TEMITOPE A. OGUNYOKU, PH.D.

Professional Profile

I am a research leader who empowers teams to develop innovative solutions that address basic human needs with empathy and analytical evidence.

Accomplishments

IMPROVED THE TECHNICAL AND COMMERCIAL DEVELOPMENT OF NEW SANITATION SYSTEMS WITHIN NIGERIA AND KENYA

A major donor organization was seeking to commercialize their novel sanitation systems in low-income countries. I led a multicultural team to conduct in situ qualitative research (i.e., contextual interviews, focus groups, participatory design, observation) with potential users across two different countries. We identified and delivered user, technical, and environmental requirements to the donor organization's partners who previously lacked the data required to develop effective sanitation systems in the targeted markets. *(See report)*

UNCOVERED UNTAPPED VALUE CHAIN OPPORTUNITIES WITHIN SUB-SAHARAN AFRICA

Most development projects in sub-Saharan African countries lack a feasible economic plan to be sustainable. I developed a research strategy that addressed the lack of capital to sustain waste management. I established a partnership between IBM Research and a prominent Kenyan sanitation service provider and led a team to analyze the operation data to derive opportunities of their value chain. Specifically, metadata-analysis led to the recommendation to sell their waste by-product to untapped agricultural markets to increase revenue.

CONNECTING HUMAN NEEDS TO TECHNOLOGY WITHIN EAST AFRICA

A key goal for IBM Research | Africa is to address developmental challenges specific to Africa. IBM Research | Africa's lab solutions all contain deep technical foundation but lacked connection to the needs of the average African consumer. I developed a process to systematically determine user needs and iteratively facilitate constant feedback from users during development. This methodology connects research teams to build user empathy and the required evidence to develop meaningful solutions. *(See article)*

CONNECTING LABORATORY KNOWLEDGE TO PEOPLE TO IMPROVE QUALITY OF LIFE IN LOW-INCOME COUNTRIES

The storage, removal, transport, and disposal/reuse of fecal sludge is a big challenge for communities in low-income countries due to a lack of public services. I researched and developed a novel treatment process that disinfected fecal sludge within shared pit latrines for safe disposal. This innovation was deployed in Nairobi and was able to disinfect the fecal sludge ~1000 times faster than a traditional treatment method. *(See publication and article)*

DISCOVERED EVIDENCE THAT HELPED INFORM THE DECISION TO BAN ANTIMICROBIAL CHEMICALS IN PERSONAL CARE PRODUCTS

It was discovered some bacteria was developing a resistance to antimicrobial chemicals found in liquid soap, toothpaste, and cleaning products. My research focused on the fate and concentration levels of these chemicals in the environment. It was determined that the majority of antimicrobials chemicals ended up at wastewater treatment plants (WWTPs) and did not degrade easily during treatment. High concentration of the chemicals were detected in the waste by-product that was used as a soil conditioner. In collaboration with a colleague, we discovered that antimicrobial chemical had a negative effect on some soil microorganisms. *(See publication 1 and 2)*

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Citizenship: USA, Nigeria
Residency: South African Permanent Resident

Education

University of California, Davis
Ph.D. in Civil & Environmental Engineering, 2011
Dissertation Title: *"The Determination of the Fate of Triclocarban and Triclosan in Biosolid Processing Systems, and Soils Amended with Biosolids and Biochar."*

University of California, Davis
M.Sc. in Civil & Environmental Engineering, 2008
Master Report Title: *"The Implementation of Sustainable Point-of-Use Water Treatment and Sanitation Systems in Rural Uganda."*

University of California, Riverside
B.Sc. in Chemical Engineering, 2005

Engineer-In-Training
California/ 2005/EIT 123593

Skills

- Data analysis
- Project planning and management
- Usability testing
- Contextual inquiry
- Human-Centered Design
- Water and wastewater treatment analysis
- Soil and sewage sludge characterization (i.e., physical, chemical, and microbial)
- Extraction of trace contaminants in the environment

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Experience

Researcher| March 2018 - Present
Dimagi

- Grant planning and development of the National Institutes of Health (NIH) Small Business Innovation Research (SBIR) Program
- Support the design, execution, and analysis of research projects across the different business units (i.e., South Africa, India, USA, West Africa)

Independent Research Consultant| May 2017 – Present
Sub-Saharan Africa

- Working with international organizations, multinational corporations, and businesses to incorporate a user-centered approach in their development of services and technologies
- Develop research, insights, and strategy point of view

Research Scientist| Aug. 2013 – Mar. 2017
IBM Research| Africa, Kenya

Design Thinking Facilitator/User Researcher

- Supported healthcare, public safety, and financial inclusion to apply design thinking and agile methodologies

Project Leader

- Led a team to develop a system that used advanced analytics to analyze public safety security data and contextual information, in real-time, helping to identify, qualify, and corroborate security incidents
- Led cross-functional teams, including software development and engineering to design, test, and deploy mobile applications

Postdoctoral Researcher| Oct. 2011 - Mar. 2013
University of California, Berkeley, Civil & Environmental Engineering

- Modeled and experimentally determined the inactivation rates of pathogenic indicator organisms in human excreta using a newly developed disinfection approach
- Designed and fabricated a low-cost waterless toilet for high-density urban communities in low-income countries

Graduate Student Researcher| Sept. 2005 - Oct. 2011
University of California, Davis, Civil & Environmental Engineering

Doctoral Research

- Researched, designed, and executed experiments to determine the fate of antimicrobial chemicals in wastewater and agricultural systems

Master Research

- Iteratively constructed and tested point–of–use water, sanitation, and hand washing systems for a community in Uganda who lacked access to basic services
- Managed the implementation of water, sanitation, hygiene, cook stoves, and composting technologies in Uganda

United Nations Intern| Jan. 2009 - Mar. 2009
United Nations' Dept. of Economic and Social Affairs. Division for Sustainable, Environmental Security Branch

- Investigated and produced a comprehensive report with a detailed analysis and recommendations of environmental strategies for countries emerging out of conflict

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Publications

Patents and peer-reviewed journal articles are on my personal website: www.taogunyoku.com/publications/

Awards (selected)

- IBM Manager's Choice Award (Jun. 2014, Mar. 2016, Nov. 2016)
- Bill and Melinda Gates Foundation Supplemental Funding ($30,000 USD) for the Reinvent the Toilet Fair (May 2012)
- University of California, Davis Department of Civil and Environmental Engineering Farrer-Patten Fellowship for Academic Achievement (May 2011)
- Outstanding Student Paper Award at the 17th Annual International Sustainable Development Research Conference at Columbia University (May 2011)
- 1st place platform presentation at the 19th Annual NorCal SETAC Meeting (May 2009)
- Grant Recipient of the 2005–2006 Environmental Protection Agency (EPA) People, Prosperity, and the Plant Design Competition for Sustainability ($10,000 USD)
- Grant Recipient of the 2005–2006 Metropolitan Water District Southern California World Water Forum Program ($10,000 USD)
- Recipient of the 2004–2005 Ford Motor Company Scholarship