Enhancing Rural Youth Livelihood through Digital Innovations

ELVIN SHAVA

UNIVERSITY OF KWAZULU-NATAL, SOUTH AFRICA

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PRESENTATION OUTLINE

- Overview of Rural youth & Digital Innovations
- Theoretical & Policy Context
- Role of Digital Innovation in Rural Youth Livelihoods
- Examples of use of Digital Innovations
- International Case studies
- Barriers to adoption of digital innovations
- Questions to ask for adoption
- Conclusions

Overview of Rural youth & Digital Innovations

- The entrance of the Fourth Industrial Revolution (FIR) dramatically changes the landscape of rural development and local livelihoods in South Africa.
- Government has in the past initiated several micro and macro-economic policies to promote youth livelihoods.
- However, this has not yielded anticipated results due to less emphasis on the use of digital innovations to stimulate youth innovation and entrepreneurship.
- Embracing digital innovations (Internet, computers, satellite, 3D machines, cloud computing, robotics) biomedical engineering and biotechnology and other forms of new technologies in South Africa can be a step towards improving the socio-economic lives of rural youth.
- In describing the use of digital innovations in the FIR, Lillian Barnard the Managing Director for Microsoft South Africa states that:
- "This revolution, like every revolution before it, has the power and potential to raise global income levels and improve the quality of life for populations around the world. But for this to happen we have to take advantage of the opportunities presented by innovation and new advances in technology."

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- Digital innovation holds the potential to unlock employment opportunities, increase youth empowerment through access to information, technology & markets, scaling new innovative solutions to global challenges such as food insecurity and improvement in agriculture (FAO, 2018).
- **Digital innovations refers to** rapid changes by using digital technology to enhance services, traditional models, products & processes.
- Deloitte (2018) in its study, argues that innovation trigger opportunities for entrepreneurship for the youth to enter the mainstream economy, in South Africa this has not been the case despite the enabling constitutional provisions.
- Youth as the United Nations explained, refers to an individual in the age group ranging 15 to 24 years that live in rural areas embedded in the socio-cultural context (Filmer and Fox, 2014).
- Main rural livelihoods where youth can participate is agriculture which has the potential to create employment opportunities.

Technological Acceptance Model

- In 1989, Fred Davis developed the TAM model as an information systems theory that informs users on how to accept and utilise technology. The model assumes various factors that develop in eveNt the user embraces the use of technology. These include:
- **Perceived usefulness (PU**) which refers to the extent at which a user perceives that a system can enhance his/her performance leading to satisfaction and further determination to repeat the use of the same technology.
- **Perceived ease of use (PEOU**) informs the degree at which a user believes in the use of a certain system in order to reduce tax or effort.
- This occurs the behavioural intention of an individual to adopt a system is largely determined by the potential performance (PU) benefits that can be derived from such a system when performing a given task (PEOU).
- The variables are affected by factors such as level of **training** and **systems design**, therefore, PU & PEOU are fundamental for redirecting the behaviour of users towards a system that culminates into their acceptance (Davis, 1989).

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- Their perceived use and acceptance of the use of digital innovations to improve rural livelihoods need to be assessed.
- Whereas rural youth can feel the use of digital innovations can improve employment opportunities, local government officials feel they cannot embrace the systems perhaps due to low **skills gap** associated with digital technologies.
- To cater to such technology, further **training** is needed which can strain the already bleeding municipal funds.

The White Paper on Science & Technology (DACST 1996)

- Has a vision in which all South Africans enjoy an improved and sustained quality of life, integration into the economy by means of satisfactory employment and participation in the democratic political culture.
- To achieve this vision the following six robust goals are considered critical by the developers of the 1996 White Paper:
- 1. Establish an efficient, well-coordinated and integrated system of technological and social
- innovation;
- 2. Encourage creative and collaborative partnerships for individual and national benefit;
- 3. Aim at problem solving and involving the multidisciplinary use of engineering, the natural,
- health, environmental and human and social sciences;
- 4. Include formerly marginalised stakeholders in science and technology policy-making and
- resource-allocation activities;
- 5. Ensure that the advancement of knowledge is valued as important to national development;
- 6. Improve support to all types of innovation fundamental to sustainable economic growth,
- employment creation, equity through redress and social development.

Role of Digital Innovations in Uplifting Youth Livelihoods

- **Digital innovations as accelerators to youth employment**
- Adopting digital innovations in rural areas can be beneficial for the youth as this can enable employment creation. However, few studies in South Africa document this.

Digital innovations as enablers of rural youth entrepreneurship

- The infusion of new digital technologies in the past which include mobile computing, cloud computing, 3D printing, social media and data analytics among others into several aspects of innovative and entrepreneurial process for stimulating rural livelihoods (Nambisan, 2016).

