Digitalization of Agriculture: Experiences from Uganda

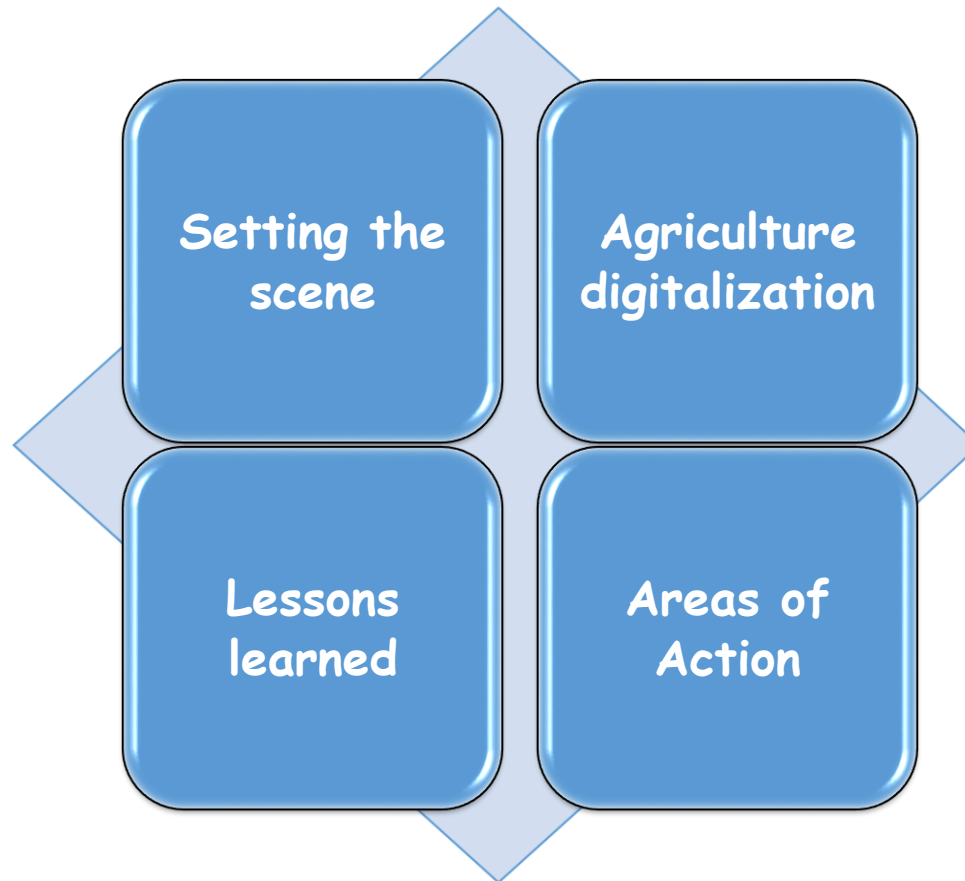Dr. Drake Patrick Mirembe,

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Presentation Overview

Setting the scene

Agriculture digitalization

Lessons learned

Areas of Action

Setting the Scene: Uganda

1. Population approx. 48 million people, Mar 2022

2. Arable Land: 37% Abundant source of water and favorable climate

3. Growing higher education sector, 50 Universities

4. Internet Penetration ~ 49% & 70% have access to a phone

5. 75% of population rely on subsistence agriculture

6. Inadequate agriculture extension services

7. Rapidly growing ICT sector 10% p.a

8. Rapid urbanization increasing demand for food

9. Growing economy average of 5% p.a

Uganda's Agriculture Sector Overview and opportunities

a) Agriculture Overview

    a) Agricultural sector (crops, animal farming, forests and fishing) contributes ~25% of GDP

    b) Provides about 70% of employment opportunities, Majority of which are women (~65%) and youth

    c) Provides about 50% of export earning, followed by Minerals (44%)

    d) Over 90% of the farmers are smallholders

b) Challenges/Opportunities

    a) Limited access to quality input materials

    b) Limited access to quality markets

    c) Poor quality of extension services and weak tools monitoring service delivery

    d) Limited access to financial services

    e) Weak production records management

    f) Limited access to quality information at various level of the value chain

    g) Poor management of pest and disease out breaks

Role of ICT in Agriculture Value Chains

1. Information system including DSS/MISS/GIS etc

2. ICT enabled leaning and knowledge exchange

3. Modeling solution

4. Sensory and proximity devices

5. ICT enabled leaning networking devices

6. Online commerce too(ecommerce)

ICT has three key roles:

