Is this the Real World?
Perfect Smart Cities
vs.
Real Emotional Cities

EXPLORING BARRIER FREE AS A CATALYST TO SMART CITY INITIATIVES IN SUB SAHARA AFRICA

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REAL CORP 2019

Presentation Outline

- Introduction
- Background
- Definitions
- Methodology
- Profile of study area
- Results and discussions
- Conclusions and Recommendation

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Ourworld

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Introduction

90%
of the global increase in
urbanisation
will be in
Africa
and
Asia

Thought-provoking discussion from the
Royal Geographical Society (with IBG)
www.21stcenturychallenges.org
Source: World Urbanization Prospects, UN, 2014

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- Today's world population of 7.65 billion will reach 8.5 billion by 2020

- Rapid urbanisation especially in Africa poses challenge to efficient management of the city

- Smart city, as an emerging urban development concept, is seen as the smartest way of managing the complex and highly organised systems

WHO 2018, Statista.com, Worldometer.com,2019

- **There are 250 Smart city projects in 178 cities worldwide with a projected market value of $34.5 billion in 2020**

- **Smart phone usage will reach 2.5 billion people in 2019**

- **Mobile money transactions alone in Kenya and Ghana was US$28 billion and US$51 billion in 2018**
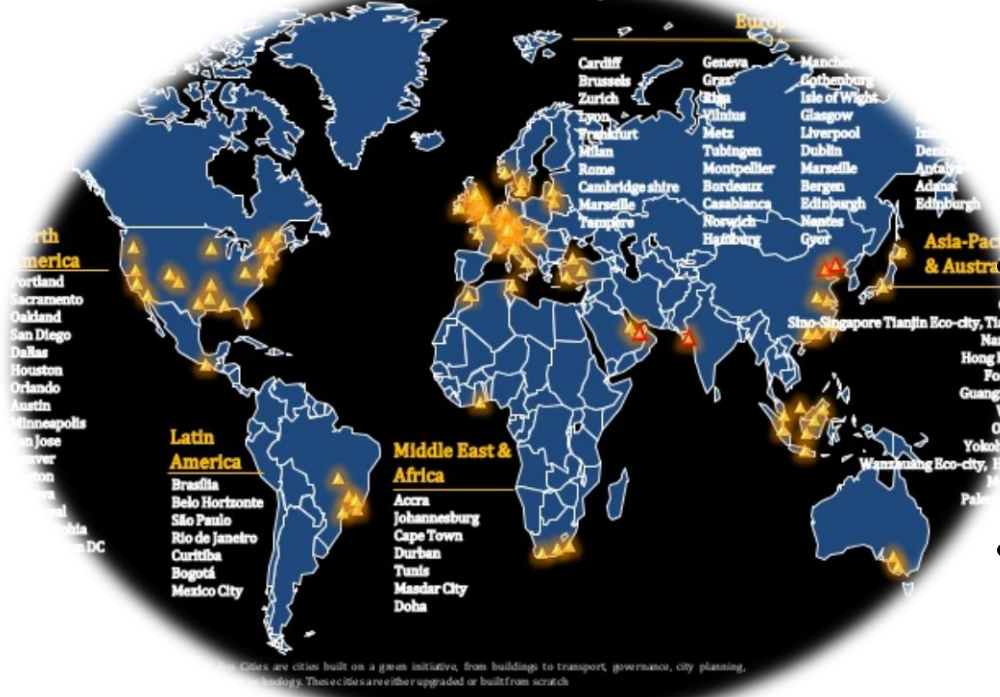
Rice-Oxley and Flood 2016, MOF ,2019

