# Measuring sustainability for an effective Information System audit from public organization perspective

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# Agenda

- Introduction
- Current Practice
- The approach
- Evaluation
- Conclusion

# Nature of Public Sector Organization

- To provide various government services such as police, health care, education and transport.
- The composition of public sector varies by country.
- In general, public sector organizations are funded through taxation.

# Nature of Public Sector Organization

- To provide effective and efficient services to public.
- To report effective information.
- To ensure public funds are spent accordingly to achieve desired objectives.

# Current practice

TRADITIONAL IS AUDIT

- Internal controls evaluation
  - General controls and application controls

- Project management/system development

(Based on report of the Auditor General from Malaysia, United Kingdom and Australia)

# Current practice

The objective of IS audit is to ensure;

- Effectiveness and efficiency of operations.
- Compliance with applicable laws and regulations.
- Effectiveness, efficiency and economically of IS investment.

# Limitation of current practice

- Inherent challenges such as inability to meet user's expectation, inadequacies in management and technical practices.
- Risks such as IS project cost and schedule overrun, fail to achieve the objective of the project.
- IS issues reported were on compliance based without any supplementary comments about the related factors that may affect the implementation of IS within the organization.

# Why do we need Sustainability?

- To enhance the audit effectiveness and applied sustainability as a strategy to highlight internal and external factors that may affect IS implementation as well as to produce effective audit report.
- Sustainability driven in IS audit is perceived to be more practical and reliable as it develops realistic audit criteria to measure IS controls, IS investment, security and risks.
- The establishment of sustainability related criteria is more realistic as it incorporates economic, environmental, resources, social and technical aspects.
- Each criteria contains specific sub criteria that would aid auditor in evaluating IS controls, value for money and addressing factors related to perception from auditee, users and auditors

# What is Sustainability?

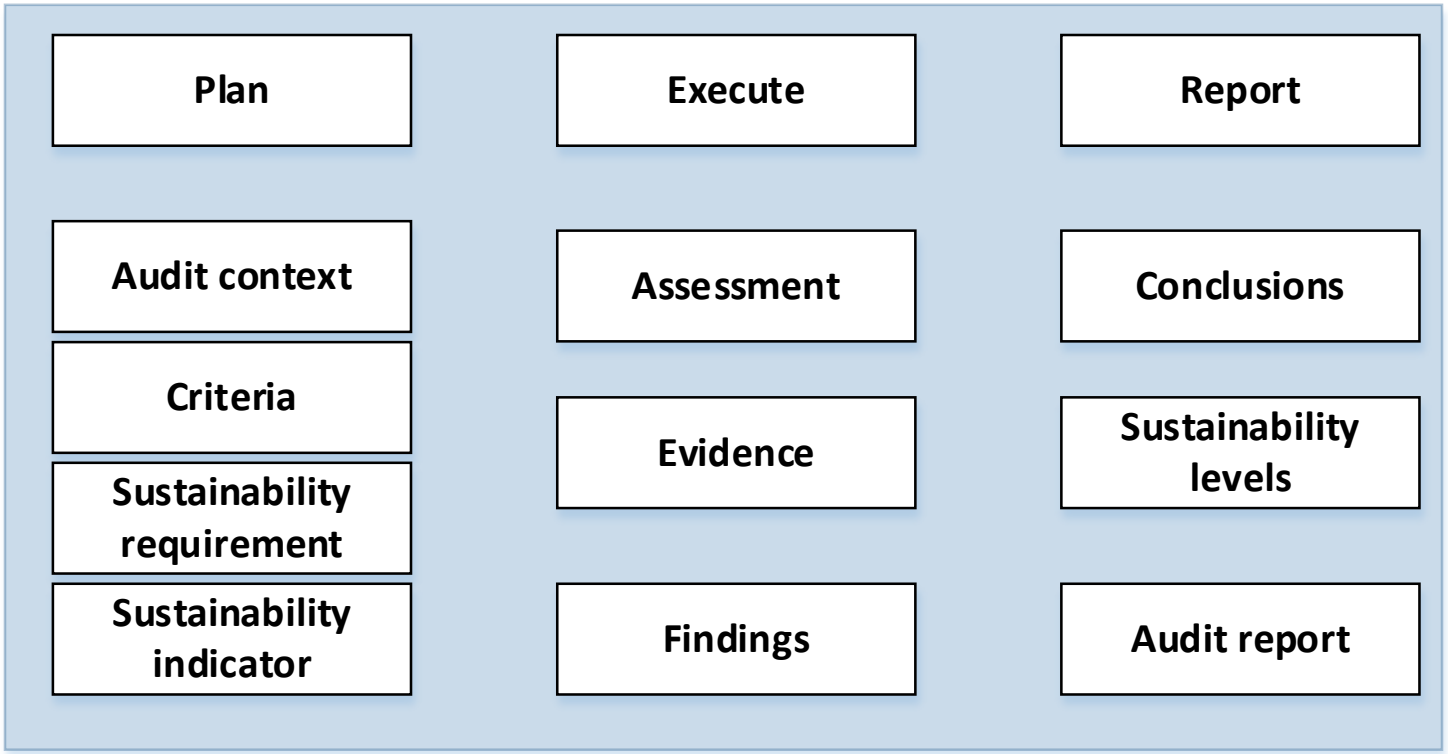
*Sustainability is '…development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'*

