

HURIA

Journal of The Open University of Tanzania

Vol 32 (1), 2025 ISSN 0856 6739



The Open University of Tanzania
P.O. Box 23409,
Dar es Salaam, Tanzania
Fax: +255 22 2668759
<http://www.out.ac.tz>

CHIEF EDITOR

Prof. Deus D. Ngaruko

The Open University of Tanzania

MANAGING EDITOR

Dr Msafiri Njoroge

The Open University of Tanzania

TECHNICAL EDITOR

Ms. Brenda Mallinson

Rhodes University, South Africa

EDITORIAL BOARD

Prof. Elinami Swai

The Open University of Tanzania

Prof. Jephias Mapuva Bindura

*University of Science Education,
Zimbabwe*

Prof. Rotimi Ogidan

National University of Nigeria

Prof. Alexander Makulilo

University of Dar es Salaam, Tanzania

Prof. Happy Kayuni

University of Malawi

Dr. Thomas Molony

University of Edinburgh, UK

Dr. Joram Tarusarira

*University of Groningen, The
Netherlands*

Dr. Felix Masiye

University of Zambia

Dr. Oscar Otele

University of Nairobi, Kenya

ADVISORY BOARD

Prof. Ezra K. Martim

Egerton University, Kenya

Prof. Uswege Minga

Tumaini University, Tanzania

Dr. Moses Khisa

North Carolina State University, USA

Dr. Ruth Carlitz

University of Gothenburg, Sweden

Dr. Bossmann Asare

University of Ghana

Dr. Steve Kerr

International School of Muscat, Oman

TECHNICAL TEAM

Mr. Ezra Kaimukilwa

Mr. Tom Kilumbi

Mr. Augustine Kitulo

The Open University of Tanzania,
Kawawa Road, Kinondoni Municipality,
P. O. Box 23409,
Dar es Salaam, Tanzania

Tel: +255 222 668 835, 222 668 820

Fax: +255 222 668 759

E-mail: huriajournal@gmail.com

Website: <http://www.out.ac.tz>

© The Open University of Tanzania 2025

All rights reserved.

NOTE

Opinions expressed in this journal are those of the authors and not necessarily those of the publishers – The Open University of Tanzania.

Editorial Note

This issue of Huria Journal demonstrates the deepening role of Tanzanian scholarship in addressing both national challenges and global priorities articulated through the United Nations Sustainable Development Goals (SDGs). The contributions illustrate how research across education, technology, environment, and governance can collectively advance sustainability, equity, and resilience in society.

The first article “Libraries and Librarians in Open Science Adoption: A Reflection from Tanzania” highlights the transformative role of libraries in expanding access to knowledge and fostering collaborative research. By promoting openness, transparency, and equity in information access, the study strongly aligns with SDG 4 (Quality Education) and SDG 9 (Industry, Innovation, and Infrastructure), while also strengthening SDG 16 (Peace, Justice and Strong Institutions) through the promotion of trustworthy knowledge systems.

In the second article “Determinants of Information Systems (IS) Success within Civil Society Organizations (CSOs)”, the author emphasizes the role of robust information systems in enhancing efficiency and accountability in CSOs. This work contributes to SDG 16 (Peace, Justice and Strong Institutions) and SDG 17 (Partnerships for the Goals) by showcasing how digital systems strengthen governance, foster transparency, and enhance collaborative action for development.

The third article “Influence of Participatory Monitoring and Evaluation on Sustainability of Water Projects in Rorya District Council” engages with community-based approaches to water project management. Its insights directly link to SDG 6 (Clean Water and Sanitation) by promoting sustainable access to safe water and SDG 11 (Sustainable Cities and Communities) by underscoring participatory approaches that ensure community ownership and long-term impact.

In the fourth article “Accessibility Analysis of e-Government Websites in Tanzania using Web Content Accessibility Guidelines 2.2”, the study evaluates inclusivity in public digital services. This aligns with SDG 10 (Reduced Inequalities) by advocating for equitable access for people with disabilities and SDG 16 (Peace, Justice and Strong Institutions) through strengthening transparency and citizen engagement in governance.

The fifth paper “The Influence of Ability Grouping on Students' Learning Experiences and Perceptions in the Selected Public Secondary Schools in Tanzania” examines how pedagogical strategies affect student outcomes. Its findings are vital for SDG 4 (Quality Education), emphasizing inclusive and equitable teaching approaches that maximize learning opportunities for diverse groups of learners.

In the sixth article “The Influence of Ethical Practices on the Organizational Performance: A Special Reference to Ruaha Catholic University”, the authors underscore the importance of ethical conduct in institutional success. The work contributes to SDG 16 (Peace, Justice and Strong Institutions) by highlighting integrity and accountability as drivers of organizational effectiveness and societal trust.

The seventh article “Effect of Adolescents' Demographic Factors on Reproductive Outcomes Affecting Teenage Pregnancy in Momba District, Tanzania” examines the social determinants influencing teenage pregnancy. It aligns closely with SDG 3 (Good Health and Well-being) and SDG 5 (Gender Equality), calling for targeted interventions to promote adolescent health and empowerment.

In eighth “The Effective Contracts in Ground Handling: Ground Handling Services in Tanzanian Context”, the authors analyze contractual efficiency in aviation services. This contributes to SDG 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation and Infrastructure) by emphasizing fair labor practices, efficient service delivery, and economic competitiveness in the aviation sector.

By addressing barriers and highlighting opportunities for parental involvement, the ninth article “Perceptions and Involvement of Parents over Girls' Secondary Education in Kisarawe District – Tanzania” examines community attitudes toward girls’ education. It contributes to SDG 4 (Quality Education) and SDG 5 (Gender Equality), promoting empowerment through education.

The tenth paper “Strategic Training Needs Assessment in Tanzania's Public Sector: Insights from the Addie Model at NHIF” emphasises capacity building for institutional performance. This aligns with SDG 8 (Decent Work and Economic Growth) and SDG 16 (Peace, Justice and

Strong Institutions) by strengthening public sector efficiency and human resource development.

Linked to SDG 16 (Peace, Justice and Strong Institutions) by promoting restorative justice and effective reforms within the criminal justice system, the eleventh paper “Community Service Orders and Prison Congestion in Tanzania” critically assesses alternatives to incarceration in addressing prison overcrowding.

Finally, in the twelfth article “Accessibility of Marine Tourism Resources and Community Livelihood in Tanzania: A Case of Bagamoyo and Kilwa Coastal Communities”, the study demonstrates how sustainable tourism supports local economies. This research aligns with SDG 14 (Life Below Water) and SDG 8 (Decent Work and Economic Growth) by emphasizing responsible use of marine resources to enhance livelihoods and preserve biodiversity.

Together, these scholarly contributions provide a multidimensional understanding of development challenges and opportunities, offering research-based solutions that resonate with the SDGs. They remind us that knowledge, when translated into policy and practice, is an essential driver of sustainability, inclusivity, and progress at both local and global scales.

As Chief Editor, I acknowledge all contributing authors for their dedication and scholarly excellence. Special thanks go to the peer reviewers for their insightful critiques. We invite our readers to engage with these papers critically and constructively as we continue the collective journey towards the achievement of SDGs come 2030.

Prof. Deus D. Ngaruko
Chief Editor,
HURIA Journal
The Open University of Tanzania

Contents

Editorial Note	iv
Libraries and Librarians in Open Science Adoption: A Reflection from Tanzania <i>Athumani S. Samzugui</i>	1
Determinants of Information Systems (IS) Success within Civil Society Organizations (CSOs) <i>Jaraj S. Kikula</i>	37
Influence of Participatory Monitoring and Evaluation on Sustainability of Water Projects in Rorya District Council <i>George Faraja and Harrieth Mtae</i>	60
Accessibility Analysis of e-Government Websites in Tanzania using Web Content Accessibility Guidelines 2.2 <i>Catherine G. Mkude</i>	79
The Influence of Ability Grouping on Students' Learning Experiences and Perceptions in the Selected Public Secondary Schools in Tanzania <i>Zamzam I. Nyandara</i>	99
The Influence of Ethical Practices on the Organizational Performance: A Special Reference to Ruaha Catholic University <i>Florence Nakawunde, Bukaza Chachage and Janeth Isanzu</i>	116
Effect of adolescents' demographic factors on reproductive outcomes affecting teenage pregnancy in Momba District, Tanzania <i>Harrieth Mtae</i>	135
The Effective Contracts in Ground Handling: Ground Handling Services in Tanzanian Context <i>Omar Tuwa and George John Nyaronga</i>	164
Perceptions and Involvement of Parents over Girls' Secondary Education in Kisarawe District – Tanzania <i>Masakija John Kafullah, Jalia Mohamed Muna and Radhia Vicent Shaidi</i>	179
Strategic Training Needs Assessment in Tanzania's Public Sector: Insights from the Addie Model at NHIF <i>Mariam Mustafa Kuhenga and Mohammed Bakari</i>	194
Community Service Orders and Prison Congestion in Tanzania <i>Alexander Ndibalema</i>	215

Accessibility of Marine Tourism Resources and Community Livelihood in Tanzania: A Case of Bagamoyo and Kilwa Coastal Communities <i>Thereza Israel Mugobi</i>	233
---	-----

Libraries and Librarians in Open Science Adoption: A Reflection from Tanzania

Athumani S. Samzugi

Department of Media and Library Studies

The Open University of Tanzania

Athumani.samzugi@out.ac.tz

<https://orcid.org/0009-0000-4780-0310>

Abstract

The study aimed to establish the role of libraries and librarians in fostering open science adoption in Tanzania. The research objectives were to examine the roles of libraries and librarians in OS adoption; to determine the challenges OS adoption presents to libraries and subsequently, propose solutions. Structured questionnaires were employed for data collection from 113 librarians. The results show 81.1% librarians were familiar with Open Science, while 18.9% indicated otherwise. This finding signals the need for awareness creation, advocacy campaigns, training, and seminars not only to familiarise the librarians with the term OS but also to adopt it. The identified OS benefits include broadening access to scientific data and research publications (57.5%); promoting collaborative research through ICT tools (34.5%); enhancing public research consumer choices (31.9%); raising productivity under tight budgets (31%); and promoting citizens' trust in science (22.1%). Strategies for enhancing OS include institutional policies (66.4%), funding (57.5%), building requisite infrastructure (55.8%), and capacity-building (50.4%). The paper concludes that Tanzania needs open science to broaden access to scientific publications and data, considering the tight budgets allocated to subscriptions for paywall learning resources. Implicitly, libraries should adopt and invest more in the OS for better results despite the teething problems.

Keywords: *Open Science; adoption; libraries; librarians; Tanzania*

INTRODUCTION

Since time immemorial, libraries have served as pivotal social institutions as gateways to knowledge for the community (White, 2012). Indubitably, libraries serve as places for fostering interaction between humans and information. Libraries and librarians also act as bridges between different actors and stakeholders. Richard, Koufogiannakis, and Ryan (2009) asserted that an important tenet of librarianship is the ready, equal, and

equitable universal accessibility of information. Based on this tenet, modern libraries are built upon this foundation, which is also the essence of Open Science (OS). It tallies with Redkina (2022), who explains that traditionally, libraries aimed at supporting, presenting, and promoting the results of scientific research in a unified information ecosystem of knowledge. As a result, libraries collect, process, organise, and disseminate information to meet information users' needs (Ari, 2017). They also offer resources and services that create opportunities for learning, support literacy, and education in addition to helping to shape new ideas and perspectives central to bolstering creativity and innovation, hence guaranteeing access to knowledge (White, 2012).

The contemporary era of change has irreversibly altered the structure and how information is generated, processed, and accessed by the public. One of the factors accelerating such changes includes Open Science, or simply OS, which has globalised information through gateways. OS is an umbrella term based on the principle of openness and transparency of the whole research cycle, aimed at fostering sharing and collaboration in open access, open science infrastructure development, and open evaluation. According to UNESCO (2021), "open science" comprises four aspects: open scientific knowledge, open science infrastructures, open engagement of societal actors, and openness to knowledge diversity (Zarghan et al., 2023). Subsequently, OS has grown into a global strategy for solving the problem of accessibility to information by making scientific research from all fields available to everyone for the benefit of scientists and society as a whole (OECD, 2015; UNESCO, 2023; Zarghan et al, 2023). In other words, OS enhances the core functions and mission of the libraries that revolve around finding, collecting, organising, evaluating, disseminating, and preserving information (Tzanova, 2020).

Open practices entail open access to research publications, data sharing, open notebooks, transparency in research evaluation, open peer review, reproducibility of research, transparency in methods, open-source code, software, and infrastructure, citizen science, and open educational resources (Brinken, Mehlberg, & Heller, 2018). The OS practices strengthen and broaden the core functions of libraries and librarians in the globalisation of information. In such under these conditions, the emergence of open science has established a new global hub that facilitates the more reliable and open utilisation of scientific data, information, and outputs (open data) with active participation from all

pertinent stakeholders (open to Society). In terms of OS, its tenets centre on heightened research repeatability, accountability, cooperation, reuse, and transparency in addition to seeking to enhance the calibre and dependability of research by utilising ideas through sharing, inclusion, justice, and equity (Brinken, Mehlberg, Heller, 2018; Makoni, 2023; Zarghan et al, 2023).

Significantly, the roles of libraries and librarians cannot be ignored following the adoption of OS. In this regard, one of the responsibilities of trained professionals in the information sector is ensuring that their clients have access to various sources of information without any restrictions through collaborations and the sharing of information. Smith and Veldsman (2018) proffer that librarians ensure citizens and researchers have access to the much-needed quality and reliable information to advance research. Moreover, Li and Weunyn (2023) reaffirm the important roles libraries play in the cycle of information and knowledge generation, exchange, and dissemination through resource management, training, disciplinary support, and academic evaluation. However, the effective contribution of libraries and librarians in OS depends on the training available to engender its full utilisation. OS provides an opportunity for libraries and librarians to broaden the horizon of knowledge through affordable access to scientific research in all fields vital in harnessing innovations and spurring social development without restrictions. With an emphasis on reproducible, cycle-free, inclusive, and open research, OS aims to address the demands of the global community in the twenty-first century by promoting sharing and cooperation across the entire research cycle (Leonelli, 2023; Percic, 2021; Morais et al., 2021).

In the context of Tanzania, however, the main issue revolves around how libraries and librarians have responded to the OS adoption as a global movement, whose adoption has been gradual. David et al.'s (2022) study on knowledge and practices of OS among scholars and researchers in Tanzania has attested. In their study on awareness of open data among researchers in selected public universities in Tanzania, Buhomoli and Muneja (2022) found determinants of OS to include open data readiness among scholars based on their experience. Muneja (2023), on his part, looked at the OS and policy interface from the perspective of Tanzania. However, these relevant and informative recent studies paid little attention to the role of libraries and librarians in the adoption of OS. This

limitation justified the conducting of this study, which aims to explore the rich but unexplored field of libraries and librarians about the adoption of OS in Tanzania. Thus, local research must be done in this field rather than extrapolating results from studies conducted abroad to the Tanzanian context. In this regard, the following specific research objectives guided the research: (a) examining the role of libraries and librarians in OS adoption; (b) determining the challenges OS adoption presents to libraries and, subsequently, proposing solutions. To achieve these specific objectives, the study raised the following research questions: What is the role of libraries and librarians in the adoption of OS? And what are the challenges faced in OS adoption, and how can they be overcome?

LITERATURE REVIEW

Role of libraries and librarians on OS

Literature abounds with substantial evidence on the crucial role of libraries and librarians in open science adoption. For instance, Roche (2022a) asserted that libraries constitute a component of the shift in OS when it is occurring systematically and comprehensively; conversely, when it is not, the shift is slower and more restricted. It seems that the open scientific movement, in all of its manifestations, is changing the information landscape and pointing libraries in a positive direction. In the same manner, libraries have always been crucial in the cycle of knowledge creation, exchange, and distribution (Redkina, 2021). By the same token, libraries support Open Science through Open scholarship, open access, open data, open educational resources, and open-source software in preserving, curating, publishing, and information infrastructural development that allow researchers to share, use, and reuse research output (Cobblah, 2022). Another source of support is the advocacy and promotion of open science inside institutions that libraries and librarians undertake. In addition, they are working to increase faculty utilisation of open science resources, build capacity in open science, and support member institutions in setting up open journals and information retrieval systems. These activities are all part of their information literacy skill development for optimal use of open-access publications (Cobblah, 2022).

The studies by Li and Weunyn (2023), Tang and Hu (2019) found that, in the context of open science, libraries have redefined or expanded their role by reinventing themselves and expanding their traditional information services as well as their educational and mediation functions.

In general, libraries and librarians play important roles in OS by creating and advancing institutional research and knowledge transparency, advancing the creation of open scientific policies, and setting up and managing services and infrastructure (Pinfield & Cox, 2014; Tang & Hu, 2019; Wilson et al., 2019; OECD, 2015). The international community has also recognised the importance of libraries in open science, with the Association of Research Libraries (ARL) and the Canadian Association of Research Libraries (CARL) (2021) reaching a consensus on the role of research libraries in the research data ecosystem. Besides, the Organisation for Economic Co-operation and Development (OECD) aptly notes:

Libraries have become active players in the preservation, curation, publication, and dissemination of digital scientific materials, in the form of publications, data, and other research-related content. As a result, libraries and repositories constitute the physical infrastructure that allows scientists to share, use, and reuse the outcomes of their work, and they have been essential in the creation of the Open Science movement (OECD, 2015).

Kennedy (2019) further describes research libraries as “catalytic leaders in a society in constant change,” and that one of the new roles in an OS environment is for both librarians and users to engage in data science education. Meanwhile, Redkina (2021) mentions that organising open science seminars, workshops, conferences, and continuing education programmes by a library to raise awareness of open science concepts, terms, and models is necessary for promoting research results. Additionally, libraries actively participate in developing funding agency policies, data sharing principles, open science tools and resources, research data management, open science-compliant open access publishing skills, encouraging the use of digital infrastructures, and, ultimately, helping to implement the open science paradigm (Redkina, 2021).

Suri (2018), Ayris and Ignat (2018) reported that the involvement of libraries and librarians in OS takes the form of teaching, education support, promotion, advocacy, communication, liaison, and personal development. Moreover, as Glusker and Exner (2018) illustrate, librarians provide research support through “digitization, metadata creation, scholarly communications, and data management as well as providing specialized direction to these traditional skills.” Additionally, libraries

have incorporated open science into their instructional programs as a subject for training researchers. OECD (2015) and Saarti (2020) postulate that the library has assumed a leading and active role in advocacy and training on OS issues within the university.

Furthermore, OS-related issues have been incorporated into the curriculum of library courses for both undergraduate and PhD students. Libraries and librarians also play an active role in educating the public about research support and open scientific services, which include publishing, research data management, and research metrics that advance open science, along with providing training and advice to researchers. In addition, librarians support open science communication through various channels such as committees, social media, websites, and more. They participate in developing open science strategies, infrastructure, and guidelines at both national and institutional levels, while also training and advising researchers and promoting the library's research support and open science services (Saarti et al., 2020). Conversely, studies by Bieraugel and Neill (2017) and Sewell and Kingsley (2017) indicate that libraries have the skills and expertise to assist researchers with their research needs. However, as Gema Bueno de la Fuente (2016) cautioned, for these roles to be effective, libraries must develop new processes and skills to support open science.

Ogunbeni et al. (2018), Ghosh (2009), and Roche (2022) affirm that libraries play a key role in promoting open science through advocacy, building institutional data repositories, and serving as hubs for scientific collaboration. They manage the life cycle of publications and data and publicize research work. Additionally, they raise awareness of researchers' work, facilitate and manage infrastructures and practices designed to advance Open Science, train trainers, teach library science, and integrate OS into the portfolio of institutional repositories. Other roles of librarians include locating, collecting, organizing, evaluating, and disseminating information, advocating, promoting open science/open access, and creating.

Giarlo (2005) emphasized the importance of libraries in promoting open science and open access through advocacy and dissemination. They should take the lead, viewing open access as their responsibility to make information easily reachable for those aiming to transform their lives, expand their knowledge, or foster innovation. Additionally, libraries and

librarians play crucial roles in designing specialized tutorials and providing refresher training in thematic workshops for researchers and academics, who need to develop new information skills under the OS movement (Sanches, 2019). Abdullah (2017) notes that libraries and librarians are responsible for digitizing their analogue collections, making them accessible online and in the public domain, managing digital libraries with open collections, providing valuable data openly, advocating for the benefits of open science, managing institutional repositories with open access content, and serving as hubs for scientific collaboration. Also, academic libraries are expected to enhance advocacy efforts and expand data repositories. They are increasingly involved in activities like promoting open science, building institutional data repositories, and serving as centers for collaboration.

Academic libraries continue to take steps to become key players in promoting open science through advocacy, developing institutional data repositories, and serving as centers for scientific collaboration, among other roles. Academic libraries must do more in advocacy and data provision. They are increasingly involved in advancing open science by engaging in advocacy, building institutional data repositories, and functioning as hubs for scientific collaboration. However, they still need to enhance their efforts in advocacy and data sharing.

Challenges libraries and librarians face in adopting OS

Despite the enormous potential that open science offers in the globalization of knowledge by making scientific outputs and processes open, transparent, and reproducible without restrictions, there are still challenges to achieving it. These include stable internet platforms, reliable electricity, high-performance computing centers, policies, guidelines, and a lack of awareness of the concept of open science, which need to be addressed holistically (Patterton et al., 2018; O'Carroll et al., 2017; Chigwada et al., 2017). The issues related to adequate human and infrastructural capacity in ICT to handle the complexity of open science and the institutionalization of open science remain critical for its adoption (Allen & Mehler, 2019; Morais et al., 2021; Okoth et al., 2023). Saarti et al. (2022), citing the experience of the University of Eastern Finland library, reported that the library often lacks resources, authority, or competence to cover all aspects of open science in research and education. Moreover, it has been shown that although all researchers

understand the concept of research funding, many are still unfamiliar with the notion of open science.

Also, Lehto et al.'s (2021) study conducted in Finland acknowledged that open science has become a significant movement, but obstacles still hinder its full implementation. These include legal issues, agreements that restrict data mining, and the absence of a self-archiving exception in national legislation. Challenges to adopting OS in Macao, for example, include a lack of understanding of open science and its value within communities, insufficient investments in supporting infrastructure and skills, as well as the need for new skills and knowledge among library staff, support from library leadership, and legal issues and policies. Similarly, in Africa, Mwelwa et al. (2020) and Onie (2020) identified key barriers to promoting OS as the absence of legal frameworks, policies, and guidelines, a lack of policy coherence, alignment, and harmonization toward achieving openness. Meanwhile, a study in Colombia, South America, mentioned factors such as lack of financial resources, limited awareness of the potential benefits of open science, and insufficient motivation and incentives as challenges to effective OS adoption.

It is evident from reviewing relevant literature that libraries and librarians are essential to OS. However, without infrastructure, finance, and a supporting policy— all of which are essential prerequisites for OS adoption— these tasks are difficult to accomplish (Morais et al., 2021). Even so, the majority of the research on whether libraries and librarians are important in OS has been conducted outside of Tanzania. Chiware (2020) contends that the slow development of digital infrastructure hampers the scaling up of OS, especially in sub-Saharan Africa. Similarly, studies by Teferra and Altbachl (2004), McKiernan et al. (2016), and Mwelwa et al. (2020) have linked a lack of awareness of OS to a lack of motivation or interest among many librarians and information scientists to develop the necessary skills for supporting OS. Other scholars, such as David et al. (2020), Buhomoli and Muneja (2020), and Muneja (2023), whose research was conducted in Tanzania, paid little attention to the role of libraries and librarians in OS adoption in Tanzania. Therefore, this study aims to fill a knowledge gap by better examining the challenges related to the successful adoption of OS in Tanzania. By providing a focused and concise analysis of the barriers to OS adoption within the context of Tanzanian libraries, this study seeks to address the information gap.

METHODOLOGY

To generate quantifiable data in response to the research questions, the study's method involved a survey using structured questionnaires with both print and online survey techniques. Purposive sampling was employed to gather data from 147 librarians and information scientists who attended the Tanzania Library and Information Association (TLA) annual general conference in Morogoro, Tanzania, from March 23–26, 2022. The AGM functions as a key forum that brings together information professionals from diverse institutions and regions across Tanzania. As primary facilitators and stakeholders in scholarly communication and knowledge dissemination, librarians and information scientists are well-positioned to influence and reflect on institutional engagement with open science (OS) practices. Targeting them during a national professional gathering ensured that the sample was information-rich and aligned with the study's goals. Although the AGM is a national platform that gathers a broad range of librarians and information scientists, the sample only includes those able and willing to attend the conference, excluding professionals who could not participate.