1. Capturing information (farmers, suppliers, gardens, market)

2. Information processing and visualization (predicting, explaining, meaning)

3. Information exchange and knowledge sharing
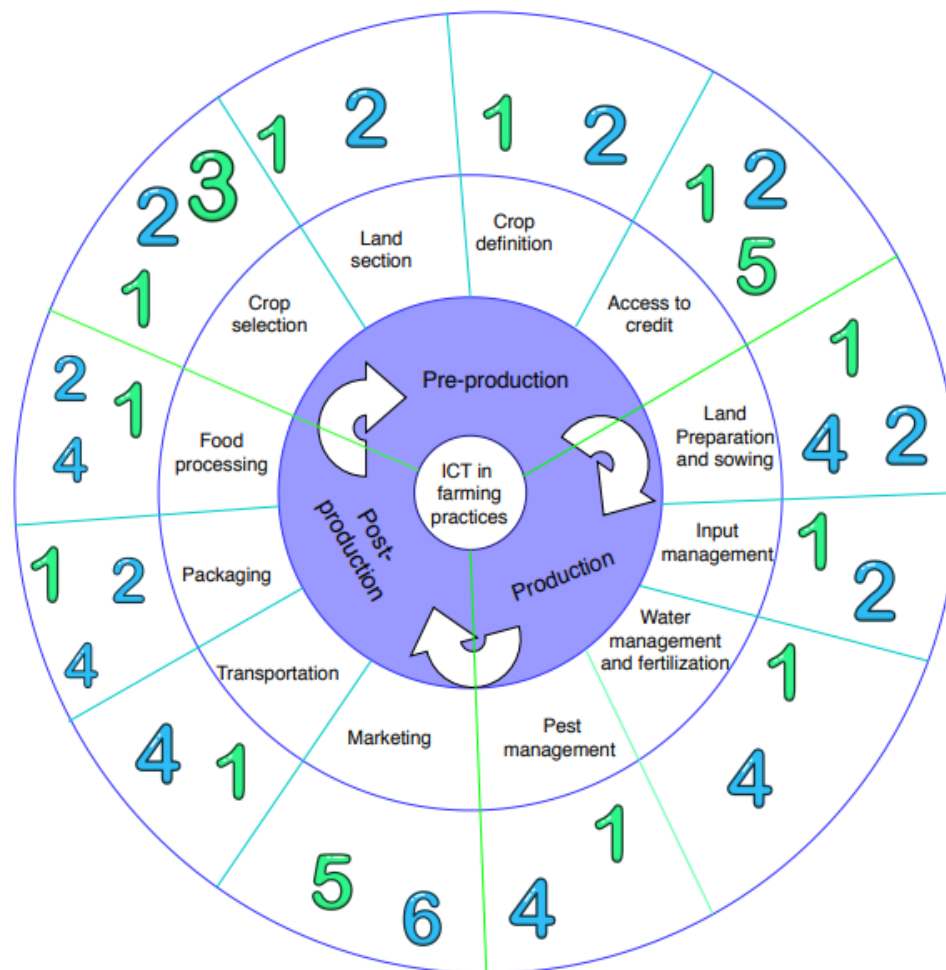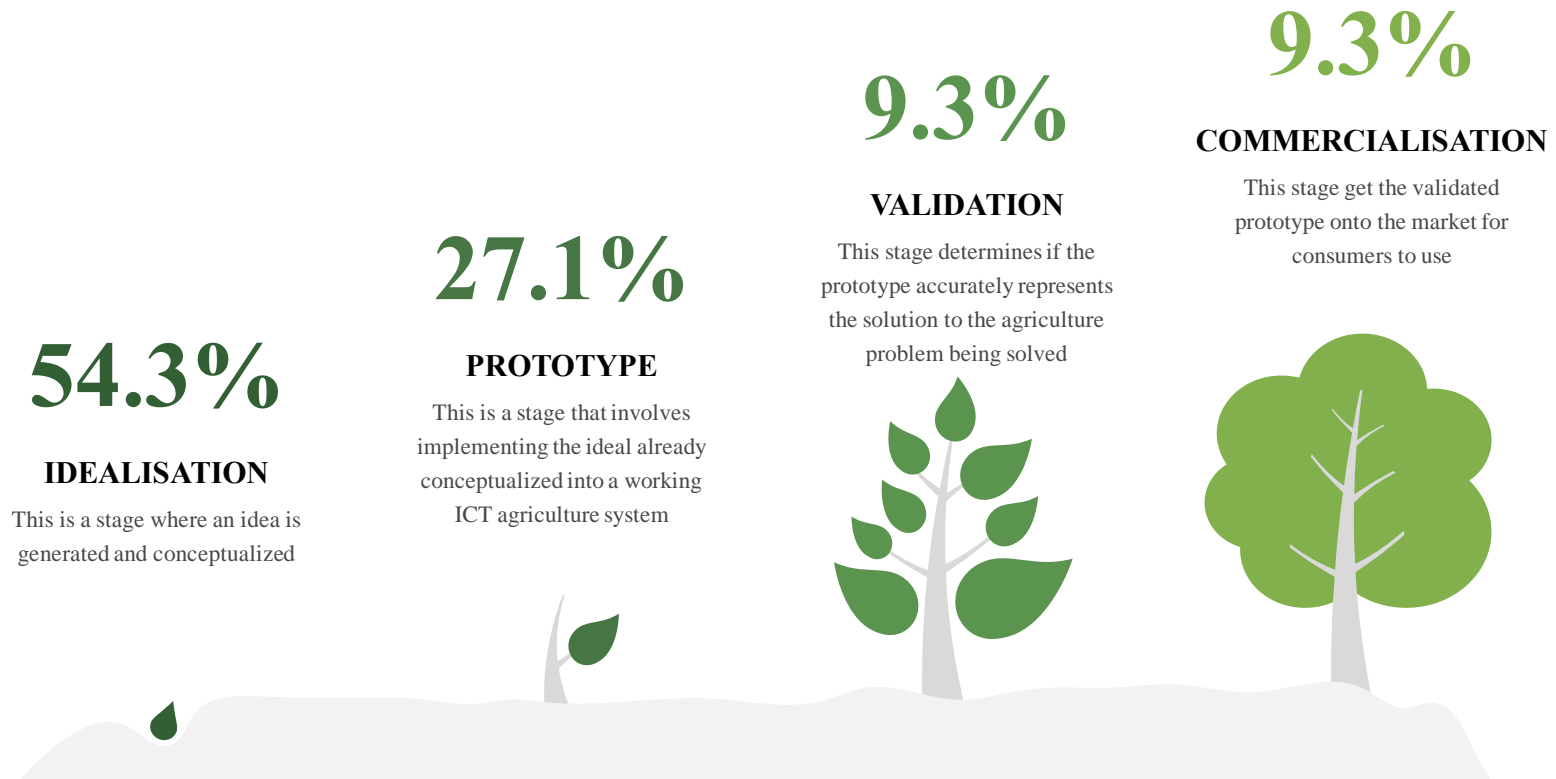
The role of ICTs in African Agriculture

