ICTs FOR ORGANIZATIONAL TRANSFORMATION

Microsoft. (n.d.). Bing.

Week 11 :

ICT strategic planning and sustainability:

ICT sustainability

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Agenda

1.

Flash back of the previous Lecture 10.

2.

ICT Sustainability

- **Three Pillars of Sustainability**
  - Environmental Sustainability-
  - Social Sustainability
  - Economic Sustainability
- The Role of Organizations in Sustainable ICT

Flash back to the previous Lecture 10

ICT Policy

- The importance/benefits of well-defined ICT policies.
- Key Policy Areas
  - *Security Policy*
  - *Data Privacy Policies*
  - *Acceptable Use Policy (AUP*
  - *Disaster Recovery & Business Continuity (DR/BC) Policy*
- Developing Effective Policies
  - *Stakeholder Engagement*
  - *Clarity and Conciseness*
  - *Enforcement and Communication*
  - *Periodic Review and Updates*
- Valuable tools and resources available to assist with ICT policy development

Under ICT Sustainability:

1. Sustainability

- Environmental Sustainability
- Environmental Impact
- Green ICT

2: Social Sustainability

- Digital Divide and Access
- Digital Inclusion
- Ethical Considerations in ICT

3. Economic Sustainability

- ICT: A Catalyst for Economic Growth
- The **C**hallenge of Job Displacement
- Bridging the Digital Divide for Economic Inclusion

4. The Role of Organizations in Sustainable ICT

ICT SUSTAINABILITY

- ICTs are essential for organizations, driving efficiency, innovation, and competition. But their rapid growth creates environmental and social problems.
- ICT sustainability tackles this by aligning ICT with eco-friendly practices, minimizing harm and maximizing benefits.

This lecture looks at key aspects of ICT sustainability, including environment, society, and strategies for promoting sustainable practices.

ICT Sustainability

- ICT sustainability refers to the practices and policies aimed at reducing the environmental impact of information and communication technologies (ICTs).
- This includes the entire lifecycle of ICT products, from production and usage to disposal and recycling. *L. etal. (2011).*