In total, out of 147 librarians and information scientists, 113 completed questionnaires that were eligible for analysis, resulting in a return rate of 77 percent. Data collected via the online Monkey survey was automatically analyzed using Google Forms, while the printed questionnaires were coded and analyzed using the Statistical Package for the Social Sciences (SPSS).

RESULTS AND DISCUSSION

As Table 1 in Appendix One illustrates, out of 113 participants, 66 (58.4%) were drawn from the university and 18 (15.9%) from college libraries. Another 18 (15.9%) came from special libraries, five (4.4%) from public libraries, and six (5.3%) from other types of libraries. The findings show that all types of libraries available in Tanzania were represented, hence providing an opportunity to paint a holistic picture of librarians/information specialists' understanding of their roles in the adoption of open science. In terms of job titles, the respondents were drawn from the following categories: information science academicians, librarians/lecturers/senior lecturers. From academia (librarians /lecturers 58 (51.3%), library Assistants (administrative), 21 (18.3%) senior librarians/senior lecturers 14 (12.4%), senior library assistants (administrative), six (5.3%), principal librarians one (0.9%) chief

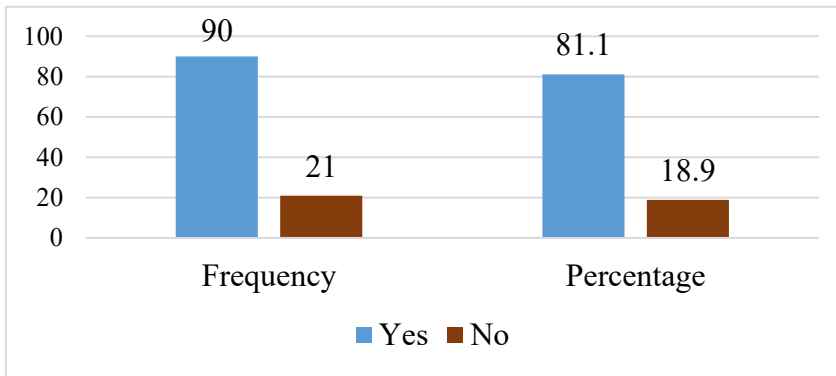
librarians, two (1.8%), and 11 (9.7%) were other categories. The combination of academic librarians/administrative librarians and information scientists has the added advantage of exposure to various sources of information, including OS. The understanding of the concept of OS is influenced by one's level of education/exposure. The study findings revealed that master's holders were 47 (41.6%), bachelor's degree 30 (26.5%) were Diploma 25 (22.1%), and 11 (9.7%) were PhD holders. Overall, the more qualified librarians/ information scientists were, the more likely they were to understand the value of OS to libraries and, hence, its adoption.

In terms of gender, there were more females, 59 (52.2%), than males, 54 (47.8%), respondents. Implicitly, there is gender parity in the field. Most significantly, the study gathered views from both genders. Besides, it shows an affirmative action taken by the government of Tanzania in promoting gender equality in the workplace. About the age profile, 50 (44.2%) of the respondents were born in the 1981-1990, followed by 34 (30.1%) born 1971-1980, 18 (15.9%) in 1961-1970, 18 (15.9%) in 1961-1970, 10 (8.8%) in 1951-1960, and one (0.9%) were born in the 1951 – 1960 period. Based on these results, the age distribution and profile of the respondents are ideal for providing the required information because the profession is dominated by young practitioners who are assumed to be conversant with ICT skills, which are vital in OS adoption.

Librarians and information scientists' familiarity with the term Open Science

The study sought input from librarians and information scientists on their familiarity with the term OS. As Figure 1 illustrates, 90 (81.1%) were familiar with the term OS this is due to UNESCO's (2021) recommendation that requested among member states to promote a shared understanding of OS, and librarians seized this opportunity. The findings paint a positive picture on the part of librarians on OS. On the one hand, the results imply a high possibility for librarians and information scientists to adopt OS. On the other hand, a notable proportion of librarians and information scientists, 21 (18.9%), reported not being familiar with the term OS. The study findings corroborate those of Teferra and Altbachl (2004), McKiernan et al. (2016), [O'Carroll et al. \(2017\)](#), Saarti et al. (2020), and Mwelwa et al. (2020), who reported that a lack of familiarity with OS made the respondents not interested in developing requisite skills for OS support.

Figure 1
Familiarity with the term OS

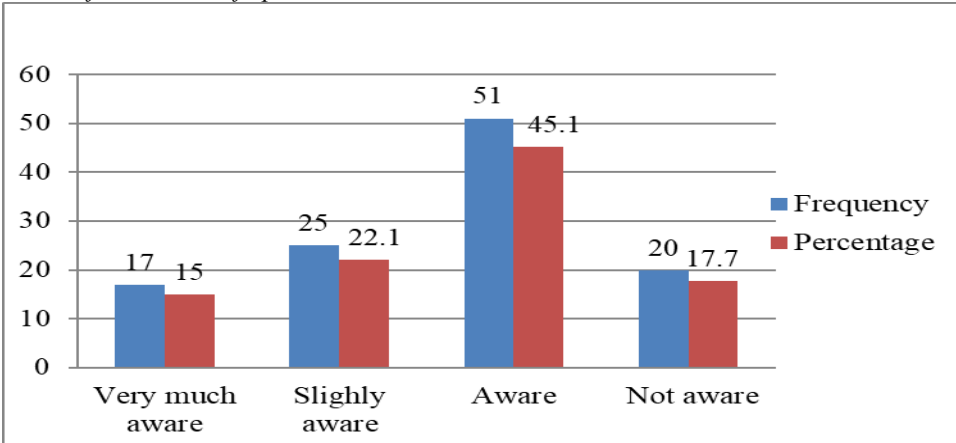


Source: Field Data (2022)

Respondents were further asked to rate the extent of their awareness of the term OS. Figure 2 presents different levels of awareness of OS among librarians and information scientists. Out of 113, fifty-one (45.1%) were aware of the concept of OS, followed by 25 (22.1%) who indicated being slightly aware, 20 (17%) who were not aware, and 17 (15%) who were very aware. In other words, to a large extent, librarians/information scientists were aware of OS at different levels, with a possibility of adopting it in their respective libraries. Even though the majority were aware and potentially amenable to OS adoption, it is important not to neglect the segment of the respondents who were unaware of it. In such circumstances, librarians in Tanzania could consider providing advocacy and training through workshops/seminars, preparation of fliers and posters and include them in the information literacy training programmes, and the use of social media as suggested in the works of Suri (2018), Ayris and Ignat (2018), Redkina (2020), and Saarti et al. (2020).

Figure 2

Extent of awareness of open science



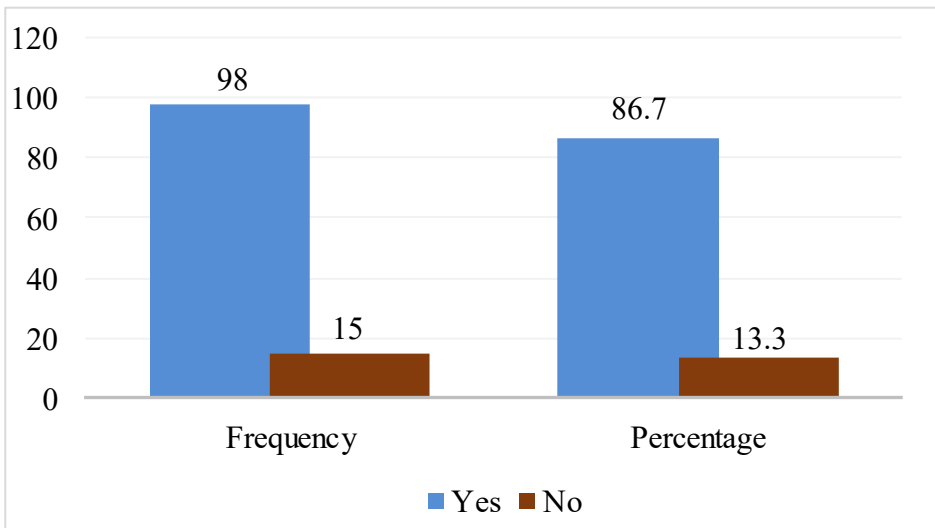
Source: Field Data (2022)

Aware of the importance of OS

For librarians and information scientists to adopt OS, there must be a perceived awareness of the importance attached to it in meeting their institutional goals. Analysis of data in Figure 3 reveals that the majority, 98(86.7%), are aware of the importance attached to open science, whereas 15(13.5%) were not aware at all.

Figure 3

Awareness of the importance of OS



Source: Field Data (2022)

Further analysis in Table 2 on the importance of open science in meeting library roles reveals that 65(57.5%) mentioned that it promotes and broadens access to scientific publications and data from public research, 65(57.5%) fosters collaborative research enabled by ICT tools, 39(34.5%), increases consumer choice from public research, 36(31.9%) boosts productivity in an era of tight budgets, and 25(22.1%) said it promotes citizens' trust in science. Generally, in Tanzania's environment, open science is important in meeting library roles by broadening access to scientific publications and data, considering the limited budget allocated to subscription to paywall learning resources. The study findings augur well with those of Brinken, Mehlberg, and Heller (2018).

Table 2
Importance of OS in Meeting Library Role

Answers	Frequency	Percentage	Ranking
It promotes and broadens access to scientific publications and data from public research	65	57.5	1
It promotes collaborative research enabled by ICT tools	65	57.5	1
It increases consumer choice through public research	39	34.5	2
It increases productivity in an era of tight budgets	36	31.9	3
It promotes citizens' trust in science	25	22.1	4

Source: Field Data (2022)

Roles of librarians and information scientists in OS

The study also sought to define the roles of librarians and information scientists in OS at the various institutions. As Table 3 shows, these responsibilities include promoting adoption of OS 48 (42.5%), bolstering dissemination policies 33(19.5%), and ensuring collection is openly accessible to users 100 (88.5%). Users can access the 22 (19.5%) and 10 (8.8%) reported evaluation systems that are uncovered and accessible to users.

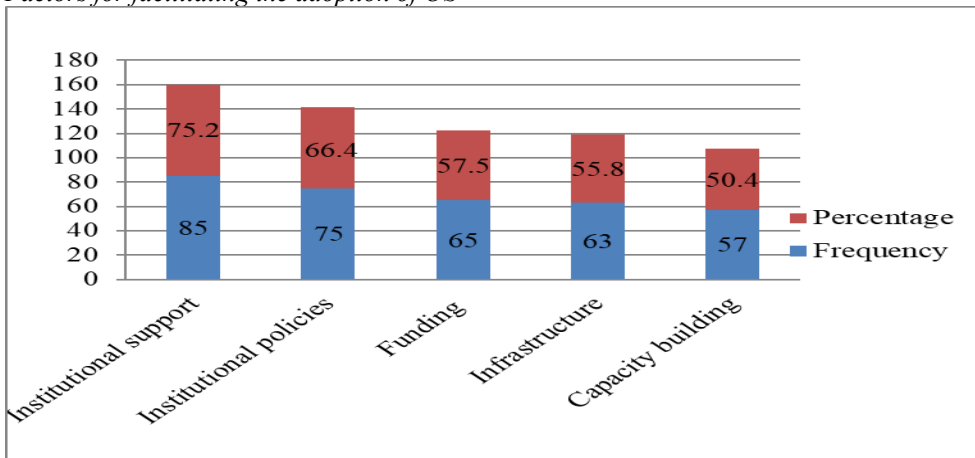
Table 3:
Roles of librarians and information scientists in OS

Answers	Frequency	Percentage	Ranking
To ensure the collection is openly accessible to users	100	88.5	1
Promoting the adoption of OS	48	42.5	2
Dissemination policies are strengthened	33	19.5	3
Evaluation systems are uncovered and accessible to users	10	8.8	4

Source: Field Data (2022)

The ultimate goal of adopting open science in libraries is to meet the information needs of users. For success to materialise, the results on factors facilitating the adoption of OS worth considering are presented in Figure 4: 85(75.2%) of the respondents stated institutional support, institutional policies were singled out by 75 (66.4%), 65(57.5%) said funding, 63 (55.8%) revealed infrastructure and 57(50.4%) capacity-building. In other words, the respondents said that there was a good chance their institutions would embrace open research if those elements were made available. Overall, the results are consistent with those of Morais et al. (2021), who noted that important prerequisites for facilitating the adoption of OS include appropriate funding, involvement from institutional leaders, supportive policies to build capacity and infrastructure, and enabling framework conditions.

Figure 4
Factors for facilitating the adoption of OS

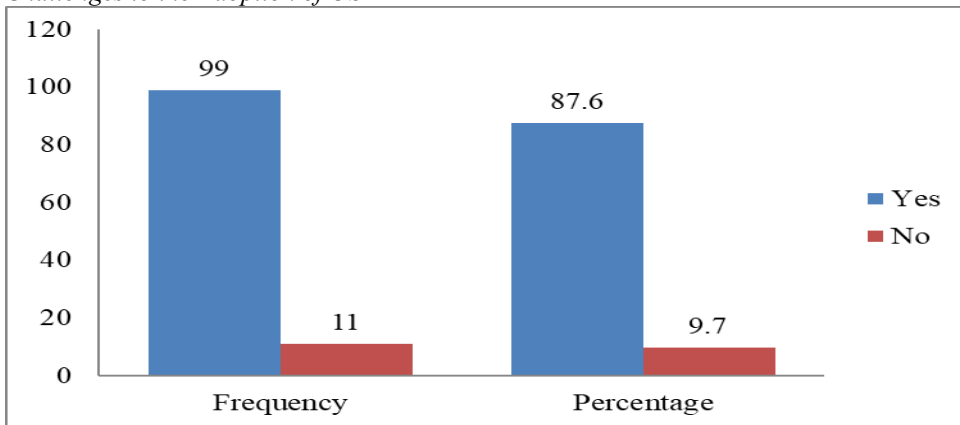


Source: Field Data (2022)

Challenges

Despite the significant contribution of open science in expanding the frontiers of knowledge, challenges to achieving it remain. As Figure 5 illustrates, 87.6 percent of the respondents reported challenges that impeded the adoption of open science, whereas 9.7 percent reported they had not encountered any challenges. The majority of the respondents indicated a challenge in the adoption of the OS. In such a circumstance, the adoption of open science is becoming increasingly possible to implement.

Figure 5
Challenges to the Adoption of OS

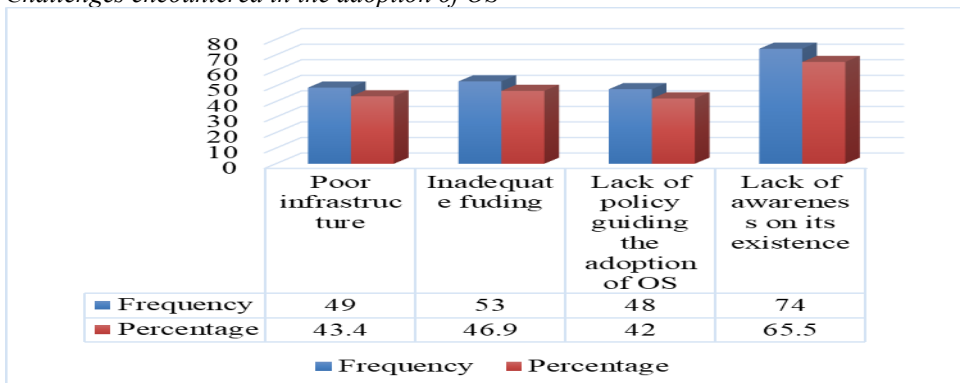


Source: Field Data (2022)

When asked to indicate the challenges librarians and information scientists face in the adoption of OS, the respondents provided their responses, as summarized in Figure 6.

Such challenges revolve around poor infrastructure to support the adoption of OS (43.4%), inadequate funding (46.9%), lack of policy guiding the adoption of OS (42.5%), and lack of awareness of its existence (65.5%) reported to be among the major obstacles to implementing fully open science in Tanzania's libraries. The study findings in this regard are in accord with those of Saart et al. (2022), Pun (2022), Mwela et al. (2020), and Onie (2020).

Figure 6
Challenges encountered in the adoption of OS



Source: Field Data (2022)

Suggestions on fostering OS adoption

Table 4 presents suggestions on the challenges of the adoption of OS. Such recommendations were sought to improve the situation. Table 4 provides a summary of recommendations that clearly show what should be done to support the adoption of OS. It shows that 48.7% recommended raising awareness on the adoption of open science: funding (32.7%), enabling policies (26.5%), improve ICT infrastructure (23.9%) and content of open science should be incorporated in library and information science training (22.1%), to build capacity on issues related to open science (14.1%).

Table 4
Suggestions on fostering OS adoption

Answers	Frequency	Percentage	Ranking
Raise awareness on the adoption of open science	55	48.7	1
Funding	37	32.7	2
Enabling policies are in place	30	26.5	3
Improve ICT infrastructure	27	23.9	4
The library and information science training program aims to incorporate the content of open science	25	22.1	5
Capacity building on issues related to open science	16	14.1	6

Source: Field Data (2022)

DISCUSSION

This study investigates how Tanzania has adopted open science, with a focus on libraries and librarians. The majority of information scientists and librarians were found to be aware of open science, indicating that they may take the lead in implementing it in their organisations. To make sure librarians and information experts are not left behind, awareness campaigns, training, and seminars are necessary for individuals who are not familiar with the phrase. This is consistent with Roche's (2022) assertion that libraries play a pivotal role in enabling systematic and all-encompassing transitions towards open research, since they both accelerate and contribute to this process.

The study emphasises how Open Science (OS) helps libraries by improving citizen trust in science, increasing consumer choice in public research, encouraging collaborative research using ICT tools, improving access to scientific publications and data, and increasing productivity in

tight budgetary environments. In OS institutions, the responsibilities of librarians and information scientists include making sure that resources are freely accessible, encouraging faculty to use open scientific resources, supporting the adoption of OS through information literacy skills, and offering technical assistance for the development of open science capability. These functions correspond with those acknowledged in the literature, which makes OS an essential tool for libraries in the contemporary setting of tight budgets (Redkina, 2021).

The study results show that respondents faced difficulties implementing OS in libraries due to a lack of knowledge, low financing, restricted infrastructure, and a lack of policies. These issues are widespread around the world and may have an effect on how well libraries function and provide customer service (Patterson et al., 2018; [O'Carroll et al., 2017](#); Chigwada et al., 2017; Pun, 2022). Users risk losing access to knowledge globally and falling behind in the rapidly evolving information society if these issues are not resolved. The study suggests increasing public awareness of open science, providing financing, enacting supportive laws, enhancing ICT infrastructure, integrating open scientific material into library and information science curricula, and developing competence on open science-related topics to overcome these difficulties. The purpose of these interventions is to boost OS.

CONCLUSION

The study looked at how libraries and information scientists are implementing open science in Tanzania. The results showed that, in an OS environment, librarians ensure that their collections are publicly accessible to users, encourage their institutions to accept them, create advocacy, and provide supporting policies. The advocacy and promotion of open science by libraries and librarians inside their institutions constitutes another source of support. Additionally, they are working to improve information literacy skills to guarantee that open-access articles are used effectively and to motivate academics to use open science resources. Financial, material, and human resources are among the difficulties. Consequently, these issues need sufficient resolution; otherwise, it would be difficult to encourage the adoption of the OS. Therefore, institutional management ought to take the lead in ensuring that sufficient resources and infrastructure are available to support OS in addition to building the librarians' capacity to handle OS-related issues

and, as a result, become knowledgeable and useful members of their profession in this era of OS global revolution.

REFERENCES

- Abdulah, A. (2017). Open Science: How Libraries can support an inclusive and innovative research community. Seki Perpust: 17.
- Ahmed, M., & Othman, R. (2021). Readiness towards the implementation of open science initiatives in the Malaysian Comprehensive Public Universities. *The Journal of Academic Librarianship*, 47(5), 102368. <https://doi.org/10.1016/j.acalib.2021.102368>
- Allen, C., & Mehler, D. M. (2019). Open science challenges, benefits, and tips in early career and beyond. *PLoS biology*, 17(5), e3000246. Doi: 10.1371/journal.pbio.3000587. eCollection 2019 Dec.
- Ayris, P., & Ignat, T. (2018). Defining the role of libraries in the Open Science landscape: a reflection on current European practice. *Open Information Science*, 2(1), 1-22. DOI: [10.1515/opis-2018-0001](https://doi.org/10.1515/opis-2018-0001)
- Brinken, H., Mehlberg, M., & Heller, L. (2018). The Open Science training handbook: Written by 14 international experts during the FOSTER Book Sprint. In Open Education Global Conference (oeglobal2018), Delft, The Netherlands, 24-26 April 2018. Zenodo. <https://oa.tib.eu/renate/backend/api/core/bitstreams/929257d1-ca28-4610-a03d-041e58493c83/content>
- Bueno de la Fuente, G. (2016). What is open science? Introduction. *Foster Open Science*.
- Buhomoli, O. S., & Muneja, P. S. (2023). Factors that determine open data readiness among scholars: experience from selected universities in Tanzania. *Information Discovery and Delivery*, 51(2), 130-142 <https://doi.org/10.1108/IDD-10-2021-0111>.
- Chigwada, J., Chiparausha, B. and Kasiroori, J. (2017), "Research data management in research institutions in Zimbabwe", *Data Science Journal*, Vol. 16 No. 0, p. 31 DOI: [10.5334/dsj-2017-031](https://doi.org/10.5334/dsj-2017-031)
- Chiwere, E. R. (2020). Open research data in African academic and research libraries: a literature analysis. *Library Management*, 41(6/7), 383-399. DOI: [10.1108/LM-02-2020-0027](https://doi.org/10.1108/LM-02-2020-0027)
- Cox, A.M., & Pinfield, S. (2014). Research data management and libraries: Current activities and future priorities. *Journal of Librarianship and Information Science*, 46, 299–316. [http://doi.org/10.1177/0961000613492542](https://doi.org/10.1177/0961000613492542).Ab

- David, A. B., Alimohamed, M., Muneja, P., Modern, G., & Buhomoli, O. S. (2022, December 19). Knowledge and practices of open science among scholars and researchers in Tanzania. *AfricArXiv*. <https://doi.org/10.31730/osf.io/vs3j5>
- Lehto, A., Abrahamsson-Sipponen, M., Harju, T., Parikka, S., & Södergård, P. (2021). Three Strategic Pillars: Finnish University Libraries' Network Fuelling Open Science and Access to Research-Based Information. In 2021, IATUL Proceedings of the IATUL Conferences. IATUL, International Association of University Libraries. <https://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=2292&context=iatul>
- Leonelli, S. (2023). *Philosophy of open science*. Cambridge University Press. DOI: <https://doi.org/10.1017/9781009416368>
- Li Liu & Wenyun Liu, (2023). The engagement of academic libraries in open science: A systematic review, *The Journal of Academic Librarianship*, 49(3),102711. <https://doi.org/10.1016/j.acalib.2023.102711>
- Lopes, C., Antunes, M. D. L., & Sanches, T. (2019). Information literacy and Open Science: Before and after the new ACRL Framework. In *Information Literacy in Everyday Life: 6th European Conference, ECIL 2018, Oulu, Finland, September 24–27, 2018, Revised Selected Papers 6* (pp. 244-253). Springer International Publishing. DOI: [10.32384/jeahil17448](https://doi.org/10.32384/jeahil17448)
- Makoni, Munyaradzi (2023, March 09). Implementing open science in East Africa is picking up speed. *University World News: African Edition*. <https://www.universityworldnews.com/post.php?story=2023030608093011>.
- Morais R., Saenen B, Garbuglia F, Berghmans F, Gaillard V (2021). From principles to practices: Open Science at Europe's universities. 2020-2021 EUA Open Science Survey results. Brussels & Geneva, European University Association.
- Muneja, P. (2023). Open Science and Policy Interface: The Tanzania Perspective. *East African Journal of Science, Technology and Innovation*, 4. <https://doi.org/10.37425/eajsti.v4i3.771>
- Mwelwa, J., Boulton, G., Wafula, J. M., & Loucoubar, C. (2020). Developing Open Science in Africa: Barriers, Solutions and Opportunities. DOI: [10.5334/dsj-2020-031](https://doi.org/10.5334/dsj-2020-031)
- OECD (2015). Making Open Science a Reality. (OECD Science, Technology and Industry Policy Papers, 25). <https://doi.org/10.1787/5jrs2f963zs1-en>

