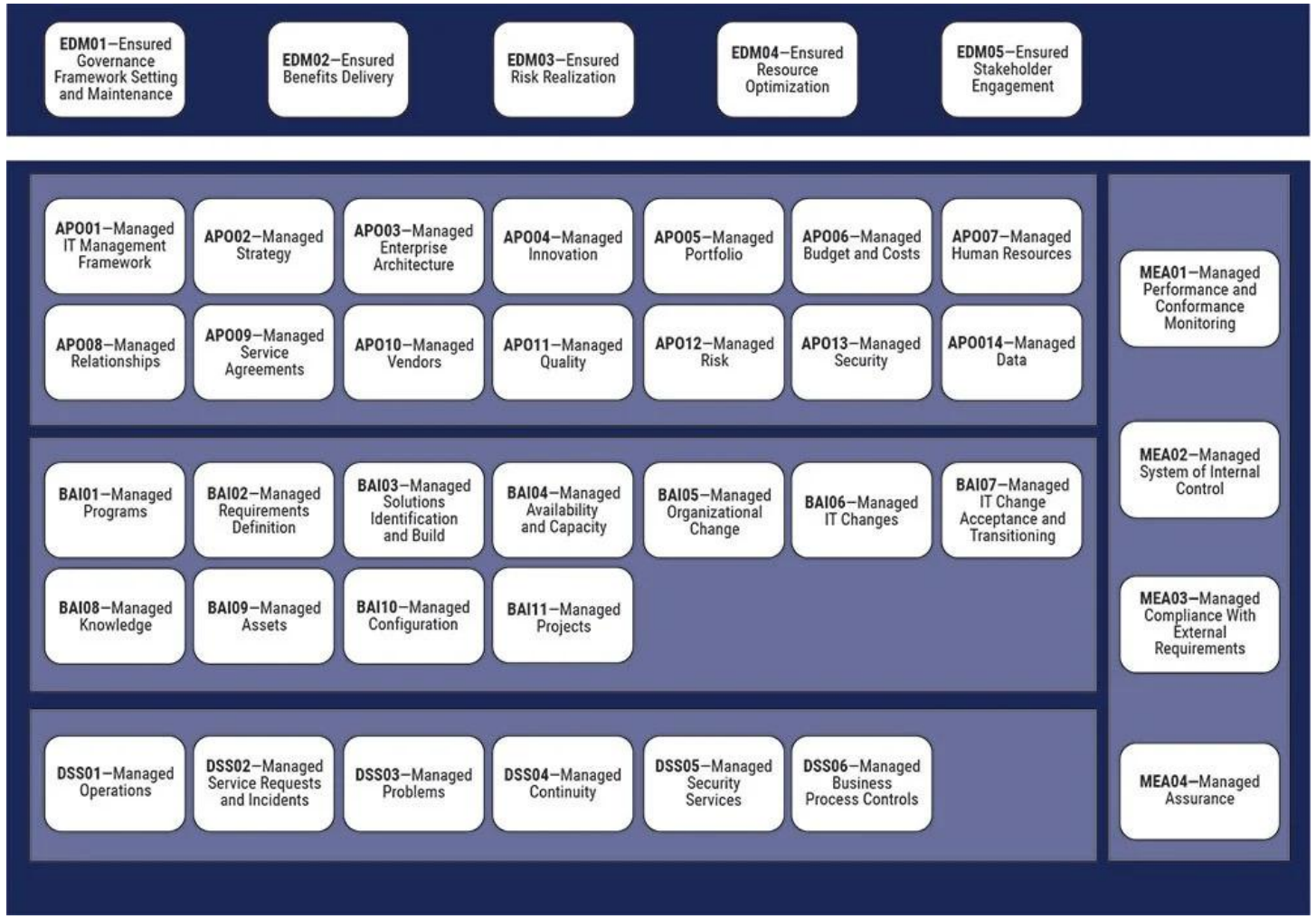
What We Assess



Governance systems

Source: isaca, 2019

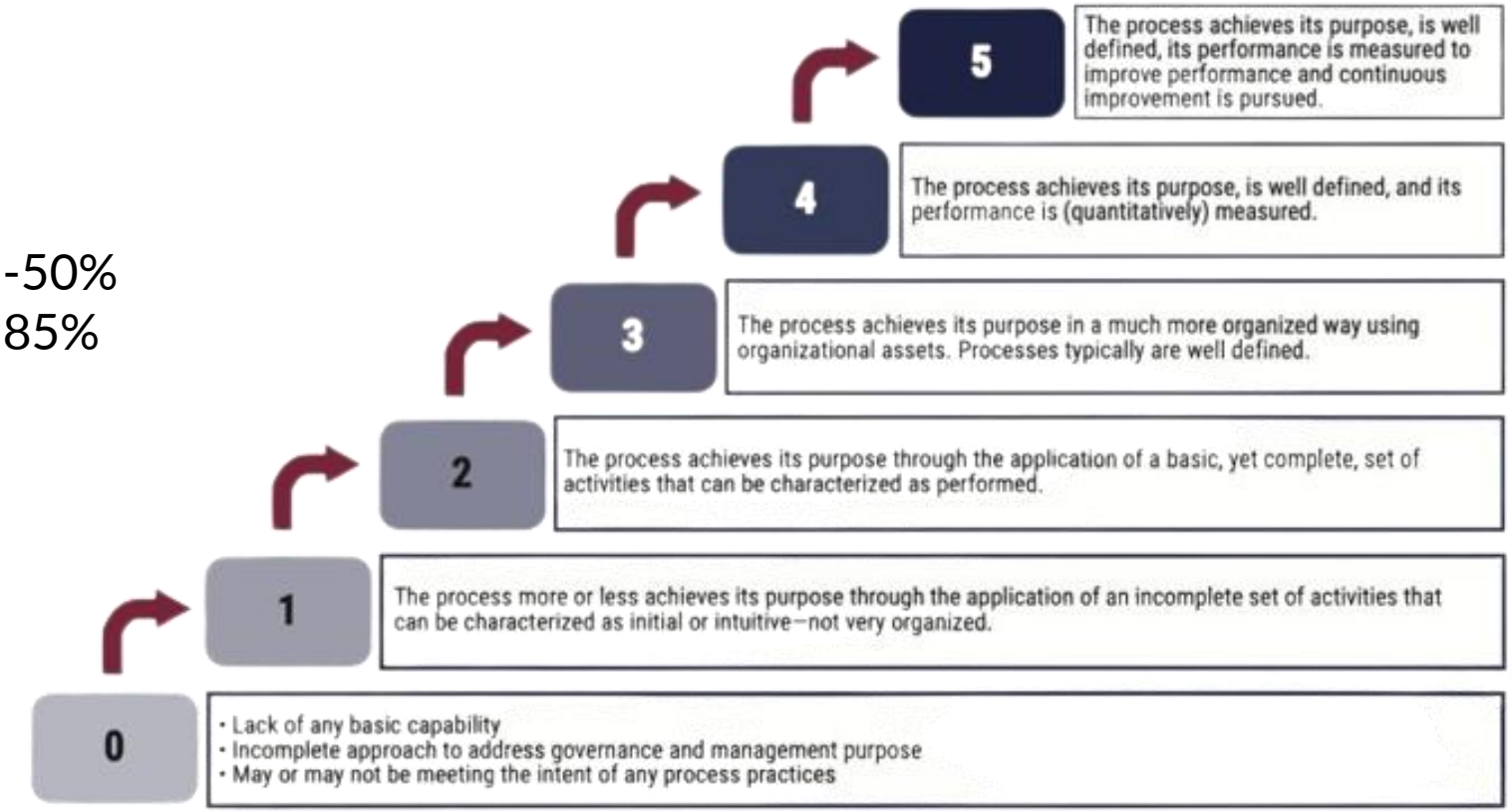
The Processes



Source: isaca, 2019

The Maturity Levelling

- Not achieved: 0-15%
- Partially achieved: >15-50%
- Largely achieved: >50-85%
- Fully achieved: >85%



Source: isaca, 2019

Bonus: Frequently Asked Questions About IS Audit



Question #1:
Does every organization need an IS audit?

Does every organization need an IS audit?

Short answer: surprise, surprise! NO

Question #2:
So how do I know if my organization needs an IS audit?

So how do I know if my organization needs an IS audit?

Study your organization objectives, do they rely on IS?

Question #3:
Which IS audit area to start?

Which IS audit area to start?

Study your organization objectives and the risks.

Question #4:
Do internal auditors need technical IS knowledge to perform IS audits?

Do internal auditors need technical IS knowledge to perform IS audits?

Auditors don't need to be IS experts, but a basic understanding of information systems is essential.

Question #5:
What standards should we use for IS audits?

What standards should we use for IS audits?

Study your organization objectives and the risks.

Question #6:
Do I need certifications to perform IS audits?

Do I need certifications to perform IS audits?

Short answer: NO, unless it's mentioned in the regulation.

Question #7:
How do I start an IS audit if I have no technical background?

How do I start an IS audit if I have no technical background?

1. Understand the business processes
2. understanding the organization's IS environment
3. Utilize checklists or frameworks like COBIT or ISO 27001 to guide your audit.

Question #8:
How do I handle IS audit in a small organization with limited resources?

How do I handle IS audit in a small organization with limited resources?

Focus on high-risk areas

Question #9:
How do I stay up to date on IS audit trends?



How do I stay up to date on IS audit trends?

Self study, find peers to discuss, join community.
Find your favorite way.

Question #10:
What are your ultimate advices?

What are your ultimate advices?

- Hold your integrity high
- Grit
- Understand the business context
- Ask for help
- Communicate clearly and regularly
- Be future-oriented

Homework



TUGAS

Write a reflection writing (around 100-200 words) on how can IT governance audit add value to public sector organizations.

Send to: https://forms.gle/76jk3JUXnvRV7oGn6 by 19th November 2025, 23.59