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WORLD SMART CITIES BY 2025

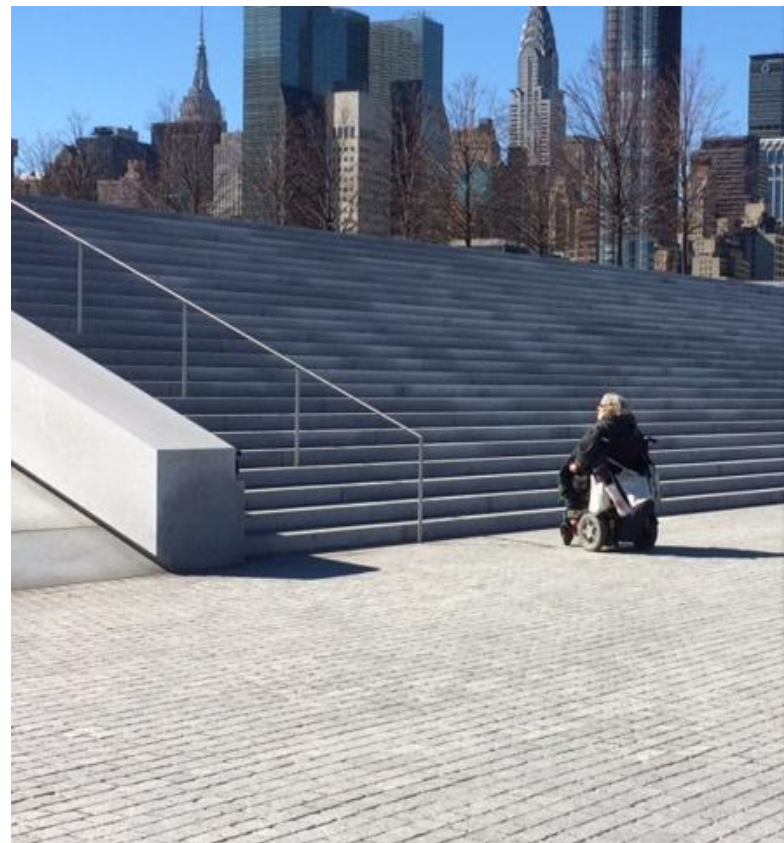- Subtle smart city initiatives are seen in sub Sahara African countries

- 7 cities in Africa are among 90 emerging ecological smart cities by 2025

- The digital revolution is evident in cities of Rwanda, south Africa, Ghana, Kenya and Nigeria

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Frost and Sulivan, 2017, Clarke et al. 2014, NEC, 2017

The world as seen by persons with disabilities

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The problem

"THE DISABILITY IS NOT THE PROBLEM. THE ACCESSIBILITY IS THE PROBLEM."

- MOHAMED JEMNI

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The bridge?
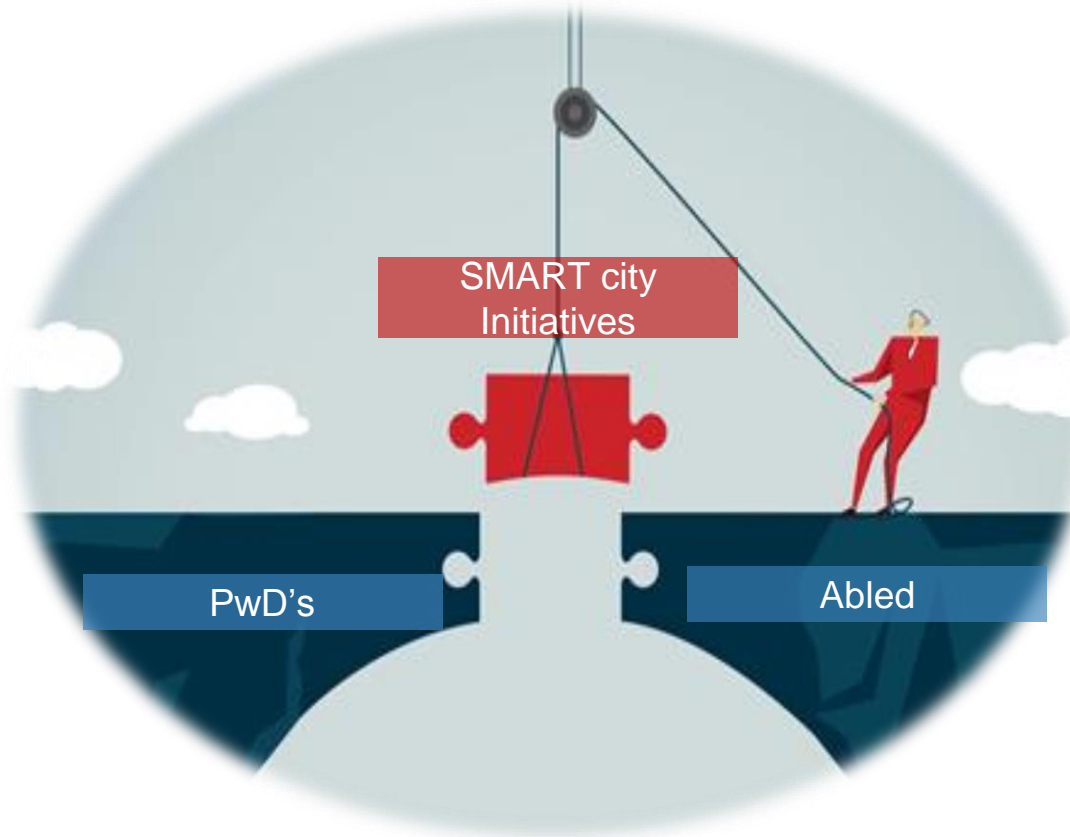
- 10 to 15 percent of world population have one multiple form of disabilities