ICT4Agric Uganda highlights

Uganda has over 200 documented ICT4Agric local innovations

54.3%

IDEALISATION

This is a stage where an idea is generated and conceptualized

27.1%

PROTOTYPE

This is a stage that involves implementing the ideal already conceptualized into a working ICT agriculture system

9.3%

VALIDATION

This stage determines if the prototype accurately represents the solution to the agriculture problem being solved

9.3%

COMMERCIALISATION

This stage get the validated prototype onto the market for consumers to use

Source: State of ICT4Agrc in Uganda 2019, by UCC

Uganda ICT4Agric : Outstanding initiatives

a) ICT4Farmers operated by UNFFE & 8TECH with support from UCC

    a) Virtual call distributed call center service, e-agriculture academy, mobile and web applications

    b) Over 20,000 farmers served in the last 2 years

b) E-voucher operated by MAAIF

c) M-Omulimisa

d) Viazi Vitamu

e) Jaguza Livestock

f) Nation Seed tracing and Tracking system (MAAIF & ISSD)

g) WIMEA-ICT (Makerere University)

h) Erignu

i) M-Crops

j) EzyAgric

k) MUIIS

Lessons

a) Digital technologies are mainly use at pre-production and post-production stages

b) Most of the locally developed digital technologies are targeting crops

c) Level of education for the farmers influences their use of the digital technologies

d) Not surprising most AI and IoT based initiatives are at infancy stage of development

e) Limited access to energy sources by farmers

f) High costs of internet and access devices

g) Unregulated online for agriculture content

h) Digital divide

i) Infant Agriculture e-services and innovation ecosystem

j) Poor network coverage and quality of service

k) Digital initiatives are largely project driven through social programmes

Areas of Action

a) Promote universal broadband connectivity and inclusive access

b) Promote open agriculture knowledge platforms

c) Digital skilling and awareness (blended digital literacy programmes)

d) Promote the development of sustainable and relevant and low cost e-solutions & e-services

e) Nurture a supportive agriculture based innovation ecosystem

f) Make devices and internet affordable and accessible

g) Integrity E-waste and electronic device end of life management in educational curriculum

h) Ban substandard and counterfeit devices

i) Improve power accessibility for example in Uganda (27%) have access to electricity compare to Ghana (83%) and Kenya (75%)