- Ogunbeni, J. I., Obiamalu, A. R., Ssemambo, S., & Bazibu, C. M. (2018). The roles of academic libraries in propagating open science: A qualitative literature review. *Information Development*, 34(2), 113-121. DOI: [10.1177/0266666916678444](https://doi.org/10.1177/0266666916678444)
- Okoth, S., Luhunga, P., Anand, R., Owango, J., Msonde, S., & Persic, A. (2023). High-Level Multi-Sectoral National Open Science Dialogue for Academic and Research Institutes in Tanzania. *AfricArXiv*. <https://doi.org/10.21428/3b2160cd.29d4cafb>
- Onie, S. (2020). Redesign Open Science for Asia, Africa, and Latin America. *Nature* 587, 35–37. DOI: [10.1038/d41586-020-03052-3](https://doi.org/10.1038/d41586-020-03052-3)
- Pardo Martínez, C. I., & Poveda, A. C. (2018). Knowledge and perceptions of open science among researchers. A case study for Colombia. *Information*, 9(11), 292. <https://doi.org/10.3390/info9110292>
- Patterton, L., Bothma, T.J.D. and van Deventer, M.J. (2018), “From planning to practice: an action plan for the implementation of research data management services in resource-constrained institutions”, *South African Journal of Library and Information Sciences*, Vol. 84 No. 2, pp. 14-26.
- Pun, P. N. I. (2022). Building sustainability and open science in academic libraries through alliances: The case of Macao SAR.
- Redkina, N.S.(2021) The Library in the Information Ecosystem of Open Science. *Sci. Tech. Inf. Proc.* 48, 239–247. <https://doi.org/10.3103/S0147688221040043>
- Redkina, N. S. (2022). The Information Ecosystem of Open Science: Key Aspects of Development. *Scientific and Technical Information Processing*, 49(3), 151-158. <https://doi.org/10.3103/S0147688222030079>
- Richard, J., Koufogiannakis, D., & Ryan, P. (2009). Librarians and libraries supporting open access publishing. *Canadian Journal of Higher Education*, 39(3), 33–48. <https://doi.org/10.47678/cjhe.v39i3.474>
- Roche, J. (2022). The future of academic and research libraries: a LIBER perspective.
- Roche, J. (2022). What role for academic libraries in open science? A library perspective. *Science Europe*. https://www.scienceeurope.org/media/uh0ncrlp/breakout_4_roche.pdf

- Saarti, J., Rosti, T., & Silvennoinen-Kuikka, H. (2020). Implementing Open Science policies into library processes – Case study of the University of Eastern Finland library. *LIBER Quarterly: The Journal of the Association of European Research Libraries*, 30(1), 1–20. <https://doi.org/10.18352/lq.10336>
- Teferra, D., & Altbach, P. G. (2004). African higher education: Challenges for the 21st century. *Higher Education*, 47, 21–50. <https://doi.org/10.1023/B:HIGH.0000009822.49980.30>
- Tzanova, S. (2020). Changes in Academic Libraries in the Era of Open Science 281 – 299. *Education for Information*, 36(3), 281-299. <https://doi.org/10.3233/EFI-190259>
- White, B. (2012). Guaranteeing access to knowledge: The role of libraries. *WIPO MAGAZINE*, (4), 15-18.http://www.wipo.int/wipo_magazine/en/2012/04/article_0004.html Accessed 2022
- Wolodko, A. (2021). Open science and libraries-where we are, where we are going https://www.unica-network.eu/wp-content/uploads/2021/02/libraries-and-open-science_v2_A.Wolodko-1.pdf
- Zarghani, M., Nemati-Anaraki, L., Sedghi, S. et al. (2023). Iranian researchers' perspective on

Appendix A

Table 1 – Respondents’ Institutional Affiliation, Job title, Academic qualifications, Gender, and Age

Answers	Frequency	Percentage
University Library UDSM, MUCE, LST, COCUM, SUA, CUHAS, MUHAS, MUM, MZUMBE, UDSM, KCMC, ARU, KIUM, SUZA, MCU, RUAHA, MMU, OUT, AMU	66	58.4
College Library SLADS, TIA, PHCI, VETA, TCAA, NCT, PSPT, ITAA, IRDPI	18	15.9
Special Library REPOA, TBS, TCU, EWAURA, NEMC, NRC, COSTEC, GST, TDL	18	15.9
Public Library TLSB	5	4.4
Others: JPMSS, PSPTB, GST	6	5.3
Total	113	100
Job title		
Library assistant	21	18.3
Senior library assistant	6	5.3
Librarian/ Lecturer	58	51.3
Senior librarian/lecturer	14	12.4
Principal librarian	1	0.9
Chief librarian	2	1.8
Others	11	9.7
Total	113	100
Academic qualifications		
Diploma	25	22.1
Bachelor’s degree	30	26.5
Master’s	47	41.6
PhD	11	9.7
Total	113	100
Gender		
Male	54	47.8
Female	59	52.2
Total	113	100
Age profile of the respondent		

Answers	Frequency	Percentage
1990 - 2000	10	8.8
1981- 1990	50	44.2
1971- 1980	34	30.1
1961- 1970	18	15.9
1951 1960	1	0.9
Total	113	100

Source: Field Data (2022)

Appendix 2(a) printed THE ROLE OF LIBRARIES AND LIBRARIANS IN OPEN SCIENCE ADOPTION IN TANZANIA

Dear Colleagues,

We are surveying the role of libraries and librarians in OS Adoption in Tanzania. The term open science, according to FOSTER (2022), refers to *“the practice of science in such a way that others can collaborate and contribute, where research data, lab notes, and other research processes are freely available, under terms that enable reuse, redistribution, and reproduction of the research and its underlying data and methods”*

We will appreciate it so much if you can spare some time to answer all the questions provided.

Thanking you in advance,

Dr Athumani S. Samzugui
Mr Azizi H. Kagugu

Please answer all questions as completely as possible

1. Name of the Institution.....
2. Job Title.....
3. Academic Qualifications: (Tick once)

PHD	
Masters	
Bachelor degree	
Diploma	
Other (Please Specify)	

4. Are you: Male ☐ Female ☐ (Tick where appropriate)
5. Age Profile of respondents: (Tick where appropriate)

1960-1970	
1971-1980	
1981-1990	
Others (please specify)	

6. Are you familiar with the term open science (OS)?
Yes ☐ No ☐

7. What does the term open science mean to you? (Tick all that apply):

- Open access ☐
- Open data ☐
- Open science evaluation ☐
- Open science policies ☐
- Open science tools ☐
- Open educational resources ☐
- Open citizen ☐
- research integrity ☐
- re-usability of research results and data ☐
- Others (please specify).....

8. Have you ever heard of the term “Open Science (OS)” before? Yes ☐ No ☐

9. To what extent are you aware of Open science? (Tick once)

Very much aware	
Slightly aware	
Aware	
Not aware	

10. If the answer to question 8 above is Yes, where did you get to know about it?

.....

.....

.....

.....

11. What types of resources forums do you have in your library? (Tick all that apply):

Open Education Resources (OERs)	
Institutional Resources (IR)	
Online Public Access Catalogue (OPAC)	
Open Course Ware (OCW)	
Others please specify	

12. What are the principles of open science?

- Open access to literature for funded research ☐
- Access to research tools from funded research ☐
- Access to data from funded research in the public domain ☐

- Other (please specify)
.....
- 13. What are the qualities of open science tools?
 - Free use ☐
 - Open source ☐
 - Enable customization ☐
 - Enable sharing of information ☐
 - Are interoperable ☐
 - Other (please specify)
.....
- 14. Do you have Library Policy? Yes ☐ No ☐ I don't know ☐
- 15. If the answer to question 14, above is Yes, is OS covered in the policy? Yes ☐ No ☐ I don't know ☐
- 16. If the answer to question 15 above is No, do you have a plan to develop it? Yes ☐ No ☐ I don't know ☐
- 17. Are you aware of the importance of OS in meeting your role of library? Yes ☐ No ☐ I don't know ☐
- 18. If the answer to question 17 above is Yes, what are they? (Tick all that apply)
 - it promotes and broadens access to scientific publications and data from public research ☐
 - it promotes collaborative research enabled by ICT tools ☐
 - it reduces duplication in collecting, creating, transferring and re-using scientific materials ☐
 - it increases productivity in an era of tight budgets ☐
 - it increases consumer choice from public research ☐
 - it promotes citizens' trust in science ☐
- 19. What types of OS does your Library engage with?
 - Open Science Evaluation ☐
 - open access ☐
 - open data ☐
 - open educational resources ☐
 - research integrity ☐
 - re-usability of research results and data ☐
 - Other (please specify)
.....
- 20. What is the purpose of adopting OS in your Library?
 - Supporting free open access to publications ☐
 - Facilitate open data ☐
 - Improve research infrastructure ☐

- Join the globe policies in OS ☐
 - Others (please specify)
21. What are the roles of Librarians in OS in your Institution?
- To ensure collection is openly accessible to users ☐
 - Evaluation systems are uncovered ☐
 - Dissemination policies are strengthened ☐
 - Promoting adoption of OS ☐
 - Others (please specify)
22. What are the important factors that could be used to facilitate the adoption of OS?
- Institutional support ☐
 - Institutional policies ☐
 - Funding ☐
 - Infrastructures ☐
 - Capacity building ☐
 - Others (please specify)
23. Do you, as a librarian, encounter any problems/obstacles/challenges in the adoption of OS?
Yes ☐ No ☐
24. If the answer to question 23, above, is yes, what problems/obstacles/challenges do you encounter?
- Lack of awareness of its existence ☐
 - Lack of policy guiding the adoption of OS ☐
 - Inadequate funding ☐
 - Poor infrastructure ☐
 - Others (please specify)
25. What would you recommend to address the challenges?
.....
.....
.....
.....
.....

Thank you very much for your assistance and time.

Appendix 2: (b) online

THE ROLE OF LIBRARIES AND LIBRARIANS IN OPEN SCIENCE ADOPTION IN TANZANIA

Dear Colleagues,

We are conducting a survey on the role of libraries and librarians in Open Science (OS) Adoption in Tanzania. The term open science according to FOSTER (2022) refers to “the practice of science in such a way that others can collaborate and contribute, where research data, lab notes and other research processes are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and methods”

We will appreciate it so much if you can spare some times to answer all the questions provided.

Thanking you in advance,

Dr Athumani S. Samzugui

Mr Azizi H. Kagugu

ntimikasumo@gmail.com [Switch account](#)

* Indicates required question

Email*

Please answer all questions as completely as possible

1. Name of the Institution:
2. Job Title
3. Academic Qualifications: (Tick once)
 - PhD
 - Masters
 - Bachelor degree
 - Diploma
 - Others (please specify)
4. Are you: (Tick where appropriate)
 - Male
 - Female
5. Age Profile of respondents: (Tick where appropriate)
 - 1960-1970
 - 1971-1980
 - 1981-1990

Others (please specify)
.....

6. Are you familiar with the term open science (OS)?
Yes
No
7. What does the term open science mean to you? (Tick all that apply):
Open access
Open data
Open science evaluation
Open science policies
Open science tools
Open educational resources
Open citizen
Research integrity
Re-usability of research results and data
Others (please specify)
.....
8. Have you ever heard of the term “Open Science (OS)” before?
Yes
No
9. To what extent are you aware of Open science? (Tick once)
Very much aware
Slightly aware
Aware
Not aware
10. If the answer to question 8 above is Yes, where did you get to know about it?
Colleagues/librarian network
Seminars/ Workshops
research community/academic staff
Self-searching
can't remember
Others please specify:
11. What types of resources forums do you have in your library? (Tick all that apply):
Open Education Resources (OERs)
Institutional Resources (IR)
Online Public Access Catalogue (OPAC)
Open Course Ware (OCW)
Others, please specify

12. What are the principles of open science?
Open access to literature for funded research
Access to research tools from funded research
Access to data from funded research in the public domain
Other (please specify)
.....
.....
13. What are the qualities of open science tools?
Free use
Open source
Enable customization
Enable sharing of information
Are interoperable
Others (please specify)
.....
14. Do you have a Library Policy?
Yes
No
I don't know
15. If the answer to question 14, above is Yes, is OS covered in the policy?
Yes
No
I don't know
16. If the answer to question 15 above is No, do you have a plan to develop it?
Yes
No
I don't know
17. Are you aware of the importance of OS in meeting your role of library?
Yes
No
I don't know
18. If the answer to question 17 above is Yes, what are they? (Tick all that apply)
0 points
it promotes and broadens access to scientific publications and data from public research
it promotes collaborative research enabled by ICT tools

it reduces duplication in collecting, creating, transferring and re-
using scientific materials
it increases productivity in an era of tight budgets
it increases consumer choice from public research
it promotes citizens' trust in science
Others (please specify)
.....

19. What types of OS does your Library engage with?

Open Science Evaluation
Open Access
Open Data
Open Educational Resources
Research Integrity
Re-usability of research results and data
Others (please specify)
.....

20. What is the purpose of adopting OS in your Library?

Supporting free open access to publications
Facilitate open data
Improve research infrastructure
Join the globe policies in OS
Others (please specify)
.....

21. What are the roles of Librarians in OS in your Institution?

To ensure collection is openly accessible to users
Evaluation systems are uncovered
Dissemination policies are strengthened
Promoting adoption of OS
Others (please specify)
.....

22. What are the important factors that could be used to facilitate the adoption of OS?

Institutional support
Institutional policies
Funding
Infrastructures
Capacity building
Others (please specify)
.....

23. Do you as a librarian encounter any problems/obstacles/challenges in adoption of OS?

Yes

No

24. If the answer to question 23, above is yes, what problems/obstacles/challenges do you encounter?

Lack of awareness on its existence

Lack of policy guiding the adoption of OS

Inadequate funding

Poor infrastructure

Others (please specify)

.....

25. What would you recommend to address the challenges?

No more questions

Thank you very much for your assistance and time.

Appendix 3

HURIA COMPLIANCE REPORT

REVIEWERS COMMENTS

Dear Editor,

I acknowledge receipt of comments from two external reviewers. The comments were very constructive and have helped to shape the article in a better perspective. As requested, I have addressed **almost** all the comments/suggestions raised, both general and specific. The comments are presented in tabulated form for easy follow-up.

S/N	ISSUE		RESPONSE
1	Sampling bias Respondents were recruited at a single professional conference; results may over-represent more motivated or senior staff, and cannot be generalized to all librarians.		Response: The methodology adopted possesses a clear National character due to the strategic use of the TLA Annual General Meeting, which is a national professional forum and covers institutions, regions, and sectors across Tanzania.
2	Instrument transparency. The questionnaire is neither appended nor described		-They are now attached under Appendix 1 and 2, respectively
3	Data integrity Some ranking orders in Table 2-4 do not match the percentages of items tied for rank one, but rank 2 is skipped		The rankings are adjusted as advised. Refer to the respective Tables
4	Referencing: Mostly APA, but the DOI is missing		This is a very valid observation. The reason for this is that older publications (especially before the early 2000s)

S/N	ISSUE		RESPONSE
			often lack DOIs because the system wasn't widely adopted yet. In the past, neither APA nor MLA considered DOIs necessary.
5	Recommendations	i. Provide the questionnaire as an appendix for instrument credibility	The questionnaire is attached as Appendices 2 and 3
		ii. Re-phrase population claims Acknowledge conference sample limitation and report potential response bias -	The sample limitation was acknowledged in the methodology section
		iii. Ensure full APA-7 compliance—	Complied as evidenced in the references section
		iv. Remove duplicate paragraphs and tighten literature review---Complied	Complied with the suggestions made and is reflected in the document
6	Additional comments:	Consider collecting a small qualitative follow-up (FGD) to illuminate why certain barriers, particularly policy absence and awareness gap, persist despite high OS familiarity.	This is a very valid observation, though for the case of this study, it was considered appropriate because it allowed for the efficient collection of data from a large, diverse, and dispersed sample, which provided broad representativeness. It facilitates honest and comparable responses. The advice will be applied in the follow-up

S/N	ISSUE		RESPONSE
			research on OS and will take into account FGD and interviews.
7		Uploading an anonymised data set would enhance transparency and facilitate future meta-analyses	This is a very good suggestion. The philosophy behind open science is to make datasets freely accessible to others, promoting transparency, etc. Uploading the data set to IR is part of Open Science/Open Access, although not sure whether our journals at OUT have adopted this culture or if we have a supportive policy.

I submit for your consideration

Determinants of Information Systems (IS) Success within Civil Society Organizations (CSOs)

Jaraj S. Kikula

Mzumbe University

jskikula@mzumbe.ac.tz

Abstract

This study investigates the determinants of Information Systems (IS) success within Civil Society Organizations (CSOs), employing the Information System Success Model (ISSM) as a theoretical framework. Using Covariance-Based Structural Equation Modeling (CB-SEM) on data from 272 Tanzanian CSOs, the study identifies system quality, information quality, service quality, and IS use as critical factors influencing success. Results reveal that system quality directly impacts both IS use and net benefits, while IS use mediates the relationship between quality factors and organizational outcomes. Surprisingly, information and service quality do not directly affect net benefits, highlighting the need for CSOs to prioritize robust system design and user engagement. The findings offer actionable insights for enhancing IS effectiveness in resource-constrained environments.

Keywords: *Information Systems, Success, Civil Societies*

INTRODUCTION

The rapid evolution of technology has redefined operational strategies for various sectors, making IS technology a crucial element for organizational success. Despite its evident advantages, particularly in enhancing efficiency and decision-making, many CSOs struggle with effectively adopting and utilizing such technologies. This research seeks to uncover the factors governing both the adoption and practical use of IS technology, emphasizing its significance for achieving organizational objectives and maximizing social impact.

IS technology being indispensable in today's organizational landscape, facilitating better communication, strategic decision-making, and operational efficiency. As articulated by Varajão et al. (2022), organizations harness IS technology to manage information systems, streamline processes, and meet their objectives. For CSOs, the ability to

collect, process, and disseminate relevant data efficiently can significantly enhance project effectiveness, improve stakeholder engagement, and facilitate performance measurement. However, while many CSOs recognize the value of IS technology, the road to successful implementation remains fraught with challenges, particularly due to resource constraints and external pressures.

The landscape of CSOs presents unique challenges that impact the adoption of IS technology. Many of these organizations operate under limited financial resources, prioritizing social change over technological investments. As noted by Ijab (2019), the complexity of stakeholder relationships and the pressure to meet the expectations of donors and communities complicate the technological adoption process. Understanding these challenges is crucial for ensuring that IS initiatives within CSOs are strategically aligned with their mission objectives and capable of effectively addressing their operational needs.

To study the nuances of IS technology adoption and use in CSOs, this research employs the Technology-Organization-Environment (TOE) framework, which encompasses technological, organizational, and environmental factors influencing decision-making. Organizational factors, such as culture, leadership support, and resource availability, play vital roles in shaping an organization's readiness for technology integration. Furthermore, environmental factors ranging from regulations to funding agencies' requirements heavily influence CSO decisions about adopting and utilizing IS technology. This multi-faceted approach enables a comprehensive exploration of how various dynamics converge to affect technology adoption in CSOs.

A critical facet of this study is its focus on the determinants for the successful implementation and use of IS technology. Merely adopting a technology does not guarantee success; instead, organizations must ensure its effective integration into their processes. Literature on IS technology success emphasizes the importance of system quality, information quality, and service quality, which significantly impact overall organizational efficiency. This research will also explore the mediating role of IS technology use in bridging the gap between adoption and successful outcomes, illuminating its relevance in contribution to heightened organizational performance.

The specific objectives of this study extend beyond merely assessing IS technology adoption levels; they aim to investigate the practical implementation of these technologies within CSOs and identify the key determinants that influence both adoption and success. This comprehensive examination allows for a nuanced understanding of how CSOs can better navigate the complexities of IS adoption, implement effective strategies, and ultimately enhance their operational performance. Additionally, by uncovering the specific factors that underpin successful IS technology use in CSOs, the research will have practical implications for the sector.

Civil Society Organizations (CSOs) face mounting pressure to adopt Information Systems (IS) to improve transparency, efficiency, and project outcomes. However, IS success remains elusive due to underutilization and contextual challenges. While prior research emphasizes adoption factors, the determinants of IS success measured as net benefits are underexplored in CSOs. This study addresses this gap by examining how system quality, information quality, service quality, and IS use collectively drive success. Focusing on Tanzanian CSOs, the study leverages the ISSM to provide actionable strategies for maximizing IS impact.

LITERATURE REVIEW

The IS Success Model (ISSM) posits that system quality (technical performance), information quality (accuracy/relevance), and service quality (user support) influence user satisfaction and net benefits. In CSOs, success is measured through improved decision-making, cost savings, and stakeholder trust.

Determinant of IS Success in CSOs

IS's success is derived from use experience and perceived benefits under quality aspects (DeLone & McLean, 1992, 2003; Mauerhoefer et al., 2017). IS success relies on the quality of project manager's decisions and consequent impacting the project performance improvements. DeLone & McLean (2003) indicated that, the net-benefit (including both individual and organizational impacts) is a function of interactions of other variables in the ISSM - system quality, information quality, information use, user satisfaction, and service quality. (Park et al., 2018) established that, less is known on how much and which parts of project performance are impacted. Similarly, this study observes IS success on the basis of the

factors instigated by the ISSM. However, this study conceptualises and hypothesise the relationships between the success variables i.e. IS Quality, IS-Technology use, Information Quality, Service Quality variables and sets to examine their respective influence on success (net benefits) as demonstrated on the conceptual Model.

IS Quality

Often regarded as the foundation of a system's ability to deliver value to its users and organizations, System Quality plays a central role in determining the success and adoption of IS-Technologies. High system quality is typically defined by factors such as technical functionality, reliability, usability, and performance efficiency (DeLone & McLean, 2003). When a system demonstrates these qualities, it is more likely to be embraced by users, such as Civil Society Organizations (CSOs), who depend on its functionality for various operational and strategic activities (Al-Nassar, 2020).

System quality influences project performance through various attributes, including system availability, reliability, timely responsiveness, and functionality (Ojo, 2017). These characteristics ensure that the system can operate without frequent downtimes, errors, or lags, which would otherwise disrupt critical workflows. According to (Hasan Al-Mamary et al., 2014) features such as accessibility, ease of use, flexibility, integration, and fast response times are critical elements that improve the overall user experience and promote the continuous use of IS-Technologies. The sophistication of the system, in terms of navigability and functionality, further enhances the user's ability to extract value from the technology.

High system quality directly contributes to operational efficiency by improving decision-making and enhancing organizational performance. For instance, a system with high data accuracy ensures that users can rely on the information produced for making informed decisions. this technology is to say, a well-designed user interface contributes to usability, making it easier for users to navigate the system and execute tasks with minimal frustration (Miraz et al., 2021). These attributes collectively foster a conducive environment for achieving project goals and realizing organizational benefits.

In terms of its effect on IS-Technology adoption, system quality is a significant determinant. When systems exhibit reliability and effectiveness, users are more inclined to adopt and utilize them consistently. Furthermore, system quality influences the overall success of the IS by directly affecting user satisfaction and organizational outcomes. High-quality systems improve performance metrics, reduce operational risks, and allow organizations to respond quickly to emerging challenges (Abu Ezza et al., 2020; Umaroh & Barmawi, 2021).

System quality is therefore a fundamental factor in ensuring the effective utilization and success of IS-Technology within organizations. It impacts both individual users and organizational performance by enhancing efficiency, accuracy, and overall system reliability.

H1a: System quality has a significant influence on the use of IS-Technology.

H1b: System quality has a significant influence on the success of IS.

IS-Technology use

Information quality is yet another crucial factor in determining the success and utility of IS-Technologies. It encompasses the characteristics that define the accuracy, completeness, relevance, and timeliness of the information generated by the system. According to DeLone and McLean (2003), High-quality information ensures that organizations can make informed decisions, optimize project management processes, and ultimately achieve better outcomes. Information quality is not an end in itself, but rather a means to enhance decision-making and improve user satisfaction (Ngari & Ndiritu, 2017).