- 70 percent are found in developing countries

- Smart city initiatives is seen as means to bridge the gap

- Mobile technology leads in this initiative

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(Worldometer,2018, GSM Mobile Economy Report Series, 2015; Ericsson, 2014, 2015, Clarke et al. 2014)

key definitions

Barrier Free

A society that accommodates the everyday cares of persons with disability (including the elderly) without any form of prevention. (Nugent & Pam M.S.,2013; Cambridge dictionary, 2017)

Persons' with Disability (PwD's)

Various functional limitations, either permanent or temporal, occurring in any population in any part of the world hindering a person from performing their daily activities (World Heath Organization; International Classification of Function, 2001, United Nations, 2017)

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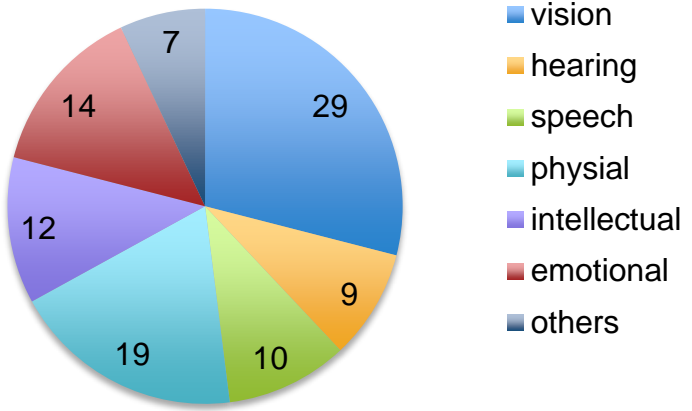# key definitions

Smart City

An **urban development strategy** that investments in **human** and **social capital** and traditional **(transport) and modern (ICT) communication** infrastructure

(Caragliu and Nijkamp 2009b, Giffinger et al,2007; paskaleva,2009, Schaffers et al, 2012, Angelidou,2016)

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Disability in Ghana

Types of disability in Ghana

Pie chart legend:
- vision — 29
- hearing — 9
- speech — 10
- physial — 19
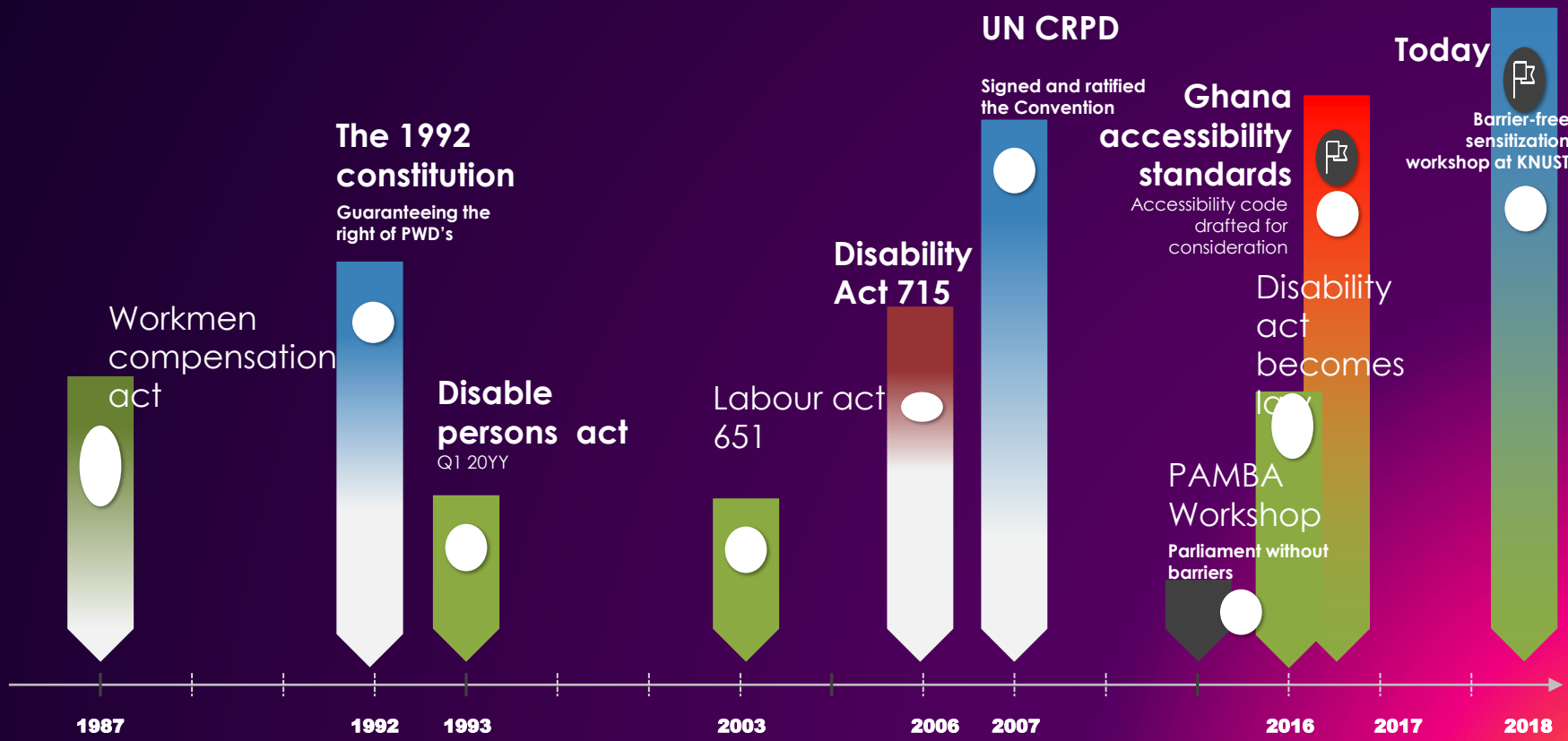- intellectual — 12
- emotional — 14
- others — 7