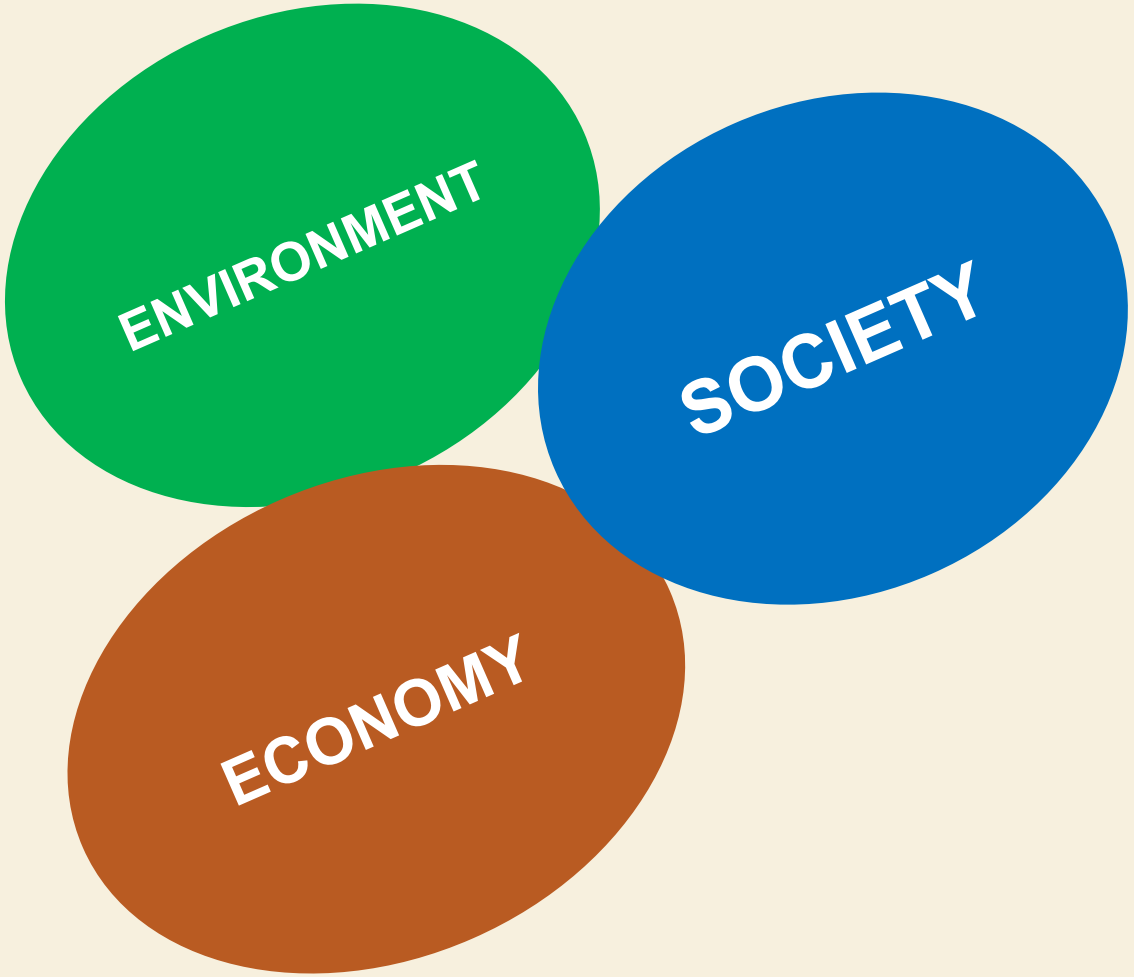
ICT Sustainability

With the usage of ICTs, there is a growing emphasis on

- Minimizing the negative environmental impact of ICT (e.g., energy consumption, e-waste) and
- Maximizing its positive contributions to social and economic development.

Three Pillars of Sustainability

ICT pillars of sustainability refers to a framework used to achieve a sustainable Information and Communication Technology (ICT) ecosystem. Similar to the three pillars of general sustainability



Three Pillars of Sustainability

Environment

Negative	Positive
ICT hardware manufacturing, data center operations, and e-waste disposal contribute to resource depletion and pollution.	ICT can play a positive role by enabling environmental monitoring, smart grid technologies for energy efficiency, and the development of sustainable solutions.

Three Pillars of Sustainability

Society

Negative	Positive
ICT can have a profound social impact where there is unequal access to technology can exacerbate social inequalities.	ICT can foster social inclusion, improve access to education and healthcare, and empower communities.

Three Pillars of Sustainability

Economy

Negative	Positive
Rapid technological advancements can lead to job displacement and require ongoing workforce development efforts.	Creates new jobs, facilitates business operations, and increases productivity.

1. Environmental Sustainability- Environmental Impact

a). The Environmental Impact of ICT

Reliance on Information and Communication Technologies (ICT) comes with a hidden cost: its environmental impact

i). Energy consumption: Data centers, which house vast computer servers and networking equipment, consume a significant amount of energy for their operation and cooling.

The energy consumption of personal devices like computers, laptops, and smartphones also contributes to the overall environmental impact.

Environmental Sustainability-
Environmental Impact

The Environmental Impact of ICT Cont.

ii) E-waste generation: The rapid pace of technological obsolescence and short lifespans of electronic devices lead to a growing problem of electronic waste (e-waste). Improper e-waste disposal can leach harmful toxins into the environment and pose health risks.

Environmental Sustainability-
Environmental Impact

The Environmental Impact of ICT Cont.

iii). Resource extraction: Manufacturing of ICT devices requires the extraction of various raw materials like rare earth elements and precious metals.

These mining activities can have negative environmental consequences, such as deforestation, habitat destruction, and water pollution.

Environmental Sustainability- Green ICT

Strategies for Green ICT

Green ICT refers to practices that reduce the environmental impact of information and communication technologies throughout their lifecycle.

These strategies for Green ICT Include:

- *Use energy-efficient hardware and software.*
- *Cloud computing for resource optimization.*
- *Extended lifecycles.*
- *Recycling .*

Environmental Sustainability- Green ICT

Strategies for Green ICT

1. **Energy-efficient hardware and software**: Encouraging the use of energy-efficient devices and software that optimize power consumption during operation and standby modes.

2. Cloud computing for resource optimization: Cloud computing offers economies of scale, allowing businesses to consolidate resources and utilize data centers that can be optimized for energy efficiency.

Environmental Sustainability- Green ICT

Strategies for Green ICT

3. Extended lifecycles for devices through proper maintenance and refurbishment: Extending the lifespan of existing devices through proper maintenance, repairs, and upgrades reduces the need for frequent replacements and associated e-waste generation.

4. Recycling and responsible e-waste disposal programs:

Implementing programs for responsible collection, recycling, and refurbishment of e-waste ensures proper disposal of electronic components and reduces environmental hazards.

Environmental Sustainability

Measuring and Reporting Sustainability

By measuring and reporting on ICT sustainability metrics, organizations can make informed decisions about resource allocation, technology investments, and green ICT practices.

Examples of ICT sustainability metrics:

- Energy consumption: Measure energy use of data centers and devices to identify opportunities for optimization.
- E-waste generation: Track the volume of e-waste generated and monitor progress in reduction and recycling efforts.