Information quality can be evaluated based on various dimensions such as accuracy, relevance, timeliness, and readability of the information output (DeLone & McLean, 2003; Ojo, 2017). In this case then, when the information produced by an IS-Technology is timely, it allows decision-makers to respond quickly to market changes or organizational needs. Similarly, accurate and complete data ensures that decisions are based on reliable information, reducing the likelihood of errors. The format in which information is presented also plays a critical role, as clear and readable data can facilitate easier interpretation and quicker decision-making.

For organizations, maintaining high information quality is essential for deriving meaningful insights from the system (Wolseley et al., 2024). Poor quality information can lead to incorrect conclusions, resulting in flawed strategies and suboptimal project outcomes. On the other hand, high information quality improves user satisfaction by ensuring that the data is not only reliable but also useful and easy to understand. This, in turn, enhances the perceived usefulness of the IS, leading to higher adoption rates and more consistent use (Park et al., 2018).

In practice, information quality is closely tied to the success of IS-Technologies because it directly impacts the system's ability to support effective managerial decision-making (Nasution & Chairunnisa, 2023). In a project management context, high-quality information improves managers' ability to track progress, allocate resources efficiently, and identify potential risks or bottlenecks early on Crossette-Thambiah et al. (2024). This technology is achieved by ensuring that the information generated by the system is accurate, relevant, and timely, organizations can improve the overall performance of their projects and achieve better outcomes.

Information quality is therefore a critical determinant of both IS-Technology use and success. Organizations that prioritize high information quality are better equipped to make informed decisions, improve user satisfaction, and achieve successful project outcomes.

H2a: Information quality has a significant influence on the use of IS-Technology.

H2b: Information quality has a significant influence on the success of IS.

Service Quality

Service quality refers to the level of support provided by service providers and vendors to ensure that IS-Technologies operate smoothly and meet user needs. It encompasses various aspects, such as responsiveness, reliability, technical competence, and user support, all of which contribute to the overall performance and adoption of IS-Technologies (DeLone & McLean, 2003). High service quality is crucial for ensuring user satisfaction, as it provides users with the necessary tools and resources to maximize the utility of the system.

A key component of service quality is the after-sale support provided by vendors. It includes technical support, user training, user manuals, and other forms of assistance that help organizations navigate and fully utilize the IS. Timely and effective access to technical support ensures that users can resolve issues quickly, minimizing downtime and disruptions to operations. Similarly, Nyandongo et al. (2019) affirms by asserting that, by offering comprehensive training and documentation, users are capacitated to understand the full functionality of the system, increasing their confidence in using the technology effectively.

Service quality also involves aspects such as assurance, responsiveness, empathy, tangibles, supplier reputation, reliability, and faithfulness (Ahmad, 2020). Vendors with a strong track record of delivering high-quality support are more likely to build trust with their clients, leading to long-term relationships and increased user satisfaction. Noteworthy, technical competence and responsiveness are essential factors in ensuring that IS-Technologies remain functional and up-to-date, enabling organizations to meet evolving technological demands.

From an organizational perspective, high service quality enhances system performance by ensuring that any issues or challenges encountered by users are addressed promptly and effectively (Safitri et al., 2020). This in turn, reduces the risk of operational disruptions and contributes to overall organizational efficiency. Moreover, service quality plays a critical role in determining user satisfaction and adoption rates, as users are more likely to continue using the system if they receive adequate support and training. Service quality is therefore a vital factor in the successful implementation and use of IS-Technologies. Organizations that invest in high quality service support are more likely to experience higher user satisfaction, better system performance, and improved organizational outcomes.

H3a: Service quality has a significant influence on the use of IS

H3b: Service quality has a significant influence on the success of IS

In summary, the success of Information Systems (IS) technologies is deeply influenced by key factors such as system quality, information quality, and service quality. System quality, with its focus on technical functionality, usability, and reliability, directly impact both user adoption and organizational performance. Information quality, centered on the accuracy, relevance, and timeliness of data, ensures that IS supports

informed decision-making and enhances user satisfaction. Service quality, defined by the responsiveness and competence of the service provider, is crucial for maintaining system performance and user confidence through effective support and training. Together, these factors contribute to the overall effectiveness and success of IS-Technologies, driving improved project outcomes, operational efficiency, and organizational benefits. Understanding and optimizing these dimensions allows organizations to maximize the value derived from their IS investments.

METHODOLOGY

The study employed a cross-sectional survey design, targeting 272 Civil Society Organizations (CSOs) across five regions in Tanzania. Data were collected using structured questionnaires that evaluated various dimensions including system quality, information quality, service quality, information systems (IS) usage, and the net benefits derived from these systems. Respondents rated their experiences and perceptions on a 5-point Likert scale, allowing for a comprehensive assessment of the factors influencing the effectiveness of IS within these organizations.

For data analysis, Covariance-Based Structural Equation Modeling (CB-SEM) was utilized through IBM AMOS software to test the hypotheses formulated based on the Information Systems Success Model (ISSM). The measurement models were rigorously validated for reliability, ensuring that Composite Reliability exceeded 0.7, and for validity, with Average Variance Extracted (AVE) greater than 0.5. Additionally, structural models were analyzed to determine both direct and indirect effects among the variables under investigation.

RESULTS

The determinants of success of IS

This section presents the findings from the CB-SEM analysis, focusing on the determinants influencing the success of Information Systems (IS) technology in CSOs, specifically measured by the Net Benefit. The CB-SEM approach was employed over its rigorous testing of hypothesized relationships between various factors that contribute to IS success. It is known to provide a robust statistical foundation for understanding the complex interdependencies among variables, including both direct and indirect effects as hypothesised in this study.

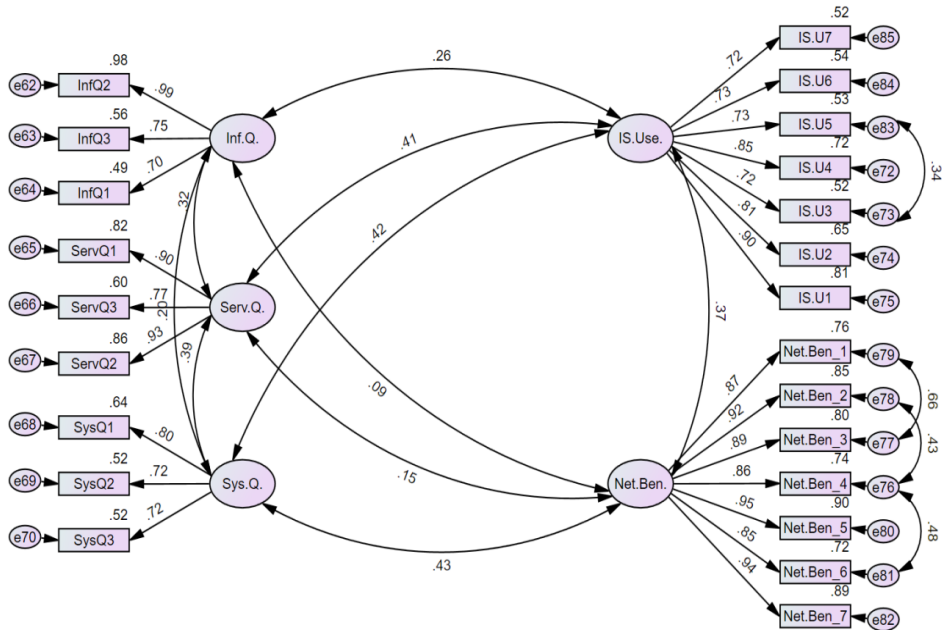
Drawing on the Information System Success Model (ISSM), this study benchmarked the key constructs such as system quality, information quality, service quality, user satisfaction, and net benefits. The SEM not only evaluated the impact of each determinant but also examined the intricate relationships between constructs in Figure 4-3, allowing for a holistic view of the factors driving IS success. The use of SEM allowed for the simultaneous evaluation of multiple pathways, enabling the identification of both direct influences on IS success and the indirect mechanisms by which certain factors exert their impact. By doing so, the analysis provides deeper insights into how organizational, technological, and environmental factors collectively contribute to the successful implementation and sustained use of IS-Technologies as were attributed on the previous section.

The measurement model for the determinants of success of IS

The measurement model for examining the determinants of IS Success included five key constructs: Information Quality (Inf.Q), Service Quality (Serv.Q), and System Quality (Sys.Q) as independent variables; Information System Use (IS. Use) as a mediating variable; and Net Benefits (Net.Ben) as the dependent variable.

The constructs (latent variables) in the model were each measured using their corresponding indicators (observed variables), with standardized factor loadings ranging as follows: 0.702 to 0.989 for Information Quality (Inf.Q), 0.774 to 0.929 for Service Quality (Serv.Q), 0.724 to 0.803 for System Quality (Sys.Q), 0.722 to 0.902 for IS-Technology use, and 0.861 to 0.950 for Net Benefits (Net.Ben). These loadings indicate strong relationships between the latent variables and their respective indicators, suggesting a reliable measurement model. Further details can be observed in Figure 1.

Figure1
 Measurement model for the determinants of success of IS



The standardized factor loadings for the constructs (latent variables) shown in Figure 4-3 indicate strong and dependable relationships with their respective indicators (observed variables). With factor loadings consistently falling within acceptable limits for each construct, the measurement model demonstrates solid evidence of the reliability and validity of the observed variables in representing their underlying latent factors. This confirms that the model appropriateness for evaluating the determinants of IS Success in Civil Society Organizations (CSOs), establishing a reliable foundation for the subsequent structural analysis.

Reliability and Validity Measurements for the determinants of success of IS

To ensure the model's validity and reliability, several metrics were used. Both convergent and discriminant validity were assessed to verify that the indicators accurately reflected the intended constructs. Reliability was assessed through Composite Reliability (CR) and Cronbach's Alpha, both of which indicated strong internal consistency for each construct, with values typically exceeding the accepted threshold of 0.70.

Validity was evaluated using multiple metrics. Convergent Validity was confirmed via the Average Variance Extracted (AVE), with all constructs achieving AVE values above 0.50, indicating that the constructs explained a sufficient portion of the variance in their respective indicators. Discriminant Validity, several tests were performed. First, the Maximum Shared Variance (MSV) was compared to the AVE for each construct, ensuring that AVE exceeded the MSV, a key criterion for discriminant validity. Additionally, MaxR(H) values were calculated, which confirmed that the reliability of each construct was robust across different model specifications. The Heterotrait-Monotrait Ratio (HTMT) was also used, with HTMT values below the threshold of 0.85, further validating that each construct was distinct from others in the model.

Reliability: According to Hair et al., (2010), a value of 0.7 or above for the overall reliability of a latent construct is typically considered acceptable for CR. The Composite Reliability (CR) results presented on table 4-6 indicate high reliability by reflecting measures the internal consistency for the respective model constructs with all values being above the 0.7 threshold. This confirms that, the items within each construct are reliably measuring the same underlying concept.

Table 1
Validity Analysis for the determinants of success of IS

	CR	AVE	MSV	MaxR(H)
IS.Use	0.917	0.614	0.173	0.930
Net.Ben	0.967	0.809	0.186	0.973
Inf.Q	0.860	0.677	0.103	0.979
Serv.Q	0.904	0.760	0.171	0.924
Sys.Q	0.795	0.564	0.186	0.801

Reinforcing the reliability of the constructs, the robustness of the latent constructs in the model is further indicated by the MaxR(H) values which are all above 0.801.

Validity: The Average Variance Extracted (AVE) values range from 0.564 to 0.809 suggesting all constructs to explain over 50% of the variance of their indicators. Most constructs in the model are well-defined by their indicators, contributing to their validity. The estimates of the Maximum Shared Variance - MSV (highest squared correlation between a construct and other construct in the model) are below their corresponding AVE values (see table 4-6), hence discriminant validity. Each construct is

more strongly associated with its own indicators than with any other constructs, supporting the idea that the constructs are distinct from one another.

Table 2
Validity Analysis for the determinants of success of IS

	IS. Use	Net.Ben	Inf.Q	Serv.Q	Sys.Q
IS. Use	0.784				
Net.Ben	0.374***	0.899			
Inf.Q	0.264***	0.090	0.823		
Serv.Q	0.413***	0.149*	0.320***	0.872	
Sys.Q	0.416	0.431	0.200	0.393	0.751

The square roots of the Average Variance Extracted (AVE) for each construct (Diagonal Bolded Values on table 4-7) represent the amount of variance captured by the construct itself. The (Off-Diagonal Values) represents the correlations between the constructs. The significance levels are indicated by asterisks, with *** indicating $p < 0.001$, ** indicating $p < 0.01$, and * indicating $p < 0.05$.

Discriminant validity ensures that constructs that are supposed to be distinct are indeed different from each other. In this case the analysis results on table 4-7 indicate that the constructs IS.Use, Net.Ben, Inf.Q, and Serv.Q exhibit strong discriminant validity. Meanwhile, the respective Average Variance Extracted (AVE) square roots are greater than their correlations with other constructs, confirming they measure distinct concepts. For instance, IS.Use (0.784) has higher AVE than its correlations with Net.Ben (0.374), Inf.Q (0.264), and Serv.Q (0.413). Similarly, Net.Ben (0.899) exceeds its correlations with other constructs.

Discriminant validity between constructs in a model was further established using the HTMT results which show that all values are below their common threshold of 0.85, indicating strong discriminant validity.

Table 3
HTMT Analysis for the determinants of success of IS

	IS. Use	Net.Ben	Inf.Q	Serv.Q	Sys.Q
IS. Use					
Net.Ben	0.368				
Inf.Q	0.316	0.127			
Serv.Q	0.420	0.175	0.418		
Sys.Q	0.420	0.424	0.257	0.395	

This suggests that each construct (IS. Use, Net.Ben, Inf.Q, Serv.Q, Sys.Q) is distinct from the others, with no significant issues of overlap. Overall, the analysis supports the distinctiveness of the constructs. These metrics collectively confirmed the reliability and validity of the measurement model, ensuring a solid foundation for further structural analysis.

Success factors' test and impact on IS-Technology use

Findings on table 4-10 shows the impact of System Quality on IS-Technology use to be positive and significant ($\beta = .300$, $t = 3.945$, $p < .001$), hence supporting H1a; similarly, Information Quality ($\beta = .103$, $t = 2.006$, $p < .045$), hence supporting H2a; and Service Quality ($\beta = .258$, $t = 3.807$, $p < .001$), hence supporting H3a.

Specifically, System Quality (Sys.Q) has the strongest positive effect on IS-Technology use (H1a), indicating that a reliable and user-friendly system encourages users to engage with it. Similarly, information quality (H2a) has a positive, though smaller, influence on IS-Technology use, meaning that accurate and relevant information provided by the system enhances its usage. Service quality (H3a) is another significant determinant, suggesting that the availability of good technical support and user assistance positively impacts how much the system IS-Technology used. Together, these three factors underscore the importance of both technical performance and user support in driving IS usage.

The estimated squared multiple correlations for the Information System Use is .261 implying a 26.1% variance in Use of Information System when change is applied on the respective factors (Inf.Q, Ser.Q, and Sys.Q). These results suggest that improvements in these quality dimensions can significantly enhance user engagement with the system.

Success Factors' Impact on Net Benefit (IS Success)

The findings on the Net Benefit presented on table 4-10 shows the effects of the determinants of IS-Technology success to be positive and significant for System Quality ($\beta = .338$, $t = 4.694$, $p < .001$), hence supporting H1b; negative and insignificant for Information Quality ($\beta = -.017$, $t = -.373$, $p < .709$), and Service Quality ($\beta = .087$, $t = -1.385$, $p < .166$), hence not supporting H2b and H3b respectively. The direct impact of IS-Technology use on Net Benefit is reported to be positive and significant ($\beta = .243$, $t = 3.829$, $p < .001$), hence supporting H4.

These findings reveal that the positive and significant effect of system quality (H1b) suggest that, high-quality system not only encourages usage but also leads to greater organizational benefits, such as increased productivity or cost savings. However, information quality (H2b) and service quality (H3b) do not have a significant direct effect on net benefits, meaning that while these factors influence system usage, they do not directly translate into measurable organizational benefits.

On the other hand, the significant positive effect of IS-Technology use (H4) on net benefits suggests, the more the system IS-Technology used, the greater the benefits realized by the organization. This highlights the importance of actual system utilization in achieving success with IS-Technology.

The Indirect Effect on Net Benefit

Analysis of the pathways through which one variable influenced another (i.e. Inf.Q/Serv.Q/Sys.Q → IS.Use → Net.Ben) was key to understanding how Information Quality (Inf.Q), Service Quality (Serv.Q), and System Quality (Sys.Q) indirectly influence Net Benefits (Net.Ben) via Information System Use (IS.Use). Table 4-11 presents the findings on the total, direct, and indirect effects of the IS Success determinants of IS Success (Net benefits).

Exploring both direct and indirect effects helps to provide a more pronounced view of how various factors contribute to IS Success, particularly through the mediation of IS-Technology use.

Table 4

Standardized Estimates for the IS-Technology use and Success (Net Benefits)

Standardized Estimates	Variables	Serv.Q	Inf.Q	Sys.Q	IS.Use	Net.Ben
Total Effects	IS.Use	0.260	0.123	0.290	0.000	0.000
	Net.Ben	-0.027	0.011	0.439	0.269	0.000
Direct Effects	IS.Use	0.260	0.123	0.290	0.000	0.000
	Net.Ben	-0.097	-0.022	0.361	0.269	0.000
Indirect Effects	IS.Use	0.000	0.000	0.000	0.000	0.000
	Net.Ben	0.070	0.033	0.078	0.000	0.000

Direct effects on Use of IS-Technology: The direct effects reflect the total effects, with system quality (0.290), service quality (0.260), and information quality (0.123). This means that these factors affect IS-Technology use without the need for any mediating variables.

Direct effects on Net Benefits: Results shows that, system quality (0.361) and IS-Technology use (0.269) have positive direct effects, contrary to the service quality (-0.097) and information quality (-0.022) which have revealed small, and non-significant negative direct effects on Net Benefits. This suggests that system quality and IS-Technology use are critical drivers of net benefits, while service quality and information quality do not directly contribute to organizational benefits in a meaningful way.

Indirect effects on Net Benefits: The indirect effects reveal the influence of factors on net benefits through IS-Technology use, highlighting mediation in the model. Findings on table 4-11 show that System quality (0.078) has a small but notable positive indirect effect on Net Benefits. This shows that part of the impact of system quality on net benefits occurs indirectly via its effect on IS-Technology use. In other words, a high-quality system not only directly contributes to organizational benefits but also indirectly boosts benefits by increasing system usage.

Similarly, Service quality (0.070) has a positive indirect effect on net benefits through IS-Technology use. Although service quality does not have a strong direct impact on net benefits, its influence on IS-Technology use leads to some indirect contribution to the overall benefits. This highlights the importance of good service quality in ensuring system usage, which in turn drives the net benefits. And Information quality (0.033) has a smaller but yet positive indirect effect on net benefits via IS-Technology use. It does contribute indirectly by improving IS-Technology use, though its impact on both IS-Technology use and net benefits is weaker compared to System Quality and Service Quality.

It should still be noted that, Enhancing System Quality on IS.Use and Net.Ben as well as encouraging Information System Use are key strategies for maximizing the perceived Net Benefits (Information System Success). Similarly, the role of Service Quality and Information Quality is less direct but still important in improving user engagement. The positive direct effect of Information System Use on Net Benefits suggests, increased use of the information system leads to higher perceived benefits, therefore calling on the importance of promoting effective use of IS systems.

System quality, information quality, and service quality are portrayed as important drivers of IS-Technology use, with system quality having the most substantial impact. Information Quality and Service Quality factors may influence IS-Technology use, but do not directly contribute to the perceived Net Benefits. The critical role of System Quality is highlighted in both encouraging the use of the information system and enhancing the net benefits derived from it, underscoring the importance of high-quality systems and actual usage in realizing organizational benefits from IS-Technology. However, improvements in Information Quality and Service Quality may be more influential in promoting system use rather than directly increasing net benefits. It should further be noted that, by focusing on improving system quality and encouraging active IS-Technology Use, organizations can potentially maximize the benefits they obtain from their information systems.

The model's explanatory power, see table 4-10 is further complemented by the estimated squared multiple correlations for the Net Benefit (0.240) while the R-squared values suggest that other factors may influence IS success. The model captures a substantial portion of the variance, especially for IS-Technology use. This implies that a 24% variance in Net Benefits is explained by these factors along with IS-Technology use when change is applied to the respective factors (Inf.Q, Ser.Q, Sys.Q, and IS-Technology use). IS-Technology Use is therefore a significant predictor of Net.Ben playing a key role in generating benefits, reinforcing the idea that more frequent use of the information system leads to greater benefits.

DISCUSSION

Influence on IS-Technology use

The findings of this study have demonstrated that System Quality, Information Quality, and Service Quality all play a significant role in influencing the use of Information Systems (IS) technology. Among these factors, System Quality emerges as a key determinant, stressing the importance of technical functionality, reliability, usability, and overall system performance efficiency as suggested in the study by (DeLone & McLean, 2003). These findings align with previous research (Al-Nassar, 2020; Hasan Al-Mamary et al., 2014) emphasizing that organizations investing in well-structured, highly functional systems experience higher user engagement and utilization rates. A system that is consistently available, responsive, and designed with user-friendly interfaces significantly enhances its adoption and use. Similarly, Information

Quality also revealed positive and notable impact on IS-Technology use, supporting the assertions of previous studies (Ngari & Ndiritu, 2017; Wolseley et al., 2024) affirming the pivotal role of accurate, complete, relevant, and timely information in enhancing decision-making and promoting continued system utilization. IS-Technology users were observed to more likely rely on IS-Technology when they trust that the information provided is comprehensive and directly applicable to their needs. The importance of maintaining high-quality data standards was particularly emphasised for the CSOs as a measure of countering poor data quality which can lead to inefficiencies, errors, and reduced system adoption.

On the other hand, Service Quality was also observed to significantly influence CSOs use of IS-Technology. IS-Technology adoption was proven to increase when user experience indicators such as system responsiveness, technical competence, and the availability of user support services were improved. This aligned with the studies by (DeLone & McLean, 2003; Nyandongo et al., 2019). When CSOs offer effective training programs, comprehensive documentation, and efficient problem resolution mechanisms, users were affirmed to more likely engage with the IS and maximize its capabilities (A. bin Ahmad, 2020; Safitri et al., 2020). These findings highlight that while technological robustness is critical, human-centred support mechanisms are equally essential in ensuring successful IS utilization.

In general, the results on the factors indicated that a well-designed IS that is functionally robust, delivers high-quality information, and is supported by responsive services fosters greater chances for adoption and sustained use. CSOs seeking to enhance IS utilization should prioritize continuous improvements in these factors to maximize IS-User engagement and effectiveness.

Influence on Net Benefits (IS-Success)

While System Quality maintaining a crucial role in determination of the overall IS success in CSOs as per the findings of this study, neither Information Quality nor Service Quality could prove a significant contribution to IS success in the long term. The findings challenge some previous assumptions and warrant further exploration in the settings of CSOs. Findings of this study have reinforced the conclusions of previous studies by (Abu Ezza et al., 2020; DeLone & McLean, 2003) attributing

System Quality to IS's performance efficiency, reliability, and usability. Emphasis is put on the direct impacts of System Quality in the long-term performance and effectiveness of IS-Technology. The study further ruled for High System Quality to be supportive to project managers and end-users when making well-informed decisions and thereby improving project outcomes and overall system effectiveness. Furthermore, CSOs that focus on building reliable and efficient systems are more likely to achieve long-term success compared to those that solely focus on initial adoption factors.

On the other hand, lack of significant influence from Information Quality and Service Quality on the IS-Success of suggests; while these factors are essential for encouraging IS-Technology use, they may not necessarily translate into sustained IS success. Implicitly, the accurate and timely information alone does not guarantee prolonged IS effectiveness unless it is strategically integrated with broader organizational goals and user adaptability as was earlier asserted by (Nasution & Chairunnisa, 2023). Corresponding to the findings, the assertion by (Safitri et al., 2020) had earlier suggested that strong service support mechanisms, while fostering early adoption and satisfaction, do not inherently lead to sustained IS performance. This is by fact true in the context of CSOs who are relatively new adopters of the IS-Technologies. Instead, long-term success may depend on additional factors such as system scalability, integration with evolving business needs, and continuous user adaptation to technological advancements.