❑ **3.5 million of the 29 million people are classified as PwD's**

❑ **PwD's continue to struggle to access the built environment**

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Disability timelines in Ghana

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Case studies -1

Singapore

- Technology driven smart city approach
- Rely on huge government budget
- Accessibility of environments by PwD's highly successful

Tel aviv, Isreal

- smart city approach driven by local citizens
- Relies on small budget targeted at specific needs
- local start ups encourages competition and active participation of all

University of Johannesburg

- Smart University initiatives include: smart energy systems, smart transport, smart info and accessibility through assistive devices and mobile applications and WIFI.
- Provision of disability centre to provide support for PwD's on campus

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methodology

- **Case study of KNUST Campus**
- **104 respondents with 100 successfully validated**
- **Mixed sample – students, staff**
- **Semi-Structured questionnaire, physical and photographic surveys adopted**
- **Six pillars of smart city ()were used to rank the university's performance**

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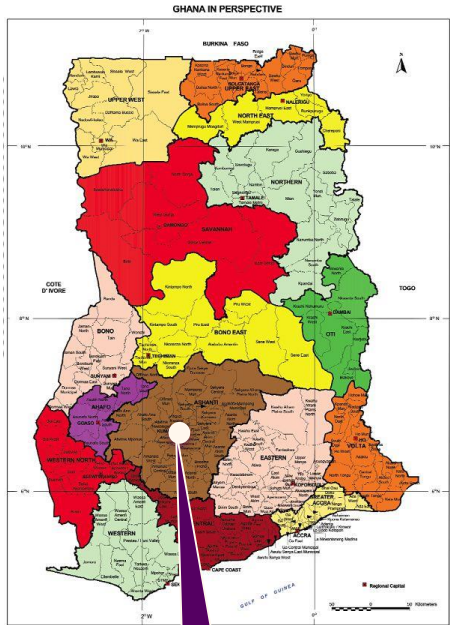
paradigm worldview
Post positivism / pragmatism

methodological approach
mix methods design with theoretical perspective on case study

