DISRUPTIVE INNOVATIONS AND NEW APPROACHES TO CONNECTIVITY AND INTERCONNECTION.

Hilda Mutseyekwa

Director Economics, POTRAZ, Zimbabwe

ITU Regional Standardization Forum on
Emerging Economic, Regulatory and Policy Trends for an Inclusive, Sustainable and Trustworthy Digital World
Antananarivo, **Madagascar**
18 February 2019

Hosted by
ARTEC

PRESENTATION OUTLINE

- EMERGING TRENDS
- DISRUPTIVE INNOVATIONS
- NEW APPROACHES TO CONNECTIVITY
- NEW APPROACHES TO INTERCONNECTION
- FUTURE WORK

EMERGING TRENDS

- From the steam engine (factory automation and railway) to electricity to digitalization and now at the crossover of the Fourth Industrial Revolution.
- Foundational General Purpose Technologies (GPTs) influencing each other.
- More specialized technologies being born out of the GPTs
- An emerging trend whereby the synergies of past inventions are being exploited to generate new innovations.
- For example the potential of AI in the design of new materials that can in turn be used to enhance computing power, energy sustainability and the impact thereof on many other technologies such as robots and drones?

DISRUPTIVE INNOVATIONS

- OTTs and their disruptive impact on traditional business models
- Cloud computing and its ability to facilitate data storage and data analytics
- Internet of things (IoT) and its capability to enhance human to machine and machine to machine interactions.
- Artificial Intelligence (AI) and its potential to blur the lines between technology and human beings;

DISRUPTIVE INNOVATIONS

- Distributed Ledger/ Block Chain and its ability to create and exchange digital records without requiring a centralized trusted party.
- Virtual and Augmented reality and its ability to create new experiences of the world around us;
- Quantum computing technology and its threat on online trust and security as it has potential to crack standards currently used to secure our online transactions
- More capable algorithms, more powerful computers, physical materials with new properties.

DISRUPTIVE INNOVATIONS

- These emerging technologies are beneficial to human kind, disruptive and fraught with challenges as well. (positive and negative externalities)
- They bring convenience; more choice, lower costs and higher quality to the consumer.
- Computers are physically becoming a part of us- think of wearables; i.e. smart watches, intelligent earbuds and augmented reality glasses etc., improving our quality of life.
- Information processing, storage and transmission are the drivers of the emerging innovations.

DISRUPTIVE INNOVATIONS

- The down side of these technologies is that they have potential to increase inequalities: widen the digital divide, rich and poor (monopoly power of the likes of google (search advertising); Facebook (mobile social traffic) Amazon in the e-book market .
- Implications on social cohesion; Challenge is how to democratize decision making.
- Concerns about security and privacy – proliferation of data centres and associated costs.
- They also come with environmental externalities- energy consumption and sustainability of computing methods and hardware

DISRUPTIVE INNOVATIONS

- The potential to reduce human employment is another ”key hazard”
- More jobs are prone to automation than was the case in previous revolutions; whilst
- The rate of job creation in technology industries is slower because of the high technical expertise required.
- Competition Issues: The creation of super platforms that have ‘bullying power “ over their value chains.
- Consumer protection issues: consumer rights, privacy and security

NEW APPROACHES TO CONNECTIVITY

- Ubiquitous connectivity via the internet
- The 4th Industrial Revolution is about the "internetization") of industry just like the electrification of industry during the second industrial revolution. (Richard Soley)
- The interactions of emerging technologies have born new ideas to do with materials, assemblies and architectures for ubiquitous, low cost and robust connectivity.

. This has spurred technological innovations in connectivity (G-fast, 5G)

- Ubiquitous connectivity poses the risk of the world becoming more fragile e.g. Power outages, Cyber attacks.

NEW APPROACHES TO INTERCONNECTION

- The new technologies are connected to each other in that they all ride on digital networks of the third industrial revolution.
- Inasmuch as digital technologies were built and driven by electricity. The Internet is a conflagration of electrical signals.
- These technologies are interlinked, with many potential interconnections characterized by varied backward and forward linkages.
- Moving away from circuit switched to IP interconnection

NEW APPROACHES TO INTERCONNECTION

- More than 80 billion devices to be connected to each other and human beings by 2030.
- A vast network of interconnected devices, identities, goods and services
- This calls for new ways for business and consumers to remunerate each other for data usage.
- New methods of accounting for value in terms of transactions and collaborations.
- Data flows will become overwhelming and cyber security will be an issue.
- Challenges: lack of security protocols; bandwidth limits; no collaborative agreements, no collaborative governance framework.

FUTURE WORK

- Dispute resolution frameworks.
  - Accountability for actions
- Ethical standards
- Competition Issues- network effects, network externalities, dominance
- Bridging the digital divide
- Consumer protection frameworks: Complaints handling; Customer service; Privacy and security; Quality of service, consumer responsibilities,
- Cyber attacks
- Charging and accounting issues
- Data governance issues- data collection, ownership, analysis, management and cross border data movements.

THE END

MERCI!!

THANK YOU!!

REGIONAL STANDARDIZATION FORUM (RSF) FOR AFRICA

Antananarivo, **Madagascar**

1956 2016
CCITT / ITU-T