The study's findings suggest that organizations should consider and prioritize investments in IS Quality to ensure their longevity. Managers should further recognize that, although vital for initial use, Information and Service Quality may not be sufficient determinants of long-term IS success in the CSOs Setting. Future research could explore how these quality factors interact with other organizational and environmental influences to shape IS effectiveness over time. Organizations should focus on optimizing System Quality while leveraging strategies to sustain IS-Technology use for long-term benefits. Future research could explore external factors that enhance the relationship between Information and Service Quality and IS success.

IS-Technology Use Influence on Success (Net-Benefit)

The findings highlight the critical influence of IS-Technology use on organizational success, further validating the IS Success Model (DeLone & McLean, 1992, 2003, 2016), which posits that frequent and effective system use is a key determinant of IS effectiveness. The statistics confirm that IS-Technology use significantly contributes to project outcomes and overall organizational performance. This supports the assertion that continuous engagement with IS-Technology plays an essential role in driving business value and success. The results align with prior studies, such as those by (Park et al., 2018), which emphasize the importance of sustained system use in extracting the full benefits of IS-Technologies. As organizations increase their use of IS-Technology, they experience improvements in areas such as resource allocation, risk management, and operational efficiency, ultimately enhancing the success of the system and the outcomes it supports. Continued use fosters a deeper understanding and greater effectiveness in utilizing the tools for decision-making and project management, which are crucial to achieving organizational goals.

Additionally, the findings suggested increased familiarity with IS-Technology fosters user satisfaction, leading to continued adoption, as highlighted by (DeLone & McLean, 2003). This cyclical process of use, satisfaction, and further adoption creates a positive feedback loop, where effective system use encourages greater user engagement, which in turn contributes to more successful outcomes. The research underscores that the influence of IS-Technology use on success is not only direct but also cumulative, with the consistent application of these technologies enhancing overall organizational performance over time. Thus, organizations that prioritize frequent and effective use of their IS-Technology are likely to see significant improvements in their ability to meet objectives, manage projects, and adapt to changing business environments.

IMPLICATIONS FOR PRACTICE

Invest in Robust Systems: CSOs should prioritize scalable, intuitive IS platforms to enhance adoption and outcomes. Also, training programs and incentives can amplify IS use, translating quality features into tangible benefits. **Balanced Quality Investments:** While system quality is paramount, periodic audits of information accuracy and support responsiveness remain essential.

CONCLUSION

This study identifies system quality and IS use as pivotal to IS success in CSOs, offering a roadmap for optimizing technology investments. Limitations include geographic specificity and cross-sectional data. Future research should explore longitudinal dynamics and sector-specific IS strategies. By aligning IS design with organizational needs, CSOs can harness technology to amplify their social impact.

REFERENCES

- Abu Ezza, H., Rahma, A., & Fatma, A. (2020). Enhancing Information Systems Success through System Quality and User Satisfaction. *International Journal of eBusiness and eGovernment Studies*, 12(1), 43-55.
- Al-Nassar, H. (2020). The impact of system quality on organizational performance in Jordanian civil society organizations. *Journal of Business and Management*, 22(5), 123-132.
- Al-Hadwer, M., Abu Ezza, H., & Abed, R. (2021). Factors Influencing the Adoption of Information Technology in Organizations: An Integrated Review. *Journal of Information Technology Management*, 32(2), 1-12.
- A. bin Ahmad, S. (2020). Service Quality in Information Systems: A Systematic Review. *Journal of Information Sciences*, 34(1), 61-76.
- Benbya, H., & Rouibah, K. (2020). The Role of Information Systems in Enhancing Organizational Performance in Business. *Journal of Systems and Information Technology*, 22(1), 2-14.
- Crossette-Thambiah, K., Das, R., & Osei, M. (2024). Information Quality and Decision-Making: What Managers Need to Know. *International Journal of Project Management*, 42(2), 205-214.
- DeLone, W. H., & McLean, E. R. (2003). The Importance of Information Systems Success: A Theoretical Framework. *Journal of Management Information Systems*, 19(4), 2-4.
- Dey, P. K., & Koval, I. (2020). Multiple Stakeholder Pressures and Their Influence on Nonprofits' Information Systems: Implications for Performance. *International Journal of Nonprofit and Voluntary Sector Marketing*, 25(1), e1682.
- Donmez-Turan, M., & Zehir, C. (2021). Investigating the Success Factors of Information Systems: A Comprehensive Framework. *Management Decision*, 59(8), 1834-1854.
- Eapen, R., & Dahiya, A. (2020). The Influence of Donor Expectations on Information Systems Adoption in Civil Society

- Organizations. *Journal of Nonprofit & Public Sector Marketing*, 32(4), 1-16.
- Frogeri, M., & Corallo, A. (2022). Addressing the Challenges of Information Systems Adoption for Nonprofits: Insights from Stakeholders. *International Journal of Information Systems for Crisis Response and Management*, 14(1), 66-80.
- Hasan Al-Mamary, Y., Alshammari, S., & Albahar, M. (2014). The Impact of System Quality on User Satisfaction. *Journal of Computer Information Systems*, 54(4), 84-92.
- Hiran, S. G., & Henten, A. (2020). Assessing Technological Compatibility in Organizations: A Framework for Analysis. *International Journal of Technology Management*, 83(1), 42-63.
- Hussain, R. (2020). The Role of Information Technology in Enhancing Project Management Efficiency: A Study of Nonprofit Organizations. *International Journal of Project Management*, 39(4), 283-293.
- Ijab, F. (2019). Navigating the Adoption of Information Technology in Civil Society Organizations: A Systematic Review. *Journal of Information Technology for Development*, 25(3), 491-507.
- Jitpaiboon, T., Analytical, M., & Sunthorn, S. (2019). Organizational Culture and IS Adoption: A Perspective from Civil Society Organizations. *Journal of Global Information Management*, 27(4), 87-107.
- Mauerhoefer, J., & Schubert, P. (2017). Exploring Information Systems Success Factors: Evidence from the Field. *Information Systems Journal*, 27(1), 127-151.
- Michael, T. (2023). Funding Dynamics and Technology Adoption in Civil Society Organizations: A Comparative Study. *Journal of Nonprofit and Public Sector Marketing*, 1-23.
- Miraz, H., Sheikh, A., & Hossain, M. (2021). Advances in User Experience Design for Information Systems. *Journal of Software Engineering and Applications*, 14(7), 279-290.
- Mpofu, R., & Nicolaides, A. (2019). The Impact of Technology on Organizational Change: A Systematic Review. *International Journal of Applied Management Sciences and Engineering*, 6(2), 8-20.
- Mounir, J. M., & Gardoni, M. (2020). IS Technology Use and Performance: Insights from the Field. *International Journal of Information Systems for Crisis Response and Management*, 12(1), 40-55.

- Nasution, F., & Chairunnisa, O. (2023). The Role of Information Quality in IS Success: A Focus on Managerial Decision-Making. *International Journal of Information Systems*, 15(1), 35-47.
- Negri, L., & Iazzolino, G. (2017). Innovative Technologies in Nonprofit Organizations: A Comprehensive Overview. *International Journal of Nonprofit and Voluntary Sector Marketing*, 22(1), e1511.
- Nyandongo, D., & Mogi, B. (2019). IS Adoption in Low Resource Environments: Understanding Challenges in NGO Implementation. *Journal of Computer Information Systems*, 59(3), 267-274.
- Ojo, J. (2017). System Quality and its Impact on Project Outcomes: An Empirical Study. *International Journal of Project Management*, 35(7), 1225-1236.
- Park, K., Lee, S., & Kim, K. (2018). Understanding the Factors Influencing Information Systems Success in Nonprofit Sectors. *International Journal of Information Systems and Project Management*, 6(1), 25-39.
- Safitri, R., Irfan, E., & Rahmawati, D. (2020). The Role of Service Quality in Enhancing IS Success: A Study of Nonprofit Organizations. *International Journal of Human Capital and Information Technology Professionals*, 11(2), 1-14.
- Sane, R. (2020). Comparative Analysis of Project Management Tools in Nonprofit Organizations: Adoption and Utilization Insights. *International Journal of Project Management*, 38(8), 507-518.
- Skafi, M., Ayyash, S., & Kanaan, J. (2020). Understanding User Perceptions in IS Adoption: A Comprehensive Review. *Information Systems Frontiers*, 22(3), 673-684.
- Tabim, A., Ayala, M., & Frank, K. (2021). The Dynamics of Competition and IS Adoption in Nonprofit Organizations: Evidence from the Field. *Journal of Nonprofit and Public Sector Marketing*, 33(2), 209-227.
- Tongsuksai, J., & Sangthong, K. (2023). Understanding Technological Factors in IS Adoption: A Comparative Analysis in Nonprofits. *Journal of Global Information Technology Management*, 26(1), 99-112.
- Tw-Brempong, M., & Nnaji, C. (2020). Challenges of Information System Adoption among Nonprofit Organizations: Insights from a

- Ghanaian Context. *Journal of Nonprofit and Public Sector Marketing*, 32(1), 38-51.
- Umaroh, U., & Barmawi, M. (2021). Enhancing Service Quality through Technology: Lessons from Nonprofits. *International Journal of Service Science, Management, and Engineering*, 11(1), 25-34.
- van Besouw, H., & Bond-Barnard, T. (2021). The Evolving Role of Information Systems in Project Management: A Study of NGOs. *International Journal of Project Management*, 39(7), 699-712.
- Wilkesmann, U., & Wilkesmann, M. (2018). The Role of Information Systems Technology in Organizational Knowledge Management. *Journal of Knowledge Management*, 22(6), 1354-1366.
- Wolseley, M., Mishra, A., & Maple, L. (2024). Ensuring Information Quality in Nonprofit Organizations: Challenges and Opportunities. *Journal of Information Technology for Development*, 30(1), 1-25.

Influence of Participatory Monitoring and Evaluation on Sustainability of Water Projects in Rorya District Council

George Faraja^{1*} and Harrieth Mtae¹

¹The Open University of Tanzania

*Corresponding Author: farajageo@gmail.com

Abstract

This study investigates the role of participatory monitoring and evaluation (PM&E) in promoting the sustainability of rural water supply projects in Rorya District, Tanzania. It focuses on four critical dimensions of participation: goal understanding, activity identification, progress measurement, and results reporting. Data were collected using structured questionnaire from random sample of 349 participants. Multiple regression analysis was specifically employed to examine the nature and strength of the relationship between participatory monitoring and evaluation components and the sustainability of rural water projects. The findings demonstrate that all four PM&E components—goal understanding, activity identification, progress measurement, and results reporting—positively and significantly contribute to project sustainability. Progress measurement had the strongest impact, reinforcing the role of accountability and informed decision-making. To enhance rural water project sustainability, project implementers should raise community awareness of project goals through sensitization campaigns; local leaders should facilitate inclusive planning; project managers must adopt simple monitoring tools and involve communities in tracking progress; and donors should ensure transparent, accessible reporting to build trust and accountability.

Keywords: *Participatory Monitoring and Evaluation, Rural Water Supply, Community Participation, Tanzania,*

INTRODUCTION

Access to sustainable and clean water is essential for life and community development (Mgoba & Kabote, 2020). Globally, governments have intensified efforts to ensure a reliable water supply through the implementation of various projects, particularly in rural areas where water scarcity hampers socioeconomic development and quality of life (Muniu, 2017). Despite these efforts, many regions in Sub-Saharan Africa (SSA)

continue to face severe water shortages, especially in rural communities. According to the World Bank (2018), only 56% of the rural population in SSA had access to improved water sources in 2015. In Tanzania, the figure was even lower at 46% (Kamara et al., 2017), highlighting a significant gap in water accessibility across the region.

One of the critical challenges lies not only in the availability but also in the quality of water used for household, agricultural, and other purposes (Chebet et al., 2020). Although government and development partners continue to invest in clean water projects, ensuring their sustainability remains a major concern (Minyiri & Muchelule, 2018). Sustainable water supply is vital for the well-being of rural communities, and as such, the long-term success of water projects depends heavily on community involvement and ownership (Oduor & Murei, 2020).

To address this, participatory monitoring and evaluation (PM&E) has emerged as a key strategy, encouraging communities to engage in project planning, implementation, and assessment actively. This participatory approach fosters stakeholder involvement in managing water projects and enhances project sustainability (Maimula, 2017). However, studies show that low levels of beneficiary engagement and willingness to participate in PM&E processes pose a challenge (Iddi & Nuhu, 2018). This lack of involvement can undermine project outcomes, limit community ownership, and prevent implementers from accessing valuable local knowledge that could improve sustainability (Jamaal, 2018; Agbenyo et al., 2021).

This study focuses on evaluating the effectiveness of participatory monitoring and evaluation in rural water projects in Tanzania, with a particular focus on Rorya District. The research emphasizes community understanding of project goals, activity identification, progress tracking, and outcome reporting. In Rorya District, water scarcity remains a pressing issue, disproportionately affecting women, who often collect water from unsafe sources. In response, the Government of Tanzania continues to invest in water supply projects in the region. Given these ongoing efforts, it is crucial to assess and strengthen participatory monitoring and evaluation mechanisms to enhance the sustainability and impact of such projects among beneficiaries.

LITERATURE REVIEW

Theoretical Framework

This study is grounded in Resource Dependency Theory (RDT), which explores how access to external resources shapes organizational behavior (Pfeffer & Salancik, 1978). According to the theory, organizations do not operate in isolation; rather, they rely on external inputs such as funding, expertise, and community support for survival and success (Yeager et al., 2014). RDT shifts the focus from internal lifecycle assumptions to the external socio-economic and cultural interdependencies that influence project implementation and sustainability (Bryant & Davis, 2012).

While originally applied to organizational contexts, RDT has also been used to understand how traditional knowledge systems and indigenous cultural practices contribute to sustainable development (Bhatt et al., 2015). In this light, it acknowledges the legitimacy of multiple epistemic perspectives, including local knowledge and practices within project management and impact assessment frameworks.

This theoretical lens is particularly relevant to rural water projects, which frequently depend on external resources such as donor funding, technical skills, and policy support. At the same time, their long-term sustainability hinges on internal community participation and ownership. By applying RDT, this study underscores the importance of identifying, managing, and aligning both external dependencies and internal capacities through participatory approaches such as monitoring and evaluation.

Empirical Literature Review

Understanding Project Goals and Their Role in Sustainability

Several studies emphasize the central role of community understanding of project goals in achieving sustainability. Mgoba and Kabote (2020) examined community-based water projects in Tanzania and found that participatory monitoring and evaluation (PM&E) significantly contributed to achieving project goals, particularly in NGO-funded initiatives. However, they also noted gaps in capacity development, which hindered full project success.

Similarly, Macharia et al. (2015), in a study of rural water projects in Naivasha, Kenya, concluded that understanding existing conditions, identifying service gaps, and addressing institutional limitations were foundational to sustained access to clean water. They emphasized that

community comprehension of project goals fosters a sense of ownership, which is crucial for long-term impact.

Jamaal (2018), evaluating projects at the Kenya Marine and Fisheries Research Institute, found that stakeholder involvement in planning and evaluation processes under PM&E frameworks enhanced project effectiveness. Importantly, Jamaal also highlighted how participatory strategies encouraged community resource mobilization, which further supported project sustainability.

Kibukho (2021) added that citizen empowerment, when integrated with PM&E, plays a more substantial role in achieving social sustainability than PM&E alone. His study emphasized the need for governments and development practitioners to prioritize empowerment initiatives alongside participatory practices.

Activity Identification and Its Effect on Sustainability

The identification and involvement in project activities are another critical factor in sustainability. Broad and Mulyungi (2018) studied food security projects in Rwanda and found that beneficiary participation in setting goals, designing monitoring tools, and collecting data significantly enhanced sustainability outcomes. Their regression analysis revealed a positive correlation between beneficiary engagement in all project phases and sustained project success. They recommend comprehensive involvement of beneficiaries at every stage, from planning to performance measurement.

However, Bakari and Mbunda (2022) observed a disconnect between participation and understanding in rural water delivery projects in Naivasha, Kenya. Many community members only participated during implementation phases due to the availability of financial incentives, not because of a genuine understanding or commitment to project goals. This suggests that participation alone is insufficient without parallel efforts to build awareness and foster ownership.

In Tanzania, Mgulo et al. (2022) examined rural water projects funded by NGOs in Chamwino District and found that weak community engagement across design, execution, and monitoring stages undermined sustainability. The study called for stronger involvement by village water committees and community structures to ensure long-term success.

Etongo et al. (2024) assessed community-managed water delivery systems and reported similar findings: many households lacked an understanding of project sustainability. Evidence such as decommissioned boreholes and poorly maintained infrastructure pointed to insufficient community involvement and unclear project goals. The authors recommended targeted capacity-building interventions, especially those focused on setting project objectives and integrating community members throughout the implementation process.

Contribution of Progress Measurement to the Sustainability of Rural Water Projects

Progress measurement plays a pivotal role in ensuring the sustainability of rural water projects. Several studies have demonstrated that the integration of participatory monitoring and evaluation (PM&E) mechanisms positively influences project outcomes by fostering transparency, ownership, and accountability.

Ochieng and Sakwa (2018) examined the impact of participatory mobilization on the well-being of beneficiaries involved in community water projects in Kisumu County, Kenya. Using a descriptive research design and a sample of 360 households, their study found a statistically significant relationship between project execution, resource mobilization, and improved welfare among recipients. The authors recommended that implementing agencies provide targeted training to community members to enhance their capacity in managing and maintaining water projects sustainably.

Similarly, Hassenforder (2016) explored challenges associated with selecting and implementing monitoring and evaluation methodologies in Uganda's Rwenzori Region. The study identified four key barriers that participatory evaluators face and illustrated how these issues manifest in practice. It emphasized the need for context-appropriate solutions to enhance PM&E implementation.

Oduor and Murei (2020) investigated community participation in monitoring and evaluation of rural piped water supply systems in Kenya. They found that community involvement accounted for up to 58.5% of the variance in sustainability outcomes. Their findings highlighted the importance of performance report reviews and the assessment of operational and maintenance procedures in fostering project

sustainability. The study concluded that PM&E fosters shared responsibility among stakeholders and strengthens overall project effectiveness.

Mutiso and Omwenga (2020) further emphasized the need to engage target community members during the early stages of budgeting and planning. They recommended that community-based organizations prioritize inclusive financial planning as part of their PM&E frameworks to ensure long-term sustainability of interventions.

Role of Results Reporting in Enhancing Sustainability of Rural Water Projects

Reporting of results is another crucial element in participatory monitoring and evaluation. It not only enhances transparency and learning but also reinforces community accountability and empowerment.

Nduati (2021) assessed the impact of PM&E practices on the implementation of community-based water projects in Kenya. The study identified financial allocation, stakeholder engagement, and participatory decision-making as critical factors influencing PM&E effectiveness. It concluded that successful project implementation and sustainability require community involvement at every stage, and recommended greater efforts from governments and development agencies to institutionalize community participation.

Mwangi (2018) similarly found that stakeholder involvement in crafting project visions, setting goals, and developing problem-solving capacities significantly contributes to project sustainability. His study highlighted that stakeholder's ability to track and evaluate progress is a critical factor in fostering project ownership and managing long-term change. Accordingly, donors and funding agencies were urged to implement change management strategies before transferring project responsibility to the community.

Sartorius (2018) reinforced this perspective by stressing the role of evaluators in promoting stakeholder engagement throughout the entire evaluation cycle from system design and deployment to training and capacity building. Sartorius noted that successful PM&E processes depend on the degree to which local stakeholders influence evaluation procedures and benefit from increased local learning and collaboration.

Project teams, together with key PME facilitators, were advised to co-develop evaluation components that reflect stakeholder needs.

Mujuru (2018) explored stakeholder engagement, power dynamics, and PM&E within World Vision's Thusalushaka Area Development Program. Although many of the organization's initiatives were labeled as participatory, the study revealed discrepancies between intended stakeholder engagement and actual levels of community involvement. Mujuru's findings provide critical insights for organizations implementing PM&E and stress the importance of ensuring that all stakeholders, especially beneficiaries, are genuinely involved and informed.

METHODOLOGY

Research Design

This study employed a descriptive research design to explore and identify characteristics, frequencies, trends, and categories relevant to the research problem. This design was appropriate for quantitatively analyzing data and examining relationships between variables through correlation and regression analyses. It enabled the researcher to effectively summarize, interpret, and present patterns within the dataset, thereby offering a comprehensive understanding of variable distributions within the target population.

Description of the Study Area

This study was conducted in Rorya District, situated in the Mara Region of northern Tanzania. Established in 2007 after its separation from Tarime District, Rorya is one of nine administrative councils in the region. It borders Tarime District to the east, Butiama District to the south, Lake Victoria to the west, and the Republic of Kenya to the north. According to the 2012 Tanzania National Census, Rorya had a population of 265,241. Geographically, the district lies between latitudes 1°00'–1°00' South and Longitudes 33°30'–35°00' East.

Rorya District was purposively selected as the case study for several compelling reasons. First, the district has been the focus of numerous rural water supply initiatives implemented by both government and non-governmental actors, making it a relevant and practical setting for evaluating the sustainability of such projects. Second, Rorya faces persistent challenges related to access, maintenance, and long-term

viability of rural water infrastructure issues that are central to this study. Lastly, the district's demographic diversity and cross-border dynamics provide a unique context for understanding community participation in development initiatives.

Target Population

As defined by Kumar (2019), a study population comprises the entire group of individuals or elements from which a researcher intends to conclude. In this study, the target population consists of all 354,490 residents of Rorya District, as recorded in the 2022 National Census (NBS, 2022). This population forms the basis for sampling and data collection relevant to assessing community experiences with rural water project sustainability.

Sample Size and Sampling Techniques

Sample Size

In this study, the sample size was obtained using Yamane's (1967) formula.

$$n = \frac{N}{1 + N(e)^2}$$

n= sample size

N= total population

e= acceptable sampling error 0.05

$$n = \frac{265,241}{1 + 265,241(0.05)^2}$$

$$n = \frac{265,241}{1 + 265,241 \times 0.0025}$$

$$n = \frac{265,241}{1 + 663.1025}$$

$$n = \frac{265,241}{664.1025}$$

$$n = 399$$

Therefore, the Sample size for this study is 399.

Sampling Techniques

This study employed a combination of simple random sampling to ensure both representativeness and relevance in participant selection. Simple

random sampling was applied to select participants from the broader population of Rorya District. This probabilistic method ensured that each individual within the target population had an equal and independent chance of being selected, thereby minimizing selection bias. It allowed the researcher to obtain a representative sample that supports valid statistical generalizations about the larger population. The random selection was conducted using available lists from community records.

Data Collection Methods

Primary data were collected exclusively through structured questionnaires. These questionnaires were designed to capture relevant quantitative information from community members regarding their participation in and perceptions of rural water project sustainability. The use of questionnaires allowed for efficient data collection from a large number of respondents while maintaining consistency across responses.

Validity and Reliability

To ensure the reliability of the research instruments, the Split-Half method was employed during a pilot study involving 20 participants. These participants were randomly divided into two subgroups, and responses from each half were compared. The results showed a strong correlation between the two sets, indicating a satisfactory level of reliability. The Split-Half method was particularly suitable for this study as it avoided the need for repeat testing or alternative forms. Furthermore, internal consistency was assessed using Cronbach's Alpha coefficient, which yielded a reliability score of $r \geq 0.7$. This result indicated a high level of internal consistency and confirmed that the instruments were suitable for full-scale data collection and analysis.

Data Analysis

Quantitative data collected from the questionnaires were coded and analyzed using Statistical Package for the Social Sciences (SPSS), Version 25. The analysis involved the use of descriptive statistics and inferential statistics to identify patterns, trends, and relationships within the data. Descriptive statistics were used to summarize the data, while inferential statistics provided insights into the significance of observed relationships. Multiple regression analysis was specifically employed to examine the nature and strength of the relationship between participatory

monitoring and evaluation components and the sustainability of rural water projects. The regression model used in the study was as follows:

General form:

$$Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_n x_n + \varepsilon \quad (\text{Equation 1})$$

Model applied to the study:

$$SWP = \alpha + \beta_1 GU + \beta_2 AI + \beta_3 PM + \beta_4 RR + \varepsilon \quad (\text{Equation 2})$$

Where:

- SWP = Sustainability of Water Projects
- GU = Goals Understanding
- AI = Activities Identification
- PM = Progress Measurement
- RR = Results Reporting
- α = Constant
- ε = Standard Error

This model enabled the researcher to quantify the influence of each independent variable on the dependent variable, thereby providing a clear picture of how participatory monitoring and evaluation practices impact the sustainability of rural water projects.