Data Collection Techniques
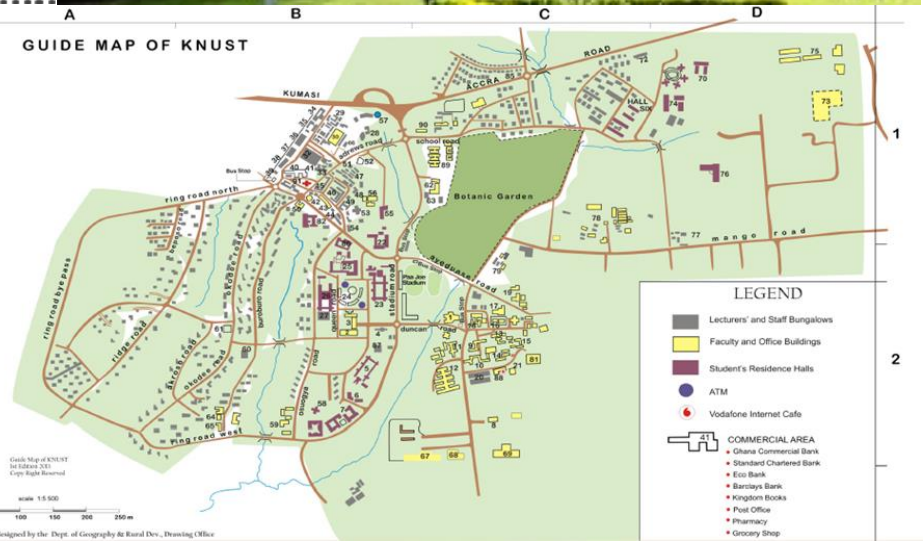Literature studies, Interviews, surveys, checklists, instruments