Environmental Sustainability

Measuring and Reporting Sustainability

- ***Examples of ICT sustainability metrics Cont.*:**
  - Resource use in manufacturing: Analyze resource consumption during device manufacturing to identify areas for efficiency gains.
- Industry standards and reporting frameworks:
  - Some examples include: The Global Reporting Initiative (GRI)

2: Social Sustainability

a). Digital Divide and Access

Digital divide refers to the unequal access to information and communication technologies (ICT), particularly the internet, between individuals, communities, and countries.

- Social and economic consequences: Lack of access to technology and the internet can limit educational opportunities, job prospects, and overall social participation.

Social Sustainability Cont.

b). Promoting Digital Inclusion (Strategies for Digital Inclusion)

These strategies include;

- Affordable internet access programs: Government initiatives that provide subsidized or low-cost internet .
- Establishing community technology centers equipped with computers and internet access can provide public access points for those who lack technology or internet connectivity at home.
- Providing digital literacy training programs equips individuals with the skills

Social Sustainability Cont.

C). Ethical Considerations in ICT

The rapid advancement of ICT has brought tremendous benefits, but also raises important ethical concerns that need to be addressed. Here are some key areas to consider:

- **Data privacy concerns:**
  - The vast amount of personal data collected through ICT raises concerns about privacy and security.
  - Data breaches and identity theft can have serious consequences
  - It's important to have strong data protection laws and regulations in place,

Social Sustainability Cont.

Ethical Considerations in ICT Cont.

- **Artificial intelligence bias:** AI algorithms can perpetuate or amplify existing societal biases if the data they are trained on is biased.
  - Developers need to be mindful of potential biases and take steps to mitigate them.
- **Cyber security risks:** ICT systems are vulnerable to cyberattacks, which can disrupt operations, steal data, or cause physical harm.
  - Strong cyber security measures are essential to protect ICT infrastructure and user data.
- By acknowledging these ethical considerations, we can ensure that ICT is used for good and contributes to a more just and equitable society.

3. Economic Sustainability

a) ICT: A Catalyst for Economic Growth

ICT plays a crucial role in driving economic growth and development.

ICT contributes to economic sustainability in many ways:

- ICT allows businesses to automate tasks, improve communication and collaboration, and optimize processes, leading to increased productivity and efficiency gains.

Economic Sustainability Cont.

ICT: A Catalyst for Economic Growth

ICT contributes to economic sustainability in many ways:

- **Job creation in the tech sector**: The ICT sector itself is a major job creator, providing opportunities for programmers, software developers, data analysts, cybersecurity specialists, and various other tech professions.
- **Innovation and new business models**: ICT fosters innovation and the emergence of new business models that disrupt traditional industries and create entirely new ones. This can lead to economic growth and increased prosperity.

Economic Sustainability Cont.

b) The Challenge of Job Displacement

- The rapid technological advancements can also lead to job displacement in certain sectors as automation replaces some traditional roles.
- This challenge necessitates proactive measures to prepare the workforce for the changing job market.
- Investing in skills development programs focused on digital literacy, data analysis, and other in-demand skills can equip individuals to adapt and thrive in the digital economy.

Economic Sustainability

c). Bridging the Digital Divide for Economic Inclusion

- By addressing the digital divide and promoting digital inclusion, more individuals can participate in the digital economy, access online job markets, and develop the skills needed for ICT-related jobs.

This fosters inclusive economic growth that benefits a broader range of people and communities.

The Role of Organizations in Sustainable ICT

- **Collaborating with industry leaders and policymakers:**
  - Collaboration is key to accelerating progress towards sustainable ICT.
  - Organizations can partner with industry peers, technology leaders, and policymakers to share best practices, advocate for sustainable ICT standards, and influence change across the industry.

The Role of Organizations in Sustainable ICT

Organizations play a critical role in shaping a sustainable digital future and this is through the following ways

- **Implementing responsible technology policies:**
  - Develop and implement clear policies that address environmental, social, and ethical considerations throughout the ICT lifecycle.
  - This could include policies on energy efficiency, e-waste management, data privacy, and ethical AI development.

The Role of Organizations in Sustainable ICT

- **Investing in green technologies:**
  - Organizations should prioritize investments in green technologies such as energy-efficient equipment, cloud computing solutions that optimize resource utilization, and renewable energy sources to power data centers.

Conclusion

- Sustainable ICT requires a holistic approach that considers the environmental, social, and economic impacts of technology across its lifecycle.
- Environmental considerations include minimizing energy consumption, reducing e-waste generation, and adopting responsible sourcing practices.
- Socially sustainable ICT focuses on bridging the digital divide, promoting digital inclusion, and ensuring ethical technology use that respects data privacy and mitigates potential biases.
- Economically sustainable ICT contributes to economic growth by increasing productivity, creating new jobs, and fostering innovation.

References

- Hilty, L., Lohmann, W., & Huang, E. M. (2011). Sustainability and ICT-an overview of the field. *Notizie di POLITEIA*, *27*(104), 13-28.

THANKS