

# Building the Foundations: E-Infrastructure Essentials for Somali Universities

Presenter: [Abdirizak Warsame Abdulle](#)

SomaliREN Annual Meeting - 13-Feb-2024

# Outline



---

Overview of the Current State of Somali HE

---

Definition of E-Infrastructure

---

Components of E-Infrastructure

---

The Importance of E-Infrastructure in Enhancing Educational Quality and Research Capabilities

---

Role of E-Infrastructure in Educational and Research Institutions

---

The Critical Role of Internet Connectivity in Accessing Global Educational Resources

---

Current Internet Penetration and Speed in the World and Somalia

---

Cloud Computing Resources

---

Advanced Data Management Systems

---

E-Collaborations: Expanding Opportunities

---

Challenges in Developing E-Infrastructure

---

Roundtable Discussion

# Overview of the Current State of Somali HE

## Growth and Challenges

- Somali higher education has seen significant growth in the number of institutions. Despite this growth, these institutions face myriad challenges, including:
  - Limited physical and academic infrastructure,
  - Insufficient funding, and
  - The need for more qualified faculty.

## Quality and Accreditation

- The absence of a unified national accreditation body complicates efforts to standardize educational quality across institutions.

# Overview of the Current State of Somali HE

## Research Capacity

- Research capacity is nascent, with limited resources allocated towards research activities.
- This limitation is compounded by insufficient research infrastructure, including:
  - Libraries, laboratories, and access to international journals and databases

## International Collaboration

- There is a growing interest in international collaborations and partnerships to enhance academic standards and research capabilities.

# Overview of the Current State of Somali HE

- **Access to HE**

- Access to higher education remains limited, especially for students from rural areas.
- High tuition fees and the lack of widespread scholarship opportunities further exacerbate these disparities



# Definition of E-Infrastructure

E-infrastructure refers to the collection of technology-based facilities and systems that provide the essential foundation for conducting high-level research, teaching, and learning activities in a digital environment.



It encompasses a broad range of electronic resources and services, including:

Hardware (such as servers and storage devices),

Software,

Networking facilities, and

The personnel required to maintain and manage these components.

# Components of E-Infrastructure



## High-Speed Internet Connectivity

The backbone of e-infrastructure, enabling fast and reliable access to online resources, communication, and collaboration tools



## Cloud Computing Resources

Services that provide on-demand access to computing resources (servers, storage, applications, and services) over the internet, allowing for scalability, flexibility, and cost-efficiency in managing IT resources.

# Components of E-Infrastructure



## Data Management Systems

Technologies and protocols for storing, retrieving, and managing data effectively.

This includes databases, data warehouses, and tools for data analysis, ensuring that data is accessible, secure, and usable.



## Collaboration Tools

Platforms and software that facilitate collaboration among students, educators, and researchers, like video conferencing tools and online learning management systems (LMS)

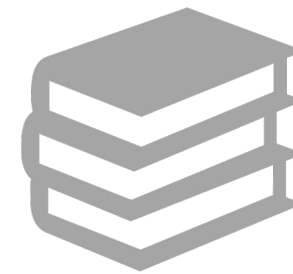


# Components of E-Infrastructure



## Cybersecurity Measures

Essential to protect data, infrastructure, and users from cyber threats, including firewalls, encryption, and security protocols.



## Digital Libraries and Repositories

Online collections of digital objects, including texts, visuals, and research data, that support teaching, learning, and research activities.

# The Importance of E-Infrastructure in Enhancing Educational Quality and Research Capabilities



## Access to Global Knowledge

E-infrastructure enables students and faculty to access a vast array of global academic resources, including:

- Online libraries, journals, and educational platforms.



## Quality of Education

Through e-learning platforms and digital resources, institutions can offer diverse and interactive educational content.

This approach can help address the shortage of qualified teaching staff by leveraging online courses and materials.

# The Importance of E-Infrastructure in Enhancing Educational Quality and Research Capabilities



## Research and Collaboration

Advanced data management systems and high-speed internet facilitate research activities by enabling data collection, analysis, and storage.