[World Commission on the Environment and Development, 1987]

# Audit Process

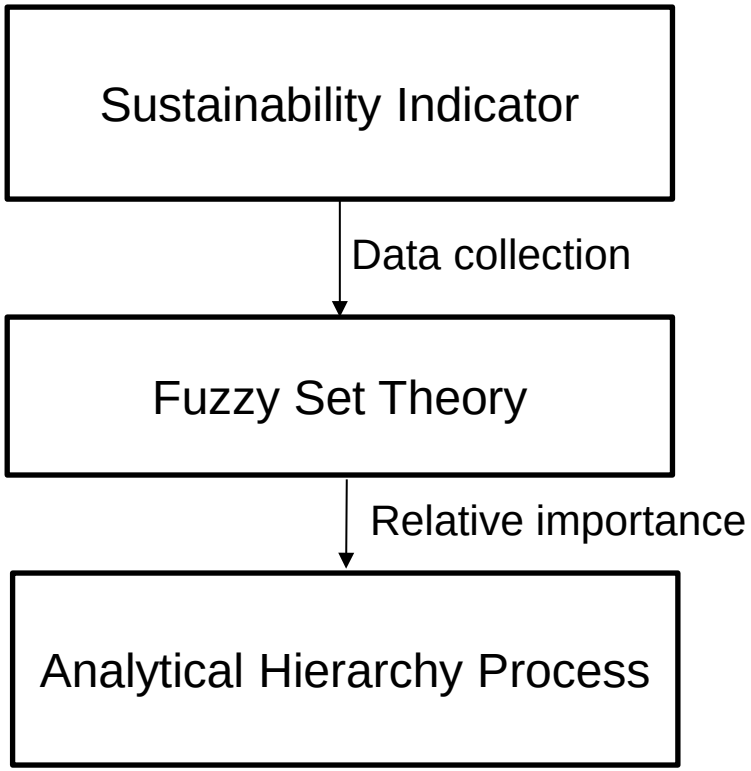
# The Approach

## Sustainability driven information systems audit



# The Approach(cont..)

- The introduction of 3 elements:



# The Approach(cont..)

## Fuzzy Set Theory

| Importance level | Definition |
|---|---|
| 1 | Equal importance |
| 3 | Moderate importance |
| 5 | Strong importance |
| 7 | Very importance |
| 9 | Extreme importance |
| 2,4,6,8 | Intermediate values |

## Analytical Hierarchy Process

| | Ec | Env. | S | R | T |
|---|---|---|---|---|---|
| Ec | $CM_{i,j}$ | -- | -- | -- | $CM_{i,5}$ |
| Env. | $CM_{i+1,j}$ | 1 | -- | -- | $CM_{i+1,5}$ |
| S | $CM_{i+2,j}$ | -- | 1 | -- | $CM_{i+2,5}$ |
| R | $CM_{i+3,j}$ | -- | -- | 1 | $CM_{i+3,5}$ |
| T | $CM_{i+4,j}$ | -- | -- | 1 | $CM_{i+4,5}$ |