Digital innovations as a double-edged sword

- Whereas embracing digital innovations can help transform the nature of rural youth livelihoods and bridge the socio-economic disparities government cannot ignore their consequences on society, humans and labour. Many rural youths may not benefit from the entire systems of using digital machines as they require certain skills.

Examples of use of digital innovations

Picture: 123RF/Ruslan Zagidullin

The above shows an example of how digital technology has been used to monitor the movement of cattle in KwaZulu Natal. The Durban-based Cattle Watch, for instance, fits livestock with collars or ear tags which enable them to monitor their herds in real time. Scientific research was done by Zolani Gwiliza & Mark Mongameli Ngwenya to develop this technology that allows farmers to track locate, and monitor and automatically count their livestock remotely in any location in the world.

Drones in agriculture

AEROBOTICS co-founder and chief executive James Paterson at the presentation Picture: Supplied

At a recent Aerobototics Future of Farming 2018 in KwaZulu Natal, five innovations to assist farmers manage their crops, identify stressed trees and sport individual pests and disease without setting foot on a farm were introduced. More than 700 people from 11 farming communities attended to witness the latest innovation that youth can embrace in agriculture (Adriaanse, 2018). This type of technology capture high resolution images of stressed trees and these will be run through a data. Using this form of artificial intelligence and machine learning can help farmers reduce stress and increase productivity (Malahe, 2018)

ABALOBI (isiXhosa)

- A new mobile app called Abalobi which referred to small scale fisher has been invented to help rural communities improve their fishing methods a as way of supporting their livelihoods.
- The Co-developed App was introduced to make small scale fisheries life easier. The app was supported by researcher at the University of Cape Town and the Department of Agriculture, Forestry and Fisheries as well as other small-scale fisher representatives.
- An award-winning App in the category of Social Innovations Award at the 2017 SAB Foundation Social Innovation & Disability Empowerment Awards, the app allows for real time fishery data, transparent accounting of the catch and a digital marketplace, making the catch easier to sell (Notwabaza, 2017).
- Although the ABALOBI is believed to have helped to mitigate overfishing and stress in rural communities, experts raise concerns as to where the fish are could have detrimental effects of fish farmers.

Vula Mobile app

- Developed by Dr William Mapham to enable rural health workers in remote rural areas to carry out eye tests & consult with specialists using a smartphone.
- The app can help in test blindness among poor people in rural communities and community health workers can make referrals

International Case Studies

Rwanda uses drones to transport medicines and blood transfusion to other remote areas of the country which quite commendable it improves efficiencies and minimises costs

Drones in agriculture

Rwanda uses drones to monitor fields, spray herbicides

International examples of innovations

- **Mobile AgriBiz** of Kinshasa is a mobile app with web and SMS application that helps farmers decide when and how to plant crops, how to select the best crops for a given location using climate and weather data.
- **MLouma app** connects Senegal farmers to food purchasers by displaying real-time market prices, products and localizations.
- **ESoko TradeNet** in Ghana allows farmers to collect data and get advice on market prices, weather forecasts, and growing tips to help them increase their yields and profits (Jaya Shukla, 2018)

Barriers for adoption of Digital Innovations in rural youth livelihoods

- Lack of digital literacy
- Educational mismatch supply
- Fear of change/Risk aversion
- Poverty, inequalities & unemployment
- Unpreparedness of local municipalities
- Minimal investment in research on science & technology
- Poor infrastructure

Questions in adoption of Digital innovations

- Do we have enough expertise at local government level to embrace the use of digital innovations?
- What is the level of acceptance of new innovations, models among rural municipalities?
- Are the rural youth ready to tap into the opportunities presented by the Fourth Industrial Revolution?
- Is the education system adequately designed to emancipate youth with digital schools?
- How can we strike a balance between socio-economic inequalities & adoption of digital innovations?
- Does the rural youth have a shift of mindset to embrace innovations in rural livelihoods? Do they need change?

Conclusions

- Adopting digital innovations by youth requires huge investment & training in digital skills,
- The government need to address the triple challenges of poverty & unemployment and inequalities.
- Rural municipalities can partner with organisation such as CSIR is of significance in pooling resources together towards improving skills capacity for the rural youth in South Africa.
- Further collaborative opportunities between multi-national corporations (MNCs), Business Sector and government can go a long way in improving the adoption and use of digital innovations to create employment and entrepreneurs that will help improve rural youth livelihoods.
- Creating a technologically conducive environment i.e. innovation labs, hubs where youth can be exposed to use of digital technologies.
- Rural municipalities need to shift their status quo & embrace change brought by digital technologies.