Profile of study area
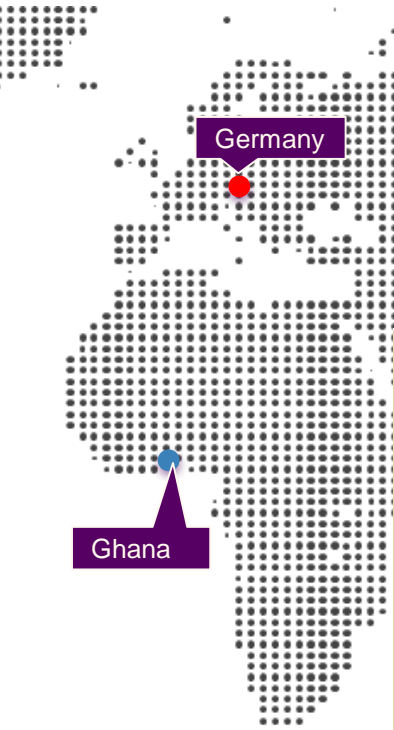
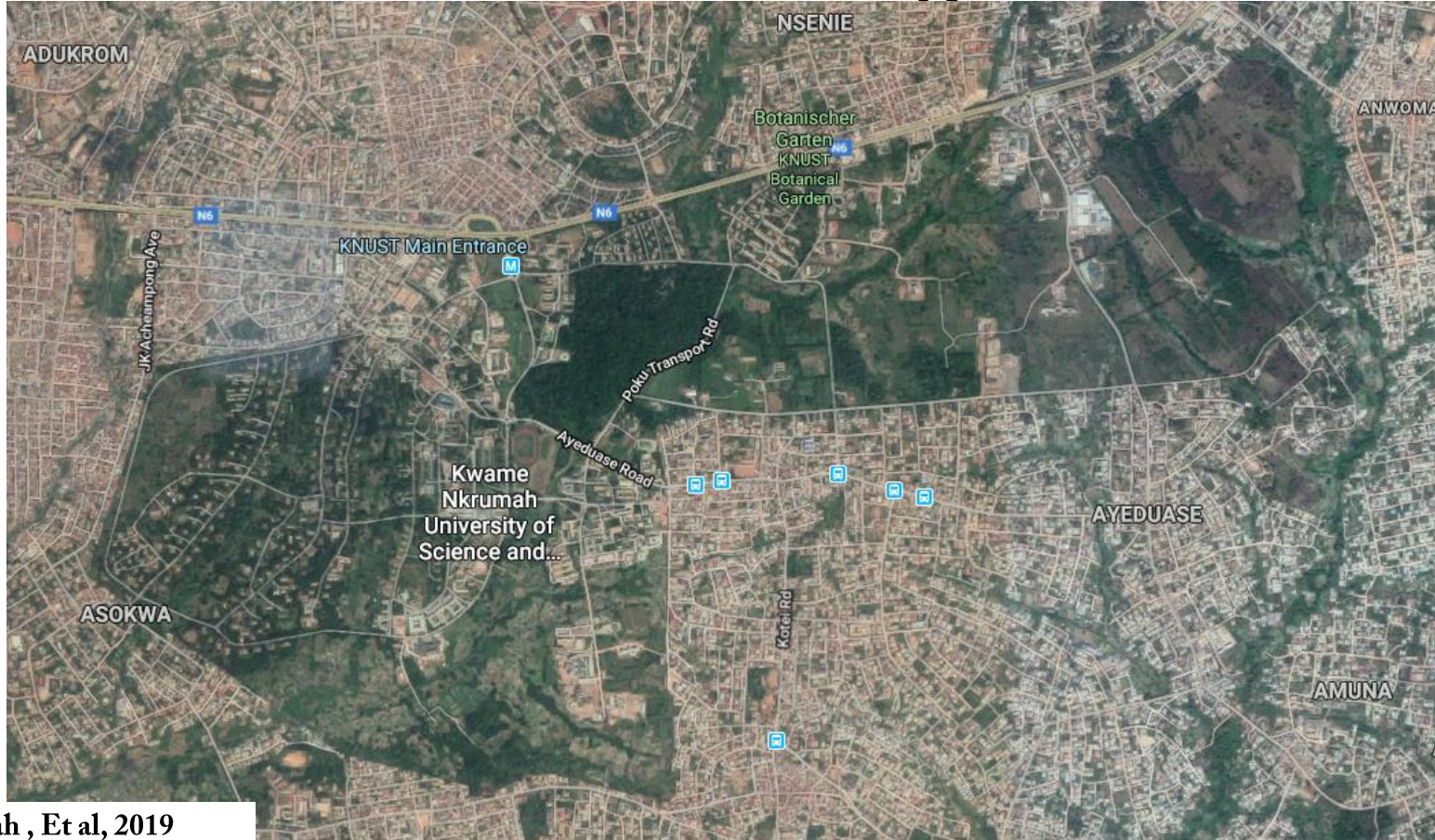**Danquah , Et al, 2019**
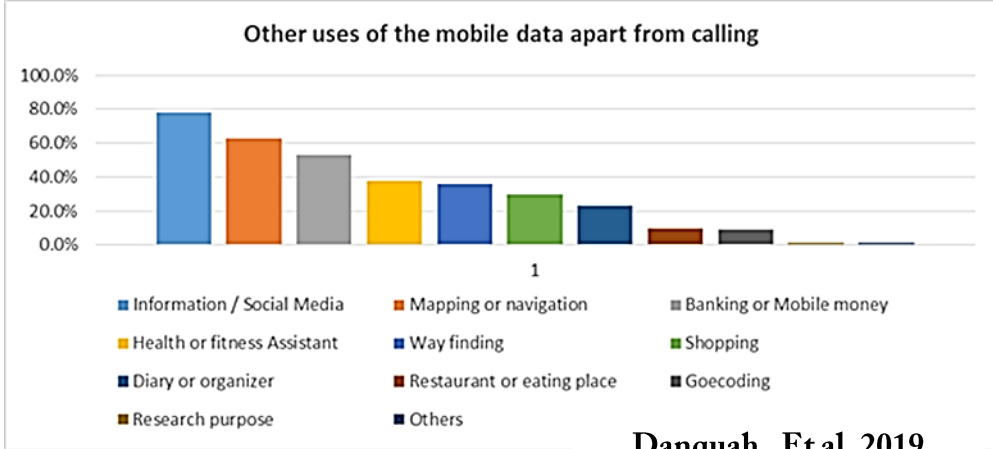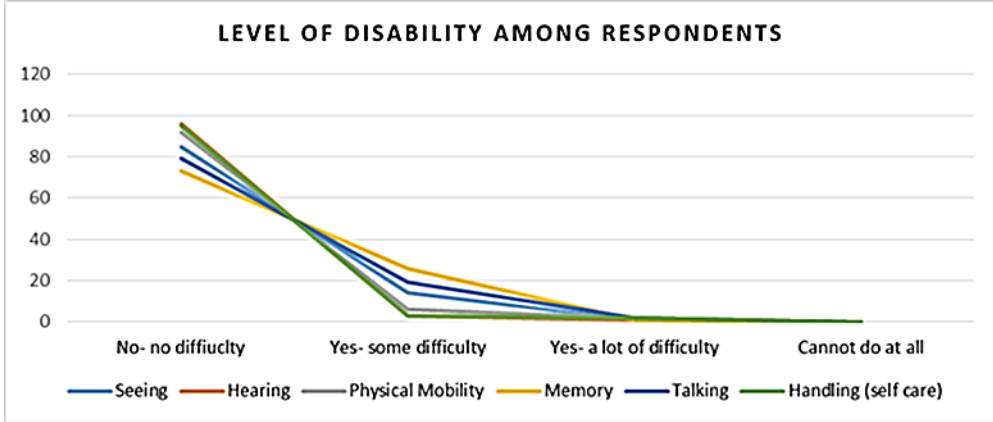
KNUST, Ghana