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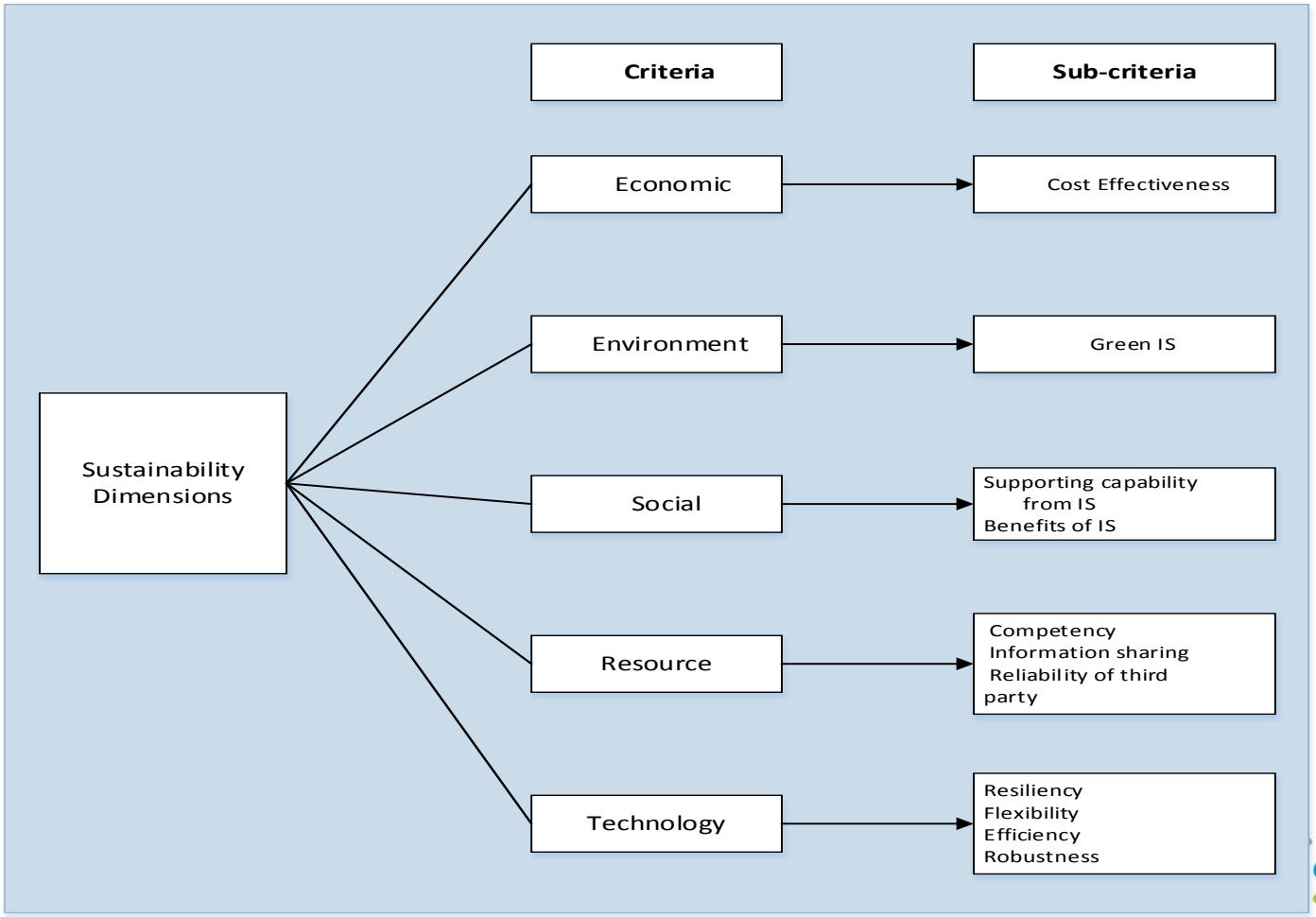
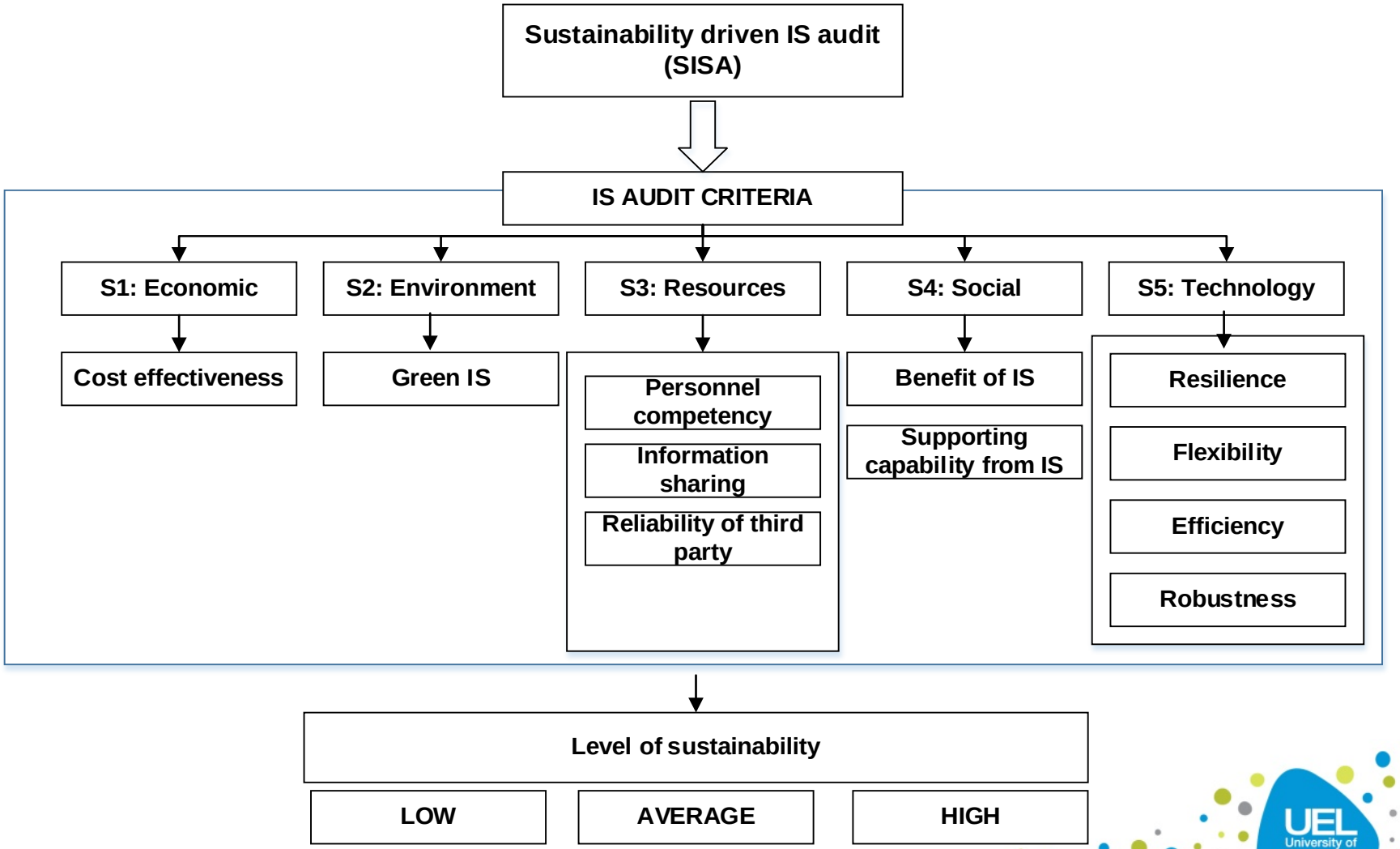
# The Approach(cont..)