A peep into ICT Platform features
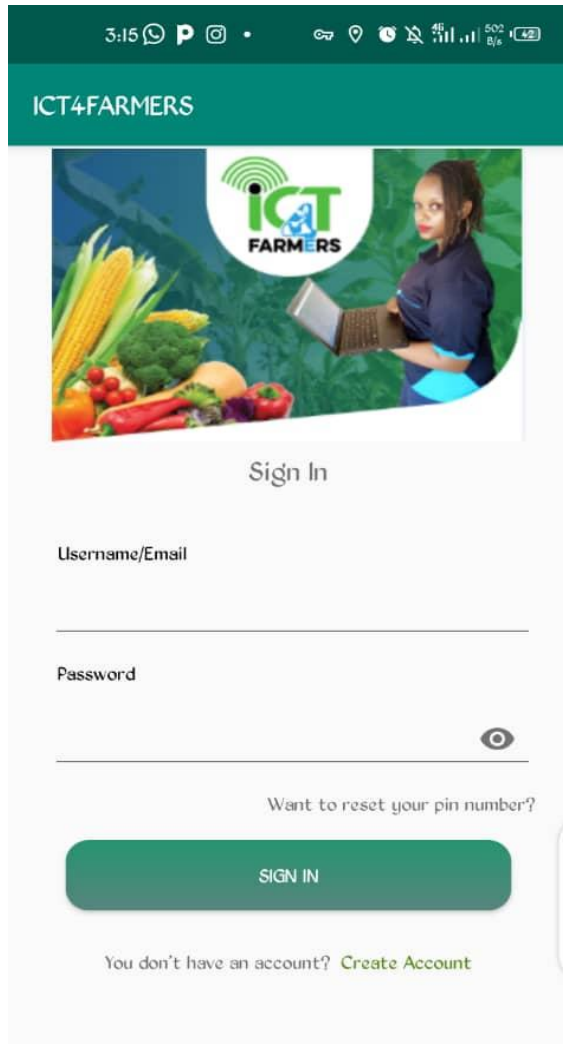
Login interface for all the registered users

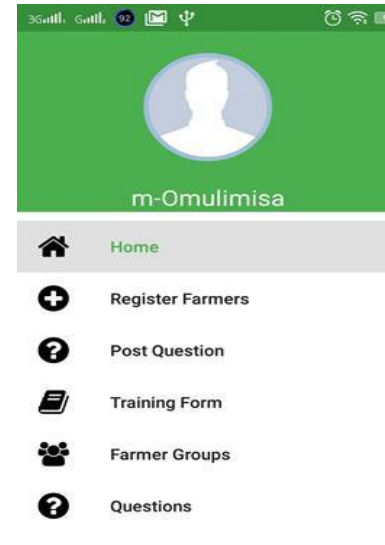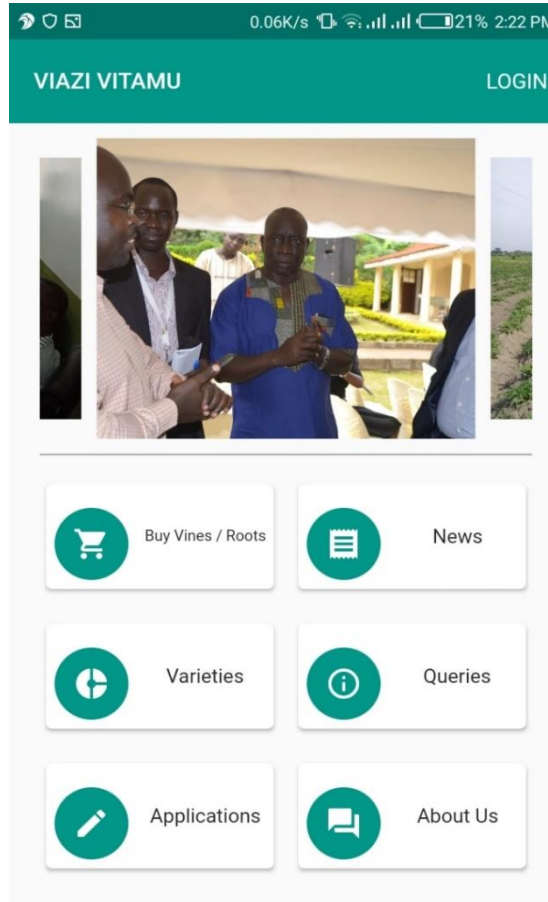# A peep into ICT Platform features

(CALL CENTRE MONITORING) Users can make calls through the call centre and they are reflected and recorded through the system for easier followup

A peep into Other ICT platforms

Viazi vitamu (sweet potato system

M-omulimisa App

Jaguza

National Seed tracking and tracing system

Thank you

"Knowledge Management and Service Delivery in Sweet Potato Seed Systems Using ICT"