## Flexibility and Scalability

Cloud computing resources offer educational institutions the flexibility to scale their IT infrastructure based on demand without significant capital investment.

# The Importance of E-Infrastructure in Enhancing Educational Quality and Research Capabilities



## Remote Access

By providing remote access to educational resources and virtual classrooms, e-infrastructure can play a pivotal role in making higher education more accessible to students from remote areas



## Sustainability and Cost-Efficiency

E-infrastructure offers a sustainable model for higher education and research by reducing the need for physical infrastructure and lowering operational costs

# Role of E-Infrastructure in Educational and Research Institutions



Enhancing Access  
to Information



Facilitating  
Innovative Teaching  
and Learning



Supporting  
Research  
Excellence



Promoting  
Collaboration and  
Communication



Increasing  
Efficiency and  
Productivity



Preparing Students  
for the Digital  
Economy

# The Critical Role of Internet Connectivity in Accessing Global Educational Resources

---

Internet connectivity is fundamental to modern education

- It provides access to a wealth of global educational resources,
- It allows students and educators to access online libraries, digital textbooks, academic journals, and massive open online courses (MOOCs)
- It supports the use of learning management systems (LMS).
- It also plays a vital role in research by providing access to databases, research networks, and platforms for scholarly communication and collaboration.

# Current Internet Penetration and Speed in the World vs Somalia

---

A total of 5.35 billion people around the world were using the internet at the start of 2024, equivalent to 66.2% of the world's total population.

Developed countries typically boast higher internet penetration rates, often exceeding 80%, while many developing countries lag behind.

Internet speed also varies significantly.

Internet penetration in Somalia has been gradually increasing but remains low compared to global averages.

# Cloud Computing Resources

---

Cloud computing offers a range of advantages for universities, fundamentally transforming how they manage IT resources, deliver educational content, and conduct research. Here are some key benefits:

- Cost Efficiency
- Scalability and Flexibility
- Accessibility and Collaboration
- Disaster Recovery and Data Backup
- Enhanced Security



# Advanced Data Management Systems

---

Data management encompasses the practices, processes, and policies involved in organizing, storing, securing, and leveraging data effectively. For Somali universities, establishing robust data management practices is crucial for several reasons:

- Enhancing Research Quality and Integrity
- Improving Decision-Making
- Facilitating Academic Collaboration
- Compliance and Ethical Considerations
- Enhancing Access and Preservation
- Supporting Funding and Accreditation Requirements

# Data Management Systems That Can Support Somali Universities

---

Several data management systems and platforms can be tailored to the needs of Somali universities, ranging from open-source options to commercial solutions.

- Research Data Repositories
- Laboratory Information Management Systems (LIMS)
- Data Analysis and Visualization Tools
- Cloud-Based Data Storage and Collaboration Platforms
- Learning Management Systems (LMS)
- Database Management Systems (DBMS)

# E-Collaborations: Expanding Opportunities

---

E-collaborations have become increasingly vital in education, leveraging digital platforms and tools to bring together students, educators, and researchers from across the globe. Here are examples:

- **MIT OpenCourseWare (OCW) Initiative** provides free, openly licensed educational materials from MIT courses. This initiative has fostered numerous collaborations worldwide, enabling educators to adapt and integrate these resources into their curricula.
- **Coursera for Campus** allows universities to offer their students access to courses from institutions around the world. This platform enables students to gain knowledge from global experts.

# Challenges in Developing E-Infrastructure

---

The major challenges  
in developing e-  
infrastructure include  
the following:

Funding

Technical Expertise

Basic Infrastructure

# Roundtable Discussion

Building and Strengthening E-Infrastructure of Somali Universities and  
Research Institutions.

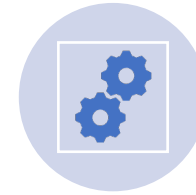
# Roundtable Discussion



Assessment of  
Current E-  
Infrastructure



Funding and  
Investment



Capacity Building and  
Technical Expertise



Technology choices



Improving  
Educational  
Outcomes



Enhancing Research  
Capabilities



Security and Data  
Protection



Success Stories and  
Lessons Learned (if any)

Thank you!