SUSTAINABILITY DIMENSIONS, CRITERIA AND SUB CRITERIA



# Sustainability level



# Evaluation

Case study:

Auditor: The National Audit Department of Malaysia

Auditee: Medium size public organization

IS audit conducted for the year 2012-2013.

# Evaluation

## Evaluation of environmental criteria

| | Value | 1 | 3 | 5 | 7 | 9 |
|---|---|---|---|---|---|---|
| Attributes | Green IT | | | | | |
| | Equip. | | / | | | |
| | Recyle | / | | | | |
| | Paperless | | / | | | |
| | Energy saving | / | | | | |

## The weight factors

| | Ec | Env. | S | R | T | WF |
|---|---|---|---|---|---|---|
| Ec | 0.041073 | 0.263374 | 0.01417 | 0.006295 | 0.01579 | 0.114 |
| Env. | 0.005134 | 0.03 | 0.01067 | 0.007359 | 0.50552 | 0.093 |
| S | 0.25 | 0.263374 | 0.08537 | 0.315956 | 0.01263 | 0.168 |
| R | 0.28751 | 0.197531 | 0.01707 | 0.04433 | 0.00789 | 0.112 |
| T | 0.16 | 0.004115 | 0.42687 | 0.354641 | 0.06319 | 0.172 |

## Comparison matrix

| | Ec | Env. | S | R | T |
|---|---|---|---|---|---|
| Ec | 1 | 5 | 5 | 3 | 1/3 |
| Env. | 1/5 | 1 | 1/3 | 1/3 | 1/5 |
| S | 1/5 | 3 | 1 | 3 | 1/3 |
| R | 1/3 | 3 | 1/3 | 1 | 1/3 |
| T | 3 | 5 | 3 | 3 | 1 |

## Result

**Relative importance of Economic = 3**
**Relative importance of Environmental =5**
**Relative importance of S= 2**
**Relative importance of R= 4**
**Relative importance of T= 1**

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# Evaluation

Audit conclusion

- Green IS policy has not been effectively implemented by the organisation.

Corrective/preventive action

-Appropriate enhancement on Green IS policy

Recommendation

- Awareness program for employees

# Conclusion

The applicability of sustainability driven in IS audit process to a real case study has been very promising.

A systematic and numerical approach is suitable for prioritizing audit criteria and to emphasize key areas of concern for the audit purposes.


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