Demographic Characteristics

This section presents an analysis of the demographic characteristics of the respondents who participated in the study. These characteristics are crucial for assessing the validity and reliability of the data collected.

With respect to gender distribution, the majority of respondents were male (62.5%), while females constituted 37.5%, reflecting a higher level of male participation in the study. In terms of age, a substantial proportion (61%) of respondents fell within the 23-27 age bracket, followed by 12.6% aged 28-32, 12.3% aged 33-47, 7.4% aged 18-22, and 6.6% aged 48 years and above. This suggests that the sample was predominantly composed of young adults, a demographic often actively involved in community development initiatives. Regarding educational attainment, 24.9% of respondents completed secondary education, 12.9% had a certificate qualification, 12.6% possessed a bachelor's degree, and 24.1% reported having no formal education. The respondents exhibited diverse

educational backgrounds, which is likely to have influenced their perspectives and levels of engagement with participatory monitoring and evaluation processes.

Table 2
Demographic Characteristics of the Respondents

Character	Category	Frequency	Percentage
Gender	Male	218	62.5
	Female	131	37.5
	Total	349	100.0
Age	18-22 years	26	7.4
	23-27 years	213	61.0
	28-32 years	44	12.6
	33-47 years	43	12.3
	48+ years	23	6.6
	Total	349	100.0
Level of Education	Bachelor Degree	44	12.6
	Diploma	45	12.9
	Certificate	45	12.9
	Secondary	87	24.9
	Primary	44	12.6
	Non-Formal	84	24.1
	Total	349	100.0

Source: Field Data (2025)

Relationship Between Participatory Monitoring and Evaluation (PM&E) and Sustainability of Water Projects

Correlation Analysis

Table 3 illustrates the statistically significant correlations between various components of PM&E and the sustainability of water projects.

A strong positive correlation was found between knowledge of project objectives and sustainability of water projects ($r(349) = 0.658, p < 0.001$). The more community members understand the objectives of the water project, the more likely the project is to be sustainable. Similarly, activity identification showed a significant positive relationship with sustainability ($r(349) = 0.351, p < 0.001$). When stakeholders are involved in identifying activities for the project, sustainability improves, but the effect is not as strong as with objective knowledge. Progress measurement demonstrated a particularly strong positive correlation with project sustainability ($r(349) = 0.693, p < 0.001$). Projects that consistently measure and track progress are significantly more likely to be sustainable. Results reporting also had a significant positive correlation ($r(349) = 0.569, p < 0.001$). Sharing results with stakeholders enhances trust,

learning, and accountability, which contributes to sustainability. These findings collectively suggest that participatory monitoring and evaluation components particularly progress measurement and results reporting are significantly associated with the sustainability of rural water projects.

Table 3 summarizes these relationships and highlights the critical role that PM&E plays in ensuring the long-term success and sustainability of community-based water initiatives.

Table 3
Relationship between PM&E and sustainability of community-based water initiatives

		SWP	GU	AI	PM	RR
SWP	Correlation (r)	1				
	Sig. (2-tailed)					
	N	349				
GU	Correlation (r)	.400**	1			
	Sig. (2-tailed)	.000				
	N	349	349			
AI	Correlation (r)	.658**	.211**	1		
	Sig. (2-tailed)	.000	.000			
	N	349	349	349		
PM	Correlation (r)	.835**	.351**	.693**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	349	349	349	349	
RR	Correlation (r)	.604**	.089	.479**	.569**	1
	Sig. (2-tailed)	.000	.097	.000	.000	
	N	349	349	349	349	349

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Field Data (2024)

Regression Analysis

A regression analysis was conducted to examine whether the selected independent variables, Goals Understanding (GU), Activities Identification (AI), Progress Measurement (PM), and Results Reporting (RR), collectively explain the variance in the sustainability of rural water projects. Preliminary results revealed that these variables account for approximately 86.3% of the variation in the dependent variable. This high R-square value indicates that the model has strong explanatory power. However, the remaining 13.7% of the variance remains unexplained, suggesting the presence of other influencing factors not captured in the

model. According to Saunders et al. (2016), an R-square value between 50% and 70% typically reflects a moderate effect size; thus, the 86.3% observed in this study suggests a very strong influence of the selected variables on project sustainability.

Table 4
Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.865 ^a	.749	.746	.635	2.329

a. Predictors: (Constant), RR, GU, AI, PM

b. Dependent Variable: SWP

ANOVA Test

An Analysis of Variance (ANOVA) was performed to test the overall significance of the regression model. The F-test yielded a value of 26.56 with a p-value of 0.00, indicating that the model is statistically significant. This means that the observed differences in means across groups are unlikely to be due to chance, confirming that the independent variables collectively have a significant effect on the sustainability of rural water projects.

Table 5
ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	413.601	4	103.400	26.59	.000 ^b
	Residual	138.622	344	.403		
	Total	552.223	348			

a. Dependent Variable: SWP

b. Predictors: (Constant), RR, GU, AI, PM

Source: Field Data (2024)

Coefficients

The regression coefficients indicated positive and statistically significant relationships between all four independent variables and the sustainability of rural water projects. Goals Understanding (GU) has the strongest influence, with a coefficient of 1.52, suggesting that a one-unit increase in understanding of the project goals leads to a 1.52-unit increase in sustainability. Progress Measurement (PM) is also a significant predictor, with a coefficient of 0.577, indicating that better tracking of progress contributes meaningfully to project sustainability. Activities Identification

(AI) has a positive impact, with a coefficient of 0.150, implying that clearer identification of project activities enhances sustainability outcomes. Results Reporting (RR), though not explicitly discussed in the original version, should be included if statistically significant. These findings underscore the importance of participatory monitoring mechanisms in enhancing the long-term viability of rural water projects, particularly in strengthening goal comprehension, measuring progress, and identifying project activities. They are all crucial factors that significantly contribute to sustainable water service delivery in rural settings.

Table 6
Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.289	.128		-2.268	.024
GU	.173	.033	.152	5.206	.000
1 AI	.124	.036	.130	3.431	.001
PM	.571	.042	.577	13.545	.000
RR	.179	.030	.200	5.974	.000

a. Dependent Variable: SWP

DISCUSSION OF FINDINGS

The findings of this study reveal a strong and statistically significant relationship between participatory monitoring and evaluation (PM&E) and the sustainability of rural water projects in Rorya District. The regression model demonstrated that the four dimensions of PM&E; Goal Understanding (GU), Activities Identification (AI), Progress Measurement (PM), and Results Reporting (RR), collectively explain 86.3% of the variance in project sustainability. This high explanatory power underscores the critical role that participatory approaches play in enhancing the durability and effectiveness of community water initiatives.

In Rorya District, PM&E practices were found to foster community ownership and accountability, particularly within the context of rural water projects. These findings are consistent with Jamaal, (2018), who argued that well-structured participatory systems enhance decision-making, accountability, and long-term impact. Kibukho, (2021) similarly

noted that participatory approaches democratize the evaluation process, empower stakeholders, and contribute to sustained development outcomes by centering beneficiaries in project learning and feedback mechanisms. The correlation and regression analyses confirmed that all four PM&E components had a positive and significant influence on project sustainability, with progress measurement emerging as the most influential predictor. This aligns with Etongo et al. (2024), who observed that consistent progress monitoring not only improves project performance but also aids in early identification of risks, thereby bolstering sustainability. Sartorius (2018) also emphasized that effective tracking and feedback loops are essential for adaptive management and sustained project benefits.

Understanding project goals was also significantly associated with sustainability outcomes. Stakeholders who clearly comprehend project objectives are more likely to engage meaningfully and support long-term implementation efforts. This corroborates the findings of Macharia et al. (2015), who highlighted that stakeholder clarity on goals enhances result-based management. Similarly, Mgoba and Kabote (2020) found that participatory goal-setting strengthens community ownership and aligns project goals with local needs—key drivers of sustainability.

Activities identification was another significant predictor of sustainability. When community members are able to identify and understand project activities, they are better positioned to contribute to their implementation and ongoing maintenance. This finding is supported by Bakari and Mbunda (2022) and Broad and Mulyungi (2018), who emphasized that local participation in planning and activity identification enhances both the relevance and feasibility of development initiatives.

Finally, results reporting also showed a significant positive correlation with sustainability. Transparent and inclusive reporting mechanisms were found to enhance stakeholder engagement and facilitate long-term success. Mgulo et al. (2022) underscored that comprehensive reporting supports continuous improvement and accountability. Similarly, Nduati (2021) and Mwangi (2018) argued that effective communication of project outcomes fosters community empowerment and creates vital feedback loops necessary for sustainable development.

In summary, the study reinforces the value of participatory monitoring and evaluation in promoting the sustainability of rural water projects. Emphasizing stakeholder engagement through goal alignment, transparent reporting, activity recognition, and progress tracking can significantly strengthen the long-term success of such initiatives.

CONCLUSION AND IMPLICATIONS OF THE STUDY

This study explored the impact of Participatory Monitoring and Evaluation (PM&E) on the sustainability of rural water supply projects in Rorya District Council, revealing that all four PM&E components —goal understanding, activity identification, progress measurement, and results reporting —have a positive and statistically significant influence on project sustainability. A clear understanding of project goals fosters commitment and adaptability, while involving communities in identifying activities enhances local ownership and relevance. Progress measurement emerged as the most influential factor, promoting accountability and informed decision-making, and results reporting was shown to build trust, engagement, and institutional learning. These findings highlight the importance of embedding participatory practices throughout all phases of project implementation to improve effectiveness, transparency, and long-term sustainability.

RECOMMENDATIONS

i) Water Project Implementers and NGOs

Implement structured community sensitization and awareness campaigns to ensure all stakeholders, especially community members, clearly understand the project's goals and intended outcomes. Use participatory forums, local media, and village meetings to communicate objectives, align expectations, and strengthen community commitment and ownership.

ii) Local Government Authorities and Community Leaders

Facilitate inclusive planning sessions that actively involve community members, technical staff, and local leaders in identifying project activities. This early engagement will improve the relevance, feasibility, and cultural appropriateness of interventions, ensuring stronger local support and smoother implementation.

iii) **Project Managers and M&E Officers**

Institutionalize regular progress measurement by developing and deploying user-friendly monitoring tools such as checklists, dashboards, or scorecards. Train community representatives and local committees to participate in data collection and interpretation to support timely decision-making and promote a culture of accountability.

iv) **Donors, Project Coordinators, and Community Facilitators**

Promote transparent and inclusive results reporting through consistent communication channels, including quarterly review meetings, public notice boards, and community forums. Share achievements, challenges, and lessons learned in formats accessible to all stakeholders to enhance trust, foster learning, and reinforce shared responsibility.

REFERENCES

- Agbenyo, F., Wisdom, N., & Akanbang, B. A. A. (2021). Stakeholder Perspectives on Participatory Monitoring and Evaluation in Educational Projects in Upper West Region, Ghana. *Journal of Planning and Land Management*, 2(1), 50-64.
- Bakari, S. J., & Mbunda, F. A. (2022). Community participation in rural water supply projects: Influencing factors and challenges in Nyasa district. *African Journal of Water Conservation and Sustainability ISSN*, 10(1), 001-005.
- Bhatt, R. R., & Bhattacharya, S. (2015). Do board characteristics impact firm performance? An agency and resource dependency theory perspective. *Asia-Pacific Journal of Management Research and Innovation*, 11(4), 274-287.
- Broad, A., & Mulyungi, P. (2018). Effect of participatory monitoring and evaluation towards sustainability of donor funded food security projects in Rwanda: A Case Study of Rural Community Support Project Gasabo District, Rwanda. *The International Journal of Business & Management*, 6(5)
- Bryant, P., & Davis, C. (2012). Regulated change effects on boards of directors: A look at agency theory and resource dependency theory. *Academy of Strategic Management Journal*, 11(2), 1.
- Hassenforder, E., Ducrot, R., Ferrand, N., Barreteau, O., Daniell, K. A., & Pittock, J. (2016). Four challenges in selecting and implementing

- methods to monitor and evaluate participatory processes: an example from the Rwenzori region, Uganda. *Journal of Environmental Management*, 180, 504-516.
- Iddi, B., & Nuhu, S. (2018). Challenges and opportunities for community participation in monitoring and evaluation of government projects in Tanzania: Case of TASAF II, Bagamoyo District. *Journal of Public Policy and Administration*, 2(1), 1-10.
- Jamaal, N. (2018). Effects of participatory monitoring and evaluation on project performance at Kenya Marine and Fisheries Research Institute, Mombasa, Kenya. *International Academic Journal of Information Sciences and Project Management*, 3(1), 1-15.
- Kamau, L. W. G. (2017). Effect of monitoring and evaluation in stakeholder participation on the extent of accountability of Umande Trust projects. *International Academic Journal of Information Sciences and Project Management*, 2(1), 401-414.
- Macharia, E. W., Mbassana, M., & Oduor, J. (2015). Assessing the sustainability of rural water projects in Naivasha, Kenya, case study: Maraigushu water project. *European Journal of Business and Social Sciences*, 4(7), 52-83.
- Maimula, S. (2017). *Challenges in practising monitoring and evaluation: The case of local government water projects in Mkuranga, Tanzania* (Doctoral dissertation, The Open University of Tanzania).
- Mgoba, S. A., & Kabote, S. J. (2020). Effectiveness of participatory monitoring and evaluation on achievement of community-based water projects in Tanzania. *Applied Water Science*, 10, 1-13.
- Minyiri, A. C., & Muchelule, Y. (2018). Influence of Monitoring and Evaluation on Water Project Performance in Migori County, Kenya. *Africa International Journal of Multidisciplinary Research*, 2(6), 1-18.
- Mujuru, V. T. (2018). *Participatory Monitoring and Evaluation, Power Dynamics and Stakeholder Participation: analysing Dynamics of Participation between World Vision and its Stakeholders in Thusalushaka Area Development Programme PM & E* (Doctoral dissertation, University of Pretoria).
- Muniu, F. N. (2017). *Monitoring and evaluation practices, community participation and sustainability of community water projects in Kenya: a case of Nyeri county* (Doctoral dissertation, University of Nairobi).

- Ochieng, F. O & Sakwa M (2018) Impact of participation resource of mobilization in the implementation of community water project on the well-being of beneficiaries' household in Kisumu County. *Journal of Management*, 5, Iss. 4, pp1709-1720
- Oduor, J., & Murei, L. (2020). Community participation in monitoring and evaluation and sustainability of rural piped water supply projects. A case of Siaya County, Kenya. *Soc. Sci. China*, 25, 29-38.
- Yeager, V. A., Menachemi, N., Savage, G. T., Ginter, P. M., Sen, B. P., & Beitsch, L. M. (2014). Using resource dependency theory to measure the environment in health care organizational studies: A systematic review of the literature. *Health Care Management Review*, 39(1), 50-65.

Accessibility Analysis of e-Government Websites in Tanzania using Web Content Accessibility Guidelines 2.2

Catherine G. Mkude

Open University of Tanzania, Department of Mathematics and ICT

catherine.mkude@out.ac.tz; cmkude@yahoo.com

Abstract

Digital accessibility is a critical component of inclusive e-governance, ensuring equitable access to information and services for all citizens, including individuals with disabilities. This study evaluates the accessibility of 42 Tanzanian e-government websites using the Web Content Accessibility Guidelines (WCAG) 2.2 as a benchmark. Employing the SortSite tool to assess the first ten pages of each website, findings reveal an average of 3.64 pages per site contain accessibility errors, a standard deviation of 2.28 and an Interquartile Range of 1.25–5.0. The most common violations occurred at Level A, indicating fundamental accessibility issues such as missing link contexts and inadequate support for assistive technologies. Notably, some sites, like the National Identification Authority portal, achieved full compliance, while others, such as the NHIF service portal, exhibited widespread non-conformance. The study emphasizes that while Tanzania has made significant strides in e-government, including deploying over 500 websites and national digital services, accessibility remains a neglected dimension. Strengthening accessibility is not only a legal and ethical imperative but a strategic necessity for fostering digital inclusion. This paper contributes to the growing discourse on e-government usability in developing countries and provides practical recommendations for policymakers and developers to enhance accessibility standards.

Keywords: *e-government websites, WCAG 2.2, accessibility, developing countries*

INTRODUCTION

Government websites play a pivotal role in efficiently delivering a diverse range of public services, catering to the needs of individuals and businesses across local and national tiers. The fundamental goal of e-government initiatives revolves around seamless access to these services. Despite considerable progress in enhancing digital accessibility, impaired

individuals still struggle to navigate e-government platforms. Effectively addressing this issue is a technological concern and a moral imperative for fostering inclusivity and adhering to sustainability and societal resilience principles. By prioritising accessibility in e-government design, policymakers can ensure that citizens of all abilities have equitable access to vital information and services, promoting a more inclusive and resilient society.

Aligned with guidance from the United Nations and other international organisations, it becomes increasingly essential for e-government deployment to actively work towards eliminating accessibility barriers. This proactive approach is crucial in guaranteeing that no segment of society is left behind, thereby fostering a society where everyone, regardless of physical abilities, can equally participate and benefit from digital advancements. Embracing inclusivity in e-government initiatives not only aligns with international standards but also contributes to enhancing overall societal well-being. As governments strive to create digital environments that are accessible to all, they contribute not only to technological progress but also to the overarching goal of building a society that values and empowers every individual.

Accessibility, which gauges how people with different abilities use and engage with e-government websites, is one of the critical elements that determine the quality of e-government websites (Henriksson et al., 2007); certain factors, such as colour selection, website structure and readability, affect accessibility. Therefore, e-government website accessibility is essential for fostering confidence and guaranteeing the successful implementation of e-government and the provision of public services. Accessibility in e-government websites has been a prominent research topic in earlier studies (Adepoju et al., 2016; Akg  L & Vatansever, 2016; Elisa, 2017; Ismail et al., 2018; Mtebe & Kondoro, 2017; Paul, 2023; Uutsi & Mufeti, 2021). However, a relatively small number of earlier studies evaluated the accessibility of e-government websites using both the Web Content Accessibility Guidelines 1.0 (WCAG 1.0) and WCAG 2.0. The year 2018 saw the release of WCAG 2.1 by the World Wide Web Consortium (W3C, 2018). WCAG 2.1 extends the WCAG 2.0 and includes several accessibility guidelines for people with disabilities, including blindness, low vision, deafness, hearing loss, limited movement, speech disabilities and photosensitivity. Most recently, the W3C recommended the WCAG 2.2 on 5 October 2023 (W3C, 2023).

According to the W3C, WCAG 2.2 extends WCAG 2.1, and websites that conform to WCAG 2.2 also conform to WCAG 2.0 and WCAG 2.1 (W3C, 2023).

In light of the escalating significance of digital accessibility in our technologically driven era, it is disconcerting to note a conspicuous deficiency in scholarly investigations within the current literature that assesses e-government websites following the latest accessibility standards, notably the WCAG 2.2 guidelines. This research gap underscores the urgent need to embark on a thorough and systematic analysis of the accessibility status of e-government portals. This research endeavour becomes all the more imperative when considered within the context of Tanzania, where the digital landscape is evolving rapidly. Therefore, the objective of this study is to conduct a comprehensive examination of the adherence of Tanzanian e-government websites to the WCAG 2.2 guidelines. By doing so, the aim is not only to contribute valuable insights to the global discourse on digital accessibility but also to provide specific recommendations for improvements in the Tanzanian e-government domain, ensuring inclusivity and equitable access for all citizens.

The structure of the paper delineates a clear path for understanding the research process and findings. Beginning with Section 2, an exploration of related work sets the stage by reviewing existing literature and studies pertinent to the accessibility of e-government websites. Section 3 then delves into the methodology employed for assessing these websites, elucidating the criteria, tools, and procedures for conducting the analysis. Then, in Section 4, the findings gleaned from the evaluation are presented and analysed. Finally, in Section 5, the paper culminates in a comprehensive conclusion that synthesises the key findings, discusses their implications, and offers suggestions for future research.

LITERATURE REVIEW

E-government in Tanzania

Tanzania, officially known as the United Republic of Tanzania, is a country located in East Africa, bordered by Kenya and Uganda to the north, Rwanda, Burundi, and the Democratic Republic of the Congo to the west, Zambia, Malawi, and Mozambique to the south, and the Indian Ocean to the east. With its diverse landscapes, rich cultural heritage, and

abundant wildlife, Tanzania is renowned for its natural beauty and attracts tourists from around the globe.

In tandem with numerous nations worldwide, Tanzania has undergone substantial advancements in adopting and integrating e-government services, marking a transformative evolution in its governance landscape. This progressive trajectory finds its genesis in establishing the e-Government Authority (e-GA) in 2019, a watershed moment catalysed by the enactment of the e-Government Act No. 10 of 2019. Positioned as a pivotal public institution, the e-GA assumes a multifaceted mandate, encompassing the orchestration, supervision, and advocacy of national e-government initiatives. Tasked as the principal enforcer of pertinent e-government policies, laws, regulations, standards, and guidelines across all public entities, the e-GA plays a paramount role in steering Tanzania's digital governance agenda. The far-reaching impact of these e-government endeavours cannot be overstated, constituting the linchpin for optimising service delivery to Tanzanian citizens, businesses, and diverse stakeholders. Through adept utilisation of digital platforms and cutting-edge technologies, e-government initiatives are catalysts for bolstering efficiency, transparency, and accessibility within governance frameworks, thereby nurturing socio-economic advancement and fostering inclusive growth throughout the nation's expanse.

To date, the Government has demonstrated significant progress in advancing e-government initiatives. Among its notable achievements are legislative measures such as enacting the eGovernment Act, which has laid the groundwork for digital governance. Concurrently, establishing the Authority has provided a structured framework for overseeing and implementing these initiatives. Operationally, the government has spearheaded the development and deployment of several pivotal sector-specific systems. These include the Government electronic Payment Gateway (GePG), streamlining financial transactions, the Online (Business) Registration System (ORS) simplifying business registration processes, the Integrated Lands Management Information System (ILMIS) enhancing land management efficiency, the National e-Procurement System of Tanzania (NeST) facilitating procurement procedures, and the Fourth Generation Birth Registration System (BRS-4G) modernising vital records management.

Moreover, the Government has conducted extensive awareness campaigns to ensure citizen engagement and understanding of e-government services. These efforts encompass training programs attended by thousands of government personnel, conferences held in major cities like Arusha and Dodoma, and televised broadcasts to inform the public about e-government initiatives. As the e-Government Strategy 2022 outlines, the Government has expanded its online presence by implementing over 500 websites and portals. Notably, the Government Portal serves as a centralised hub for accessing a wide array of government services and information, embodying the commitment to provide citizens with convenient and efficient digital governance solutions.

Enhancing the accessibility of e-services stands out as a crucial focus area within the Government's e-government Strategy 2022. Acknowledging its pivotal role, the Government has actively spearheaded initiatives to create and deploy accessible e-services while fostering an inclusive and non-discriminatory environment for e-Government offerings (eGovernment Authority, 2022). Despite commendable efforts, it remains apparent that further steps are imperative to fortify the accessibility of e-services for all citizens. The imperative for action is underscored by the recognition that accessibility must extend beyond mere technical considerations to encompass diverse needs and circumstances. The efforts include but are not limited to addressing challenges related to disabilities, literacy levels, disparities between rural and urban populations, varying age demographics, and linguistic diversity (eGovernment Authority, 2022). In essence, the pursuit of comprehensive accessibility mandates a multifaceted approach transcending conventional barriers, ensuring that e-services cater equitably to all citizens' diverse needs and circumstances.

People with disabilities in Tanzania, like in many other parts of the world, face a range of challenges and opportunities as they navigate through various aspects of life. In terms of demographics, people with disabilities in Tanzania represent a diverse group, encompassing individuals with physical, sensory, intellectual, and developmental disabilities. The 2022 Census statistics published by the National Bureau of Statistics indicate there are 5,347,397 persons with disabilities¹. This figure represents approximately 11.2% of the total population, as per the census conducted in 2022. The most prevalent type of disability is visual, which accounts

¹ [en-1738321655-01. URT_Demographic and Socioeconomic Profile.pdf](#) [Last accessed 16 February 2024]

for 1,447,853 persons with visual impairment. These statistics shed light on the prevalence and significance of disabilities within Tanzanian society, highlighting the need for comprehensive policies and initiatives to address the needs and rights of people with disabilities. In the context of e-government, these statistics hold significant implications for the design, development, and implementation of digital services and platforms. Recognising that 11.2 % of the population lives with disabilities underscores the importance of ensuring that e-government initiatives are inclusive and accessible to all citizens, regardless of their abilities. Moreover, the statistics serve as a reminder of the importance of collecting and analysing data on disability prevalence and access to e-government services.