> 45,000 population
>3,000 staff
>6 square miles

>6 colleges and 24 faculties
>Ranked 2nd and 20th in Ghana and Africa respectively
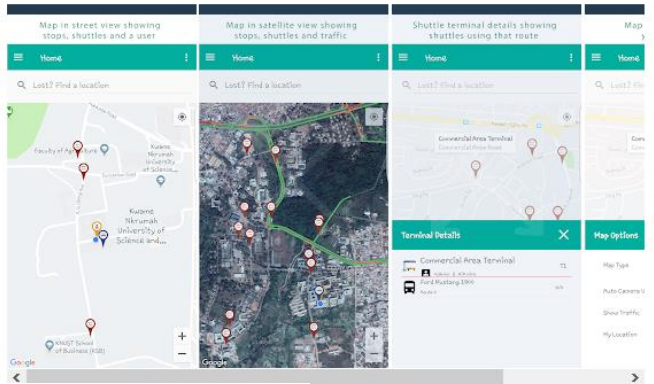
KNUST and its surroundings

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Results and Discussions

LEVEL OF DISABILITY AMONG RESPONDENTS

Seeing — Hearing — Physical Mobility — Memory — Talking — Handling (self care)

No- no diffiuclty | Yes- some difficulty | Yes- a lot of difficulty | Cannot do at all

Other uses of the mobile data apart from calling

- Information / Social Media
- Mapping or navigation
- Banking or Mobile money
- Health or fitness Assistant
- Way finding
- Shopping
- Diary or organizer
- Restaurant or eating place
- Goecoding
- Research purpose
- Others

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Smart campus initiatives

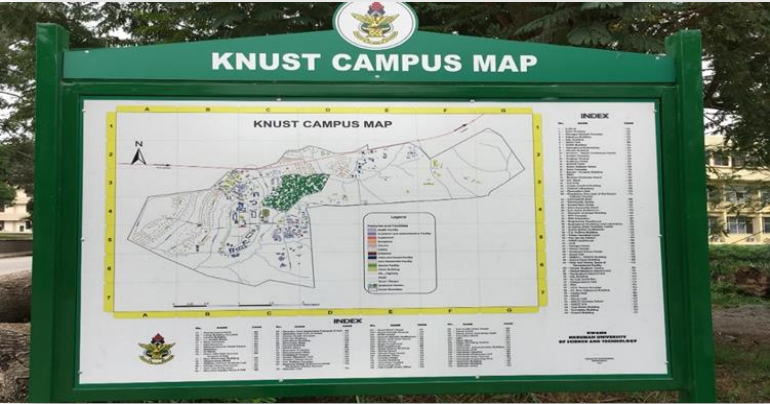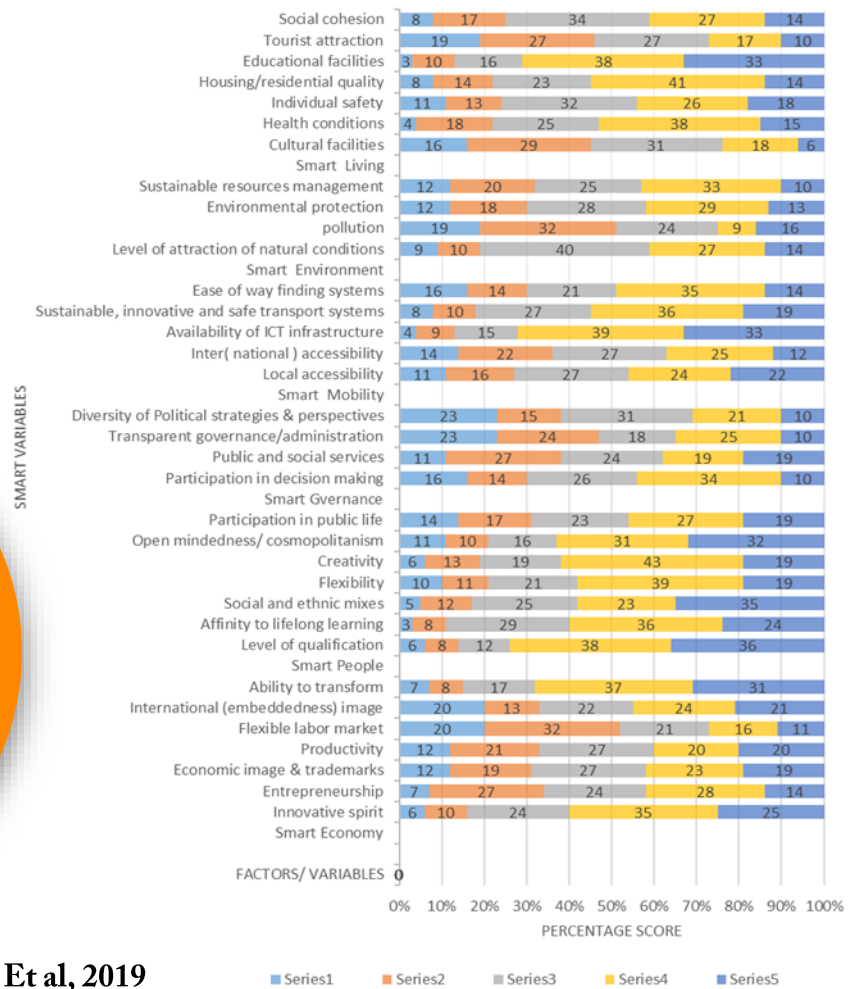
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Results and Discussions