Over the past decade, there has been a notable dearth of studies addressing the accessibility of e-government websites in Tanzania. One seminal investigation in 2014 scrutinised the accessibility of 21 e-government websites, gauging their adherence to the WCAG 2.0 Level A guidelines. The findings revealed that 95% of these websites exhibited various accessibility errors. Subsequently, in 2017, Mtebe and Kondoro embarked on a similar endeavour, assessing 22 e-government websites against the WCAG 1.0 standards (Mtebe & Kondoro, 2017). Their analysis revealed a concerning trend, with 82% of the websites harbouring over 100 accessibility issues per 100 scanned pages. Building upon this discourse, a subsequent study conducted in 2020 underscored persistent challenges, reporting that 62% of the 79 e-government websites examined continued to grapple with accessibility errors. Fast forward to 2022, where Ishengoma delved into the accessibility landscape by scrutinising three prominent e-government websites: necta.go.tz, nacte.go.tz, and ajira.go.tz (Ishengoma, 2022). Ishengoma's findings highlighted that necta.go.tz and nacte.go.tz failed to meet the minimum accessibility conformance level, lacking the prerequisite error-free environment mandated for level A accessibility (Ishengoma, 2022). These collective studies underscore a glaring imperative for improvement within e-government websites, emphasising the critical need for their permeability, operability, comprehensibility, and robustness enhancements.

Accessibility of E-government Websites

Accessibility, in the realm of website design, pertains to ensuring that individuals of all abilities, including those with visual, auditory, motor, or

cognitive impairments, can navigate and interact with digital content effectively. The objective is to provide equal access to information and functionalities for everyone. The World Wide Web Consortium (W3C) has been instrumental in establishing accessibility standards to facilitate this inclusivity. In 1999, the W3C introduced the Web Content Accessibility Guidelines (WCAG) 1.0, marking the foundational step towards web accessibility. Building upon this framework, the W3C launched WCAG 2.0 in 2008, which offered a more comprehensive set of guidelines addressing a broader spectrum of accessibility issues. Recognising the evolving landscape of technology and user needs, subsequent iterations were introduced: WCAG 2.1 in 2018 and WCAG 2.2 in 2023. These updated versions aim to address emerging challenges and incorporate advancements in web technologies, ensuring that digital content remains accessible to all individuals, regardless of their disabilities. By adhering to these standards, websites can foster inclusivity, enabling diverse populations to engage with online information and services without barriers. The guidelines outlined by four fundamental principles, established by the World Wide Web Consortium (W3C) in 2023, have been systematically structured to ensure inclusivity and accessibility for all users. These principles serve as the cornerstone for creating digital experiences that cater to diverse needs and abilities (W3C, 2023):

- v) **Perceivable:** “Information and user interface components must be presentable to users in ways they can perceive”. This principle emphasises the importance of presenting information and user interface components in ways that are easily understandable and accessible to users, regardless of any sensory limitations they may have.
- vi) **Operable:** “User interface components and navigation must be operable”. Operability highlights the necessity for user interface components and navigation to be functional and easily usable, enabling seamless interaction with digital platforms.
- vii) **Understandable:** “Information and the operation of the user interface must be understandable”. The principle of understandability underscores the importance of making both information and the operation of the user interface clear and comprehensible to users, promoting ease of use and navigation.
- viii) **Robust:** “Content must be robust enough that a wide variety of user agents, including assistive technologies, can interpret it.”

Robustness ensures that digital content remains accessible and interpretable by a wide range of user agents, including assistive technologies, thereby enhancing the overall accessibility and usability of the digital environment.

Scholarly inquiries, exemplified by extensive research in (Paul, 2023), have scrutinised the accessibility landscape of e-government websites on a global scale. Their findings have consistently highlighted many accessibility inadequacies, benchmarked against established guidelines like WCAG 1.0 and its successor, WCAG 2.0. Paul's (2023) seminal work serves as a poignant reminder of the prevalence of significant accessibility gaps within e-government portals. Across varied geographical contexts, recent investigations have consistently revealed a disconcerting reality: many government websites fall short of meeting the rigorous accessibility criteria outlined in WCAG 1.0 and WCAG 2.0 standards. This pervasive trend underscores the urgent need for concerted actions to bolster the accessibility features of e-government interfaces, ensuring that all users have equitable access and fostering inclusivity within digital governance realms.

Numerous studies, including those by (Al-Sakran & Alsudairi, 2021; Doush & Almeraj, 2019; Ilhan et al., 2020; Nakatumba-Nabende et al., 2019; Paul, 2023; Uutsi & Mufeti, 2021) have collectively shed light on a range of notable deficiencies prevalent in e-government websites. These deficiencies span from broken pages and lacking form labels to empty links and images devoid of alternative texts. Such revelations underscore the pressing need for substantive improvements across government web platforms. Policymakers and web developers must heed these findings and prioritise implementing robust accessibility measures, rectifying existing shortcomings and ensuring that e-government services are truly inclusive and accessible to all citizens, irrespective of their abilities or disabilities.

Since the publication of the WCAG 2.2 guidelines in October 2023, there has been a noticeable gap in the scholarly literature concerning the utilisation of these updated accessibility standards for assessing e-government website accessibility. This dearth of research underscores the need for comprehensive investigations into the adherence of e-government platforms to the latest WCAG guidelines. Consequently, this study endeavours to bridge this gap by conducting a thorough

accessibility evaluation of Tanzanian e-government websites, employing the WCAG 2.2 standard as the benchmark for assessment. By undertaking such an analysis, this research seeks to shed light on the current state of accessibility compliance among Tanzanian e-government portals and identify areas for improvement in alignment with the latest accessibility standards. Through this examination, valuable insights can be gleaned to inform policymakers and stakeholders about the efficacy of existing accessibility measures and facilitate targeted interventions to enhance the inclusivity and usability of e-government platforms for all users, including those with disabilities.

METHODOLOGY

The process of evaluating web accessibility primarily relied on employing automated tools to gauge the adherence of web pages to the WCAG standards. The plethora of automated tools available for this purpose includes Sortsite, AChecker, HTML Validator, CSS Validator, APrompt, and EvalAccess 2.0 (Abduganiev, 2017). These tools exhibit variations in their criteria, ranging from efficiency to conformance levels (A, AA, and AAA), as shown in Table 1. In the WCAG, adherence to Level A success criteria is characterised by relatively straightforward requirements, constituting the foundational tier of conformance. In contrast, Levels AA and AAA entail more rigorous standards, demanding more effort and attention to detail. Meeting these higher levels of conformance may present challenges that surpass the capabilities or resources of certain entities (W3C, 2023). The author acknowledges that automated tools have known limitations and cannot reliably detect issues such as keyboard traps, improper focus order, screen reader compatibility, or dynamic content interactions. This limitation provides an avenue for further studies to incorporate hybrid approaches combining automated checks with expert manual reviews or participatory usability testing involving people with disabilities.

Table 1
WCAG Conformance Levels

Conformance Level	Description
A	The website conforms to the Level A success criteria. This is the minimum level of conformance.
AA	The website conforms to the Level A and Level AA success criteria.
AAA	The website conforms to Level A, Level AA and Level AAA success criteria. This is the highest conformance level.

This study used the Sortsite website evaluation tool to assess the accessibility of 42 e-government websites in Tanzania based on the WCAG 2.2 guidelines. The online version of the Sortsite tool was used, given its capacity to provide evaluation by scanning the initial ten (10) pages of each website under scrutiny, including the homepage and 9 consistently selected inner pages (e.g., ‘About’, ‘Services’, ‘Contact’, etc.), to ensure comparability across all websites. Only the top-level domains were included to ensure consistency and comparability. Subdomains associated with departments, programs, or campaigns were excluded, as they often vary widely in structure, purpose, and management responsibility. This approach provided a nuanced understanding of each website's accessibility profile, capturing essential elements and potential barriers users might encounter during their navigation journey. Central to the selection criteria was the focus on e-government websites offering services at the national level, thereby excluding local government counterparts from the purview of this study. This deliberate decision ensured the evaluation remained targeted, homing in on platforms with significant user engagement and nationwide relevance. Additionally, the emphasis on user-centricity guided the selection process, with preference accorded to websites frequented by a substantial user base, thus ensuring the practicality and relevance of the findings to the broader digital populace. Furthermore, including websites catering to English and Swahili (Tanzanian language), speakers underscore the study's commitment to linguistic diversity, acknowledging the significance of linguistic inclusivity in ensuring equitable access to governmental services across different segments of the country's population. E-government websites included in the assessment are websites for all 26 ministries, all 12 national authorities, two (2) independent departments and two (2) online services. Information about e-government websites in Tanzania is available online at [Government of Tanzania | Home](#). The temporal dimension of the evaluation, spanning from November to December 2023, ensures that the findings remain contemporary and relevant, providing stakeholders with timely insights into the current state of accessibility within Tanzanian e-government platforms.

FINDINGS AND DISCUSSION

The study aimed to evaluate the extent to which e-government websites in Tanzania conform to established accessibility standards while concurrently identifying pivotal areas necessitating refinement to foster a

more inclusive digital environment. To accomplish this, a comprehensive analysis was conducted on a representative sample of 42 e-government portals, using the globally recognised WCAG 2.2 guidelines as the assessment benchmark. The evaluation employed the SortSite (online version) accessibility testing tool, which systematically examined a fixed set of 10 pages per website—comprising the homepage and nine consistently selected inner pages. The results revealed that, on average, 3.64 pages per site exhibited accessibility errors, representing a significant portion of the evaluated content. However, the standard deviation of 2.28 indicates considerable variability across websites—some had many more error-laden pages, while others had relatively fewer. Additionally, the interquartile range (IQR) of 1.25 to 5.0 shows that for the middle 50% of websites, between about 1 and 5 pages had accessibility issues. This spread illustrates that while some sites are performing relatively well, others lag behind notably. Together, these statistics highlight both the systemic presence and the uneven distribution of accessibility barriers within Tanzanian e-government platforms. Such disparities imply potential exclusion of users with diverse abilities and needs, underscoring the urgent need for targeted improvements. Strengthening the accessibility infrastructure of these platforms is essential to ensuring equitable digital access and fostering a more inclusive and participatory society.

As per the findings, the website experiencing the highest degree of accessibility errors is <https://verification.nhif.or.tz/ServicePortal/application>, where a thorough evaluation revealed that all ten pages analysed failed to meet adequate accessibility standards. This platform is a crucial gateway for the public to access vital health insurance services. However, the pervasive presence of accessibility barriers effectively barricades individuals with disabilities from availing themselves of these essential benefits. This stark disparity not only highlights the urgent need for remedial action to rectify accessibility shortcomings but also underscores the significant impact of such deficiencies on equitable access to healthcare services for marginalised populations.

Conversely, the National Identification Authority (NIDA) website at <https://nida.go.tz/swahili/> presents a contrasting scenario, boasting a commendable track record of zero accessibility errors across all assessed pages. This exemplary performance suggests that the NIDA website prioritises inclusivity and accessibility, ensuring that individuals with

disabilities can navigate its interface seamlessly. Such a proactive approach fosters an environment of equal access and reflects the organisation's commitment to serving all citizens regardless of their abilities. This noteworthy achievement sets a precedent for other governmental entities, emphasising the pivotal role of accessibility in fostering a more inclusive digital landscape where every individual can fully participate and benefit from online services and information.

Additionally, the analysis revealed insights into the distribution of accessibility errors across different conformance levels of the WCAG guidelines. Specifically, the average number of accessibility errors varied across the three conformance levels. Level A exhibited the highest average at 6.64 errors, followed by Level AAA with an average of 3.69 errors, and Level AA with the lowest average of 2.48 errors, as referenced in Table 2. Level A represents the minimum conformance level mandated by the WCAG guidelines, indicating that most accessibility errors occur at this foundational level. This troubling revelation suggests that individuals with accessibility challenges encounter significant barriers even at the most basic level of interaction with these websites.

To further elucidate the extent of accessibility issues, Figure 1 illustrates the percentage distribution of accessibility errors across all levels of the WCAG 2.2 guidelines. This visual representation underscores the pervasive nature of accessibility deficiencies across various facets of website design and functionality, highlighting the need for comprehensive remediation efforts to address these shortcomings effectively.

Moreover, these findings align with previous studies, corroborating the persistent inadequacies in the accessibility of e-government websites for individuals with disabilities (Abduganiev, 2017; Adepoju et al., 2016; AkgÜL & Vatansever, 2016; Al-Sakran & Alsudairi, 2021; Doush and Almeraj, 2019; Elisa, 2017, 2020; Ilhan et al., 2020; Mohd Isa, 2011; Nakatumba-Nabende et al., 2019). This consistency in results underscores the systemic nature of the issue. It emphasises the imperative for sustained efforts to enhance the accessibility of digital platforms, ensuring equal access and usability for all members of society. Such endeavours are essential for fostering an inclusive digital ecosystem where individuals with disabilities can fully participate in civic engagement, access essential services, and exercise their rights on par with their non-disabled counterparts.

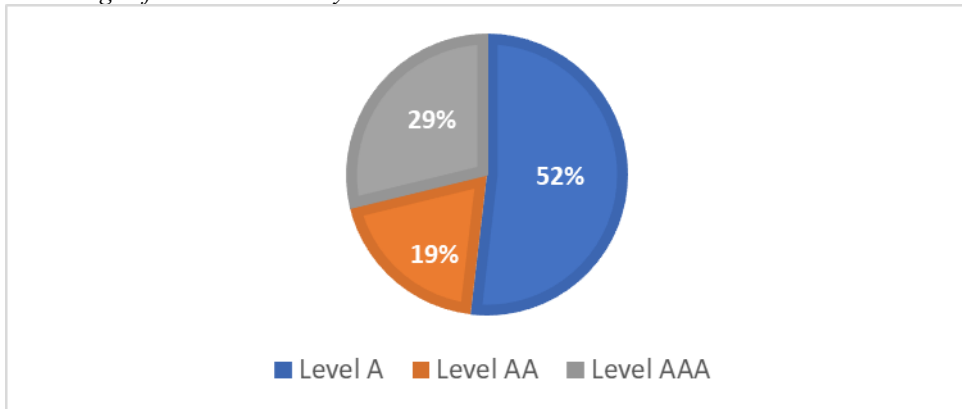
Table 2

List of websites and accessibility evaluation results based on the WCAG 2.2 guidelines

S/N	Website	Pages with accessibility errors	WCAG 2.2 issues		
			A	AA	AAA
1	https://verification.nhif.or.tz/ServicePortal/application	10	3	3	1
2	http://www.tra.go.tz/	7	5	3	3
3	https://www.nishati.go.tz/	7	9	2	5
4	https://www.lands.go.tz/	7	12	3	5
5	https://www.utumishi.go.tz/	6	6	4	3
6	https://www.vpo.go.tz/	6	5	3	4
7	http://www.maji.go.tz/	6	8	4	4
8	https://www.brela.go.tz/	6	8	3	4
9	https://www.tmda.go.tz/	6	5	4	5
10	https://olas.heslb.go.tz/olams/	6	3	3	0
11	https://www.tanzania.go.tz/	5	4	3	3
12	http://www.madini.go.tz/	5	6	2	3
13	https://www.jamii.go.tz/	5	11	3	5
14	https://www.tamisemi.go.tz/	5	9	1	4
15	https://www.mow.go.tz/	5	11	2	3
16	https://www.mawasiliano.go.tz/	5	9	2	5
17	http://www.mof.go.tz/	4	10	3	3
18	https://www.mwt.go.tz/	4	11	2	3
19	https://tcra.go.tz/	4	6	3	4
20	https://www.ega.go.tz/	4	3	3	4
21	http://www.moha.go.tz/	3	9	2	4
22	https://www.michezo.go.tz/	3	13	3	4
23	http://www.kazi.go.tz/	3	9	3	5
24	https://www.sheria.go.tz/	3	6	2	4
25	https://www.mifugouvuvu.go.tz/	3	5	1	4
26	https://www.modans.go.tz/	3	4	2	3
27	https://www.ppra.go.tz/	3	8	2	5
28	https://www.tira.go.tz/	3	8	3	6
29	http://www.moe.go.tz/	2	2	2	4
30	http://www.mit.go.tz/	2	10	4	4
31	https://www.ewura.go.tz/	2	6	1	3
32	http://www.foreign.go.tz/	1	2	2	3
33	https://www.kilimo.go.tz/	1	2	2	4
34	https://www.moh.go.tz/	1	7	2	4
35	http://www.pmo.go.tz/	1	5	2	3
36	https://www.maliasili.go.tz/	1	11	3	2
37	https://www.bot.go.tz/	1	8	3	4
38	https://www.ajira.go.tz/	1	6	2	4
39	https://www.osha.go.tz/	1	5	2	3
40	https://www.ncaa.go.tz/	1	4	2	5

S/N	Website	Pages with accessibility errors	WCAG 2.2 issues		
			A	AA	AAA
41	https://www.ports.go.tz/index.php/en/	1	5	3	6
42	https://nida.go.tz/swahili/	0	0	0	0
Total		153	279	104	155
Mean		3.64	6.64	2.48	3.69
Standard Deviation				2.28	
IQR				1.25-5.0	

Figure 1:
 Percentage of total accessibility errors



Furthermore, the evaluation of e-government websites included an analysis of violated guidelines in Levels A, AA and AAA. Table 3 summarises the most violated WCAG 2.2 guidelines, which considers violations observed in over half of the websites evaluated (>21).

Table 3
Summary of violated WCAG 2.2 guidelines

Violated guideline	Descriptions (W3C, 2023)	No. of websites
Level A		
WCAG 2.2 A F63	“Failure of Success Criterion 2.4.4 due to providing link context only in content that is not related to the link.”	42
WCAG 2.2 A F89	“Failure of Success Criteria 2.4.4, 2.4.9 and 4.1.2 due to not providing an accessible name for an image, which is the only content in a link.”	40
WCAG 2.2 A 4.1.2	Failure to “ensure that Assistive Technologies (AT) can gather information about, activate (or set) and keep up to date on the status of user interface controls in the content.”	33
WCAG 2.2 A 1.3.1	Failure to “ensure that information and relationships that are implied by visual or auditory formatting are preserved when the presentation format changes.”	22
WCAG 2.2 A F65	“Failure of Success Criterion 1.1.1 due to omitting the alt attribute or text alternative on img elements, area elements, and input elements of type "image"”	22
Level AA		
WCAG 2.2 AA 1.4.3	Failure to “provide enough contrast between text and its background so that it can be read by people with moderately low vision (who do not use contrast-enhancing assistive technology).”	39
WCAG 2.2 AA F78	“Failure of Success Criterion 2.4.7 due to styling element outlines and borders in a way that removes or renders non-visible the visual focus indicator.”	33
Level AAA		
WCAG 2.2 AAA F22	“Failure of Success Criterion 3.2.5 due to opening windows that are not requested by the user”	38
WCAG 2.2 AAA 1.4.6	Failure to “provide enough contrast between text and its background so that it can be read by people with moderately low vision (who do not use contrast-enhancing assistive technology).”	36
WCAG 2.2 AAA 2.3.3	Failure to “allow users to prevent animation from being displayed on Web pages [as] some users experience distraction or nausea from animated content.”	27

The results presented indicate that developers of e-government websites in Tanzania have the scope to improve accessibility for people with different disabilities. The improvement measures should go hand in hand with the WCAG 2.2 guidelines, which are well stipulated. For instance, the most violated guideline in Level A is the WCAG 2.2 A F63, as all 42

websites failed to provide contexts to links provided. Failure to comply with the WCAG 2.2 A F63 occurs when website developers do not provide context to link using ARIA properties such as aria-label or aria-labelledby. This leads to users being unable to understand where the links go quickly. To resolve this failure, website developers should use ARIA properties to ensure all links have contexts in the same line, paragraph, text, or heading.

The most violated guideline in Level AA is the WCAG 2.2 AA 1.4.3, as 39 websites failed to contrast text and its background sufficiently. People with moderately low vision are the most affected by not conforming to the WCAG 2.2 AA 1.4.3 guideline. This failure commonly occurs when website developers specify foreground colours without specifying background colours or use background images that do not contrast sufficiently with the foreground text. To resolve this failure, website developers should observe the contrast ratio while determining the positions and/or colours of text, foreground and background. According to the WCAG guidelines, a contrast ratio of at least 4.5:1 is recommended to achieve the minimum contrast for the visual presentation of text and images of text. Additionally, the guidelines recommend a ratio of 3:1 for large-scale text and images of large-scale text.

The most violated guideline in Level AAA is the WCAG 2.2 AAA F22, as 38 websites allow new windows/pop-ups to appear without the user's initiation or expectation. This feature fails if such windows/pop-ups lack prior indication to the user that they would appear. As such, the unexpected windows/pop-ups disturb the users' focus while browsing the website. To resolve this failure, website developers are urged to search thoroughly through the websites for actionable elements such as links, buttons or tabs and check whether they open new windows/pop-ups without any associated indication to the users. If such elements exist, then website developers should rectify the actions and use progressive enhancements to open new windows/pop-ups only when requested by the users.

CONCLUSION

Accessibility is one of the crucial aspects in determining the quality of any website, let alone e-government websites. Tanzania is a developing country implementing e-government to improve the quality and access to public services and reduce administrative burdens. Websites are among

the tools used by the Government. Therefore, the accessibility of e-government websites plays a critical role in delivering online public services to all.

This work shows a need to improve the accessibility of e-government websites in Tanzania. The results from the study show low compliance with the WCAG 2.2 guidelines among the investigated 42 e-government websites. This stark revelation underscores the urgent necessity for comprehensive accessibility audits and subsequent remediation efforts targeted at enhancing the inclusivity of such critical e-government platforms. Failure to address these accessibility shortcomings not only undermines the fundamental principles of digital inclusivity but also perpetuates systemic inequalities, depriving individuals with disabilities of essential services and opportunities.

Addressing the accessibility deficiencies within e-government websites demands a concerted effort from governmental bodies, web developers, and relevant stakeholders to prioritise inclusivity in digital design and implementation. Policymakers are recommended to ensure that e-government policies and strategies explicitly provide guidance and steps to be taken by practitioners on the accessibility of e-government websites. Practitioners, designers, and developers must properly consider addressing the accessibility concerns within e-government websites. Implementing robust accessibility standards and guidelines, coupled with ongoing monitoring and evaluation mechanisms, can pave the way for a more accessible and equitable digital landscape where all citizens, regardless of their abilities, can fully participate and benefit from online governmental services.

This paper is a significant addition to the continuous dialogue surrounding digital accessibility within the public sector, offering valuable insights and advocating for proactive measures to enhance inclusivity within governmental digital ecosystems. By highlighting the prevalent accessibility challenges faced by e-government websites in Tanzania, this study underscores the pressing need for concerted action to align these platforms with internationally recognised accessibility standards. In advocating for adherence to such standards, the paper emphasises the pivotal role of government agencies in fostering inclusivity and equity in e-government implementation. By prioritising accessibility in designing, developing, and maintaining their digital

platforms, governmental bodies can effectively dismantle barriers that impede access to essential services and information for individuals with disabilities. Furthermore, by championing digital accessibility within the public sector, governments can set a precedent for other stakeholders, including private organisations and non-governmental entities, to follow suit. This ripple effect can catalyse broader societal change, ushering in a culture where accessibility is not merely an afterthought but an integral component of digital design and development processes.

Integrating accessibility and inclusivity into e-government initiatives is a matter of legal and ethical responsibility and a strategic imperative for ensuring that digital services effectively serve all members of society, including those with disabilities. By leveraging technology to remove barriers and promote equal access, e-government can advance social inclusion, empowerment, and participation for people with disabilities in Tanzania.

While this study provides a comprehensive descriptive analysis of accessibility violations across 42 e-government websites, it does not examine the systemic or institutional causes behind these issues, which might include institutional barriers, technical barriers and policy barriers. Future research should adopt qualitative methods—such as interviews with web administrators or policy makers/administrators—to explore these structural dimensions in more depth. Additionally, although WCAG conformance is a widely used proxy for accessibility, it cannot fully substitute for the lived user experience. Future work should include participatory methods such as user testing or ethnographic studies to assess the real-world impact of digital inaccessibility on diverse users.