Results and Discussions

PERFORMANCE OF UNIVERSITY CAMPUS ON CHARACTERISTICS OF SMART CITIES

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Results and Discussions
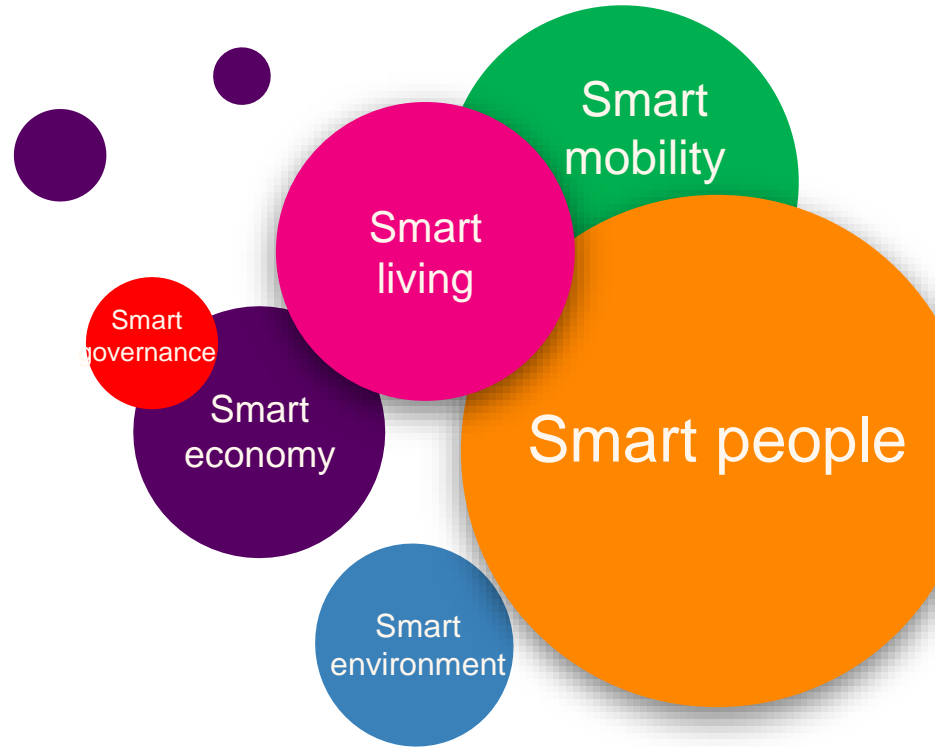
ITEM	FACTORS	MEAN SCORE
1	Smart Economy	63.70
2	Smart People	73.20
3	Smart Governance	56.10
4	Smart Mobility	68.60
5	Smart Environment	62.20
6	Smart Living	65.40
OVERALL SCORE		64.80

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Conclusions

1. PwD are present and continue to struggle to access and use facilities on campus

2. Majority of respondents agree that smart city initiatives will improve a barrier free campus

3. KNUST recorded an average performance on smart characteristic features

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Recommendations

⊗ A critical look should be looked at data gathering and disability documentation for effective policy guidance on accessibility.

⊗ A smart simplified accessibility audit tool must be developed for easy application and implementation of barrier free environments

⊗ A holistic approach should be taken to harmonise the various smart city initiatives on campus for a barrier free environment

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THANK YOU !

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