REFERENCES

- Abduganiev, S. G. (2017). Towards Automated Web Accessibility Evaluation: A Comparative Study. *International Journal of Information Technology and Computer Science*, 9(9), 18–44. <https://doi.org/10.5815/IJITCS.2017.09.03>
- Adepoju, S. A., Shehu, I. S., & Bake, P. (2016). Accessibility Evaluation and Performance Analysis of e-Government Websites in Nigeria. *Journal of Advances in Information Technology*, 7(1), 49–53. <https://doi.org/10.12720/JAIT.7.1.49-53>
- Akg  L, Y., & Vatansever, K. (2016). Web Accessibility Evaluation of Government Websites for People with Disabilities in Turkey.

- Journal of Advanced Management Science*, 201–210.
<https://doi.org/10.12720/JOAMS.4.3.201-210>
- Al-Sakran, H. O., & Alsudairi, M. A. (2021). Usability and Accessibility Assessment of Saudi Arabia Mobile E-Government Websites. *IEEE Access*, 9, 48254–48275.
<https://doi.org/10.1109/ACCESS.2021.3068917>
- Doush, I. A., & Almeraj, Z. (2019). Evaluating the Accessibility of Kuwaiti E-government Websites. *Article in Jordanian Journal of Computers and Information Technology*, 05(03).
<https://doi.org/10.5455/jjcit.71-1557233833>
- Elisa, N. (2017). Usability, Accessibility and Web Security Assessment of E-government Websites in Tanzania. *International Journal of Computer Applications*, 164(5), 975–8887. <http://www.ega.go.tz/>
- Elisa, N. (2020). Usability, Accessibility and Web Security Assessment of E-government Websites in Tanzania. *International Journal of Computer Applications*, 164(5), 42–48.
<https://doi.org/10.5120/ijca2017913632>
- Ilhan, U., Iseri, E. I., & Uyar, K. (2020). Web Accessibility of e-Government Portals and Ministry Websites of the Cyprus Island. *4th International Symposium on Multidisciplinary Studies and Innovative Technologies, ISMSIT 2020 - Proceedings*.
<https://doi.org/10.1109/ISMSIT50672.2020.9254996>
- Ishengoma, F. (2022). Exploring Critical Success Factors Towards Adoption of M-Government Services in Tanzania: A Web Analytics Study. *Igi-Global.Com*, 225–253. <https://www.igi-global.com/chapter/exploring-critical-success-factors-towards-adoption-of-m-government-services-in-tanzania/287260>
- Ismail, A., Kuppusamy, K. S., & Nengroo, A. S. (2018). Multi-tool accessibility assessment of government department websites:a case-study with JKGAD. *Disability and Rehabilitation: Assistive Technology*, 13(6), 504–516.
<https://doi.org/10.1080/17483107.2017.1344883>
- Mohd Isa. (2011). Assessing the Usability and Accessibility of Malaysia E-Government Website. *American Journal of Economics and Business Administration*, 3(1), 40–46.
<https://doi.org/10.3844/AJEBASP.2011.40.46>
- Mtebe, J. S., & Kondoro, A. W. (2017). *Accessibility and Usability of Government Websites in Tanzania*.
<http://digitalcommons.kennesaw.edu/ajis>

- Nakatumba-Nabende, J., Kanagwa, B., Kivunike, F. N., & Tuape, M. (2019). Evaluation of accessibility standards on Ugandan e-government websites. *Electronic Government*, 15(4), 355–371. <https://doi.org/10.1504/EG.2019.102615>
- Paul, S. (2023). Accessibility analysis using WCAG 2.1: evidence from Indian e-government websites. *Universal Access in the Information Society*, 22(2), 663–669. <https://doi.org/10.1007/S10209-021-00861-9>
- Uutsi, T., & Mufeti, T. K. (2021). An Investigation of E-Government Web Accessibility for Visually Impaired Persons in Namibia. *CSR, Sustainability, Ethics and Governance*, 403–420. https://doi.org/10.1007/978-3-030-78941-1_19
- W3C. (2018, September 21). *Web Content Accessibility Guidelines (WCAG) 2.1*. Retrieved December 5, 2023, from <https://www.w3.org/TR/WCAG21/>
- W3C. (2023, October 5). *Web Content Accessibility Guidelines (WCAG) 2.2*. Retrieved December 5, 2023, from <https://www.w3.org/TR/WCAG22/>

The Influence of Ability Grouping on Students' Learning Experiences and Perceptions in the Selected Public Secondary Schools in Tanzania

Zamzam I. Nyandara

Faculty of Education, The Open University of Tanzania,
zamzam.nyandara@out.ac.tz or masatuzamzam@yahoo.com
ORCID iD: 0009-0009-0960-3514

Abstract

This study investigates the influence of ability grouping on students' learning experiences and perceptions in two public secondary schools in Dar es Salaam, Tanzania. Grounded in Vygotsky's sociocultural theory, which emphasises the role of social interaction and scaffolding in learning, the study explores how students' placement into higher or lower-ability groups affects their learning experiences and perceptions of learning. A non-experimental quantitative survey design was employed, targeting 248 Form Two students categorised into higher- and lower-ability groups across two schools. Data were collected using a structured Likert-scale questionnaire adapted from validated instruments. A three-way MANOVA and follow-up univariate ANOVA were used to assess the effects of school context, ability grouping, and gender on the dependent variables. Findings reveal that ability grouping has a statistically significant impact on both students' learning experiences and perceptions of learning, with higher-ability students consistently reporting more positive experiences and perceptions of learning. Gender had a small but statistically significant influence on perception, with females scoring slightly higher. At the same time, the school context and all interaction effects were not significant. These results affirm the impact of ability grouping on students' learning experiences and learning perceptions, highlighting how grouping practices may marginalise lower-ability students by limiting their exposure to beneficial peer and teacher interactions within the Zone of Proximal Development. The study recommends inclusive, differentiated instruction strategies that promote peer scaffolding and equitable engagement across students' ability levels. Additionally, policies should encourage Universal Design for Learning to minimise the stigmatising effects of rigid ability classifications. These results contribute to the literature on the implications of ability grouping in student learning, highlighting the need for interventions that strike a balance between academic efficiency and equity.

Keywords: *Ability grouping, learning experience, perception of learning, sociocultural theory, peer interaction*

INTRODUCTION

Ability grouping is an educational practice in which students are sorted and grouped based on their academic abilities or performance levels (Petty, 2025; Roka, 2022; Hove, 2022). There are several forms of ability grouping practised in different educational institutions. For example, one of these approaches is within-class ability grouping, where students in the same classroom are divided into small groups based on their ability, such as those who have advanced, average, or are struggling (Roka, 2022). The other form of ability grouping is flexible grouping, which is temporary and based on subject or specific activity, allowing movement between groups (Hove, 2022). The last one, which appears to be the focus of this study, is the one called between classes or, sometimes referred to as streaming, which involves placing students into different classes or streams based on their academic performance (Hove, 2022; Roka, 2022). The practice of streaming or between-class ability grouping is widespread in Tanzania. However, little has been reported in the literature about its implementation, as well as the lived experiences of students.

The intention of ability grouping is to improve students' learning by providing targeted instruction tailored to meet the needs of each ability group. The literature reports that ability grouping focuses on improving student learning by providing opportunities for tailoring instruction for different learning levels as well as allowing teachers to provide targeted support to struggling students (Khazaeenezhad et al., 2012; Petty, 2025; Wang et al., 2021). Not only that, but it also provides an opportunity to present more advanced challenges to higher-ability students, offering tasks that differ from those provided to slower learners (Wang et al., 2021). However, the effectiveness of this method in improving student outcomes is debatable. Several criticisms have been raised regarding the procedures used to assign students to groups, as well as the pedagogical techniques employed in different classes (Hallinan, 2003). Not only that, but there are also concerns that ability grouping reinforces inequalities among students, which affects students' self-esteem, self-efficacy, and motivation, especially for those placed in lower-ability groups (Blanco-Varela et al., 2024; Petty, 2025). To a large extent, ability grouping has been credited with improving learning outcomes for students from high-

ability groups, who tend to enjoy greater levels of teacher and peer support (Wang et al., 2021).

Theoretical Framework

This study is grounded in Vygotsky's Sociocultural Theory, which emphasises the importance of social interaction and contextual influences on learning (Nurfaidah, 2018; Wibowo et al., 2025). According to Vygotsky, cognitive development is a socially mediated process in which learners benefit significantly from collaboration, peer interaction, and scaffolding provided by more capable peers (Nurfaidah, 2018; Wibowo et al., 2025). Central to this theory is the concept of the Zone of Proximal Development (ZPD), the range of tasks a learner cannot yet perform independently but can accomplish with appropriate support (Säljö, 2010). Within this framework, learning is most effective when instruction is pitched just beyond a learner's current ability and supported by guidance from peers or teachers (McLeod, 2024).

In the context of ability grouping, separating students based on their ability levels may influence the extent to which they access opportunities within their zone of proximal development (ZPD). For instance, when lower-ability students are grouped, they may be deprived of interactions with more capable peers who could scaffold their learning, thereby limiting the social mediation essential to their development. Conversely, when classrooms are structured to allow mixed-ability peer interactions, students are more likely to operate within their zone of proximal development (ZPD), benefiting from guided participation and the co-construction of knowledge. Thus, there is a need to examine how ability grouping influences the nature and quality of students' learning experiences, particularly through the lens of Vygotsky's theory. This study aims to address this gap by examining how ability grouping influences students' learning experiences and perceptions of learning across two different secondary schools.

The following research questions guided this study:

- i) To what extent does ability group influence students' learning experience in secondary schools?
- ii) To what extent does ability group influence students' perception of learning?
- iii) Does the perceived effect of ability grouping on experience and perception differ across different school contexts?

- iv) To what extent does the effect of ability grouping on students' learning experience and perception differ by gender?

METHODOLOGY

This study employed a non-experimental descriptive survey design using a quantitative approach. The purpose of the design was to collect and analyse numerical data from participants to examine their learning experiences and perceptions of learning in an ability grouping context, without manipulating any variables. Data were collected using a structured Likert scale questionnaire, which was developed by integrating validated items and key dimensions from established instruments. The UCL Student Experience Survey (2017) guided areas such as teaching, assessment, academic support, and the learning community, while Timmo (2024), based on McKeachie (1994), has informed aspects of rapport, group interaction, and feedback. Not only that, but Herrmann et al. (2017) also contributed constructs on peer support and engagement, while Kember and Leung (2009) added insights on cooperative learning and assessment. Questions from these sources were reviewed, adopted, and adapted to ensure coherence and content validity, measuring 'students' learning experiences and learning perceptions of ability grouping in secondary school by assessing their feelings, classroom dynamics, and support systems. The questionnaire had a 14-item scale which demonstrated good internal consistency, with a Cronbach's Alpha of 0.815.

Two public secondary schools in Dar es Salaam city were involved in this study. The practice of ability grouping in these schools was the criterion for their inclusion. These schools had a total of 902 students (School A) and 704 (School B), making a combined population of approximately 1,606. Students from Form 2 were involved because, in these two schools, students were placed in streams based on their ability. This study excluded Form Three and Form Four students because the grouping at those levels is more based on subject specialisation (art subjects stream/science subjects' stream) rather than academic performance. Form one students were also excluded because they had only a few months of experience, which would not have been sufficient to provide the details needed for this study.

The sample consisted of 248 students, comprising 125 from School A and 123 from School B. Of these, 120 were categorised as highest ability groups and 128 as lowest ability groups based on their prior academic

performance. The gender distribution included 132 male and 116 female students in total from both schools.

Table 1

The distribution of participants by school, ability groups, and gender

		Value Label	N
School	1	A	125
	2	B	123
Ability groups	1	Highest Performers	120
	2	Lowest Performers	128
Gender	1	Male	132
	2	Female	116

The independent variables for this study were the schools (A and B), as well as gender and ability groups (the highest and lowest ability groups). The dependent variables were students' learning experiences and learning perceptions, measured using a structured Likert-scale questionnaire. A three-way MANOVA (multivariate analysis of variance) was used to examine the combined effect (multivariate effect) of ability grouping, gender, and school on students' learning experiences and perceptions in both lower- and higher-ability groups. Then, since the MANOVA was significant, a follow-up test of Univariate ANOVA was conducted to identify the separate effects of ability grouping, gender, and school on each of the dependent variables (learning perceptions or learning experiences).

FINDINGS

This is a quantitative study that examined the influence of ability grouping on students' learning experiences and learning perceptions across two public secondary schools in Dar es Salaam, Tanzania, using Vygotsky's Sociocultural Theory. This section presents the results of the three-way MANOVA and a follow-up univariate ANOVA analysis conducted to assess the influence of ability grouping, gender, and school context on students' learning experiences and perceptions of learning.

Before the MANOVA, assumption checks were conducted. Box's M was 71.71, with an associated F-ratio of 3.31, based on 21 and 72,456.79 degrees of freedom, and the result was statistically significant at p less than .001 (Box's $M = 71.71$, $F(21, 72,456.79) = 3.31$, $p < .001$). However, although Box's M test indicated a significant violation of the assumption of homogeneity of covariance matrices, the analysis proceeded using Wilks' Lambda, given the robustness of this test in the presence of

approximately equal group sizes. Thus, the findings from the MANOVA remain interpretable, albeit with some caution, since the groups were not of equal size. However, they were similar in size (as shown in Table No. 1).

After the assumption of homogeneity check, a three-way MANOVA was conducted to examine the effects of schools, ability groups, and gender on students' learning experiences and perceptions of learning. The analysis revealed a statistically significant multivariate effect of ability groups on the combined dependent variables of students' learning experiences and learning perceptions. Wilks' Lambda was .519, with a corresponding F value of 110.58 (2, 239), which was statistically significant at $p < .001$, indicating a large effect size (partial eta squared = .481 (Wilks' Lambda = .519, $F(2, 239) = 110.58$, $p < .001$, partial $\eta^2 = .481$). However, no statistically significant multivariate effects were found for schools ($\Lambda = .984$, $F(2, 239) = 1.91$, $p = .151$, partial $\eta^2 = .016$), and gender ($\Lambda = .977$, $F(2, 239) = 2.78$, $p = .064$, partial $\eta^2 = .023$), or any of the interaction terms (all $p > .05$). These findings imply that students' ability groups significantly influence students' learning experiences and perceptions of learning. In contrast, school context, gender, and their interactions do not have a statistically significant multivariate impact. Table No. 2 provides a summary of these findings.

Table 2
Summary of Multivariate Test Statistics (Wilks' Lambda)

Effect	Wilks' Lambda	F	Hypothesis df	Error df	p
School	.984	1.91	2	239	.151
Ability Groups	.519	110.58	2	239	< .001
Gender	.977	2.78	2	239	.064
School × Ability groups	.993	.88	2	239	.416
School × Gender	.991	1.03	2	239	.359
Ability groups × Gender	.998	.20	2	239	.816
School × ability groups × Gender	.996	.44	2	239	.648

Since the multivariate findings on ability grouping were statistically significant, a univariate ANOVA analysis was required to determine the effects of school, ability groups, and gender on students' experiences and perceptions. Prior to conducting the univariate analyses, Levene's Test of Equality of Error Variances was performed to assess the assumption of homogeneity of variances for students' learning experiences and their perceptions of learning. The results indicated a significant violation of

this assumption for both dependent variables: learning experiences, $F(7, 240) = 4.60$, $p < .001$, and perception of learning, $F(7, 240) = 2.61$, $p = .013$. These findings suggest that the error variances were not equal across groups. Although robust statistical procedures such as Welch's ANOVA were considered to account for this violation of homogeneity of variances, the results presented are based on standard ANOVA. Future analysis may benefit from robust methods to validate these findings.

A univariate analysis of variance (ANOVA) was conducted to assess the effects of school, ability grouping, and gender on students' learning experiences and learning perceptions. The model for learning experience was statistically significant, $F(7, 240) = 37.06$, $p < .001$, partial $\eta^2 = .519$, accounting for 51.9% of the variance. A significant main effect was found for ability grouping, $F(1, 240) = 220.13$, $p < .001$, partial $\eta^2 = .478$, indicating a substantial influence of students' performance levels on their learning experiences. Gender showed a marginal effect, $F(1, 240) = 3.55$, $p = .061$, suggesting a potential influence that did not reach statistical significance. No significant effects were observed for school or any interaction terms ($p > .05$). These findings highlight ability grouping as the most prominent factor influencing students' learning experiences.

For perception, the overall model was statistically significant, $F(7, 240) = 13.87$, $p < .001$, partial $\eta^2 = .288$, indicating that 28.8% of the variance in students' perceptions was explained, representing a moderate to large effect. A significant main effect was found for ability grouping, $F(1, 240) = 83.21$, $p < .001$, partial $\eta^2 = .257$, confirming a strong influence, with ability grouping accounting for 25.7% of the variance in perception. Gender also had a statistically significant, though small, effect on perception, $F(1, 240) = 4.89$, $p = .028$, partial $\eta^2 = .020$, suggesting a minor but meaningful contribution (2.0%). No significant effects were observed for school or any interaction terms ($p > .05$), indicating that neither the school context nor the combined effects of school, gender, and ability grouping significantly influenced perception. Table 3 provides a summary of the univariate ANOVA findings, showing the main and interaction effects on 'students' learning Experiences and Perceptions.

Table 3
A summary of the univariate ANOVA findings

Source	F (Experience)	p (Experience)	Partial η^2 (Experience)	F (Perception)	p (Perception)	Partial η^2 (Perception)
School	0.218	0.641	0.001	3.440	0.065	0.014
Ability Grouping	220.126	0.000	0.478	83.211	0.000	0.257
Gender	3.554	0.061	0.015	4.890	0.028	0.020
School \times Ability grouping	0.013	0.908	0.000	1.393	0.239	0.006
School \times Gender	1.992	0.159	0.008	0.280	0.597	0.001
Ability grouping \times Gender	0.240	0.625	0.001	0.371	0.543	0.002
School \times Ability grouping \times Gender	0.003	0.954	0.000	0.573	0.450	0.002

Then, descriptive statistics were calculated for students' learning experiences and learning perceptions across schools, ability groups, and gender. Results indicated that the higher-ability groups reported significantly higher levels of both learning experiences ($M = 31.37$, $SD = 3.07$) and learning perceptions ($M = 28.58$, $SD = 4.01$) compared to the lower ability groups (learning experiences: $M = 23.02$, $SD = 4.93$; learning perceptions: $M = 23.53$, $SD = 4.74$). The mean differences for ability groups are substantial. These findings support inferential findings from the MANOVA and ANOVA that students assigned to higher ability groups may have been benefiting more from or engaging differently in the learning environment. Conversely, low-ability students may perceive the learning environment less favourably or have less positive learning experiences.

On the other hand, school comparison reveals only a slight difference. In contrast, school B students had marginally higher learning experience scores than school A students ($M = 27.98$ vs. 26.15), suggesting that the school context may not strongly influence experience levels. Gender differences are minor but consistent, as female students reported slightly higher learning experience and learning perception scores compared to male students, although the margins are small. Specifically, learning experience scores were 27.69 (females) vs. 26.50 (males), and learning perception scores were 26.78 (females) vs. 25.27 (males). These patterns were consistent across schools and performance groups, suggesting stability in the trend. Since school context and gender did not show significant effects, it implies that differences in how students perceive or experience learning are not strongly influenced by the school attended or by gender. Table No. 4 gives a summary of the descriptive findings.

Table 4
Summary of descriptive statistics

School	Performance Group	Gender	Experience M (SD)	Perception M (SD)
A	Highest	Male	30.33 (3.85)	28.13 (4.64)
A	Highest	Female	32.48 (2.77)	29.66 (4.04)
A	Lowest	Male	22.41 (4.73)	23.39 (4.12)
A	Lowest	Female	23.95 (4.53)	25.08 (4.84)
B	Highest	Male	30.96 (3.20)	27.60 (4.31)
B	Highest	Female	31.46 (2.41)	29.39 (2.56)
B	Lowest	Male	22.84 (5.50)	22.36 (5.45)
B	Lowest	Female	22.86 (5.40)	22.55 (4.47)

In summary, the findings of this study revealed that ability grouping had a significant impact on both students' learning experiences and their perceptions of learning. In contrast, school context, gender, and their interactions did not show a meaningful influence. Further analysis confirmed that ability grouping was the most influential factor, with students in higher-ability groups consistently reporting more positive learning experiences and learning perceptions than their lower-ability peers. Although gender had a minor effect on perception, it did not significantly influence the learning experiences, and school-related differences were minimal. Despite some limitations in data assumptions, the results were considered reliable.

Discussion

This study, grounded in Vygotsky's Sociocultural Theory, investigated how ability grouping affects students' learning experiences and perceptions in two public secondary schools in Dar es Salaam. Students were divided into higher and lower ability groups. Findings showed that ability grouping significantly influenced students' experiences and perceptions, with higher ability students reporting more positive outcomes. In contrast, school context and gender had little effect, although gender showed a slight influence on perception.

The findings of this study underscore the central role of ability grouping in shaping educational experiences and affirm Vygotsky's view that learning is socially mediated such that students enjoy interactions with peers as well as teachers (Nurfaidah, 2018). Peer interaction and collaboration play a significant role in learning since they offer informal and less threatening settings for sharing learning experiences (Blum-Kulka & Dvir-Gvirsman, 2010), which contribute to the development of both cognitive and affective outcomes of students' learning (Rumiantsev et al., 2023). Since ability grouping creates curriculum polarisation (Boaler et al., 2000), students' interactions, access to support, and perceived competence are not experienced uniformly across lower and higher ability groups (Anito & Gaikwad, 2025).

On the same note of differences of learning experiences, this study specifically found that ability grouping had a strong and statistically significant influence on students' learning experiences. This finding aligns with prior research indicating that students placed in higher ability groups often enjoy the benefit of getting more enriched learning interactions and increased peer collaboration (Boaler et al., 2000; Murphy et al., 2017;

Roka, 2022). Apart from meaningful peer interactions, literature has also reported that students in the higher ability group enjoy greater teacher attention than those in lower ability groups (Boaler et al., 2000; Wang et al., 2021). All these contribute to more positive learning experiences for higher-ability students.

From Vygotsky's perspective, students in higher ability groups have better access to social interaction and scaffolding within their Zone of Proximal Development (ZPD), allowing them to be motivated (Walker, 2010) and internalise learning more effectively (Nurfaidah, 2018). In contrast, students in lower-ability groups have been excluded from rich peer collaboration and teacher modelling, which limits their developmental opportunities (Anito & Gaikwad, 2025; Boaler et al., 2000). These disparities suggest that ability grouping may unintentionally widen the learning experience gap among upper and lower groups rather than supporting individualised growth. High-ability students may already feel supported and engaged, while low-ability students may require targeted interventions such as remedial programs, mentoring, or motivation-enhancing strategies. The situation suggests that differentiated instruction may be an effective way to provide social and cognitive support to students in a mixed-ability classroom.

Conversely, according to the literature, lower-ability students are disadvantaged by lowered expectations and limited participation (Anito & Gaikwad, 2025), which accounts for their less favourable learning experiences (Boaler et al., 2000). The minimal influence of school context suggests that the observed differences are more strongly related to internal instructional practices linked to ability groups than to institutional settings, since all schools involved are public secondary schools in Dar es Salaam city.

Similarly, this study has found that ability grouping has a significant impact on 'students' perceptions of learning, with higher-ability students reporting more positive attitudes and beliefs about learning. These findings align with existing studies, which show that students in higher-ability groups tend to develop a higher academic self-concept (Kikaho, 2020; Roka, 2022). According to Vygotsky's sociocultural lens, the perception of learning is shaped through interaction with more capable peers and teachers (Walker, 2010), a phenomenon that is more prevalent in higher-ability settings. Students in lower-ability groups, on the other

hand, develop lower expectations of success, thereby weakening their motivation and sense of belonging (Kikaho, 2020; Mansor et al., 2016).

The gap in perception between higher and lower groups emphasises the socio-emotional impact of grouping beyond just academic achievement, as it includes social interactions in real life, since these students do not consider themselves to be at the same academic level or status (Mansor et al., 2016). This highlights the broader social and psychological consequences of ability grouping, suggesting that it can reinforce educational inequality and affect students' overall well-being and long-term engagement with learning.

On the other hand, this study found no significant differences in the effects of ability grouping on 'students' learning experiences and learning perceptions across the two participating schools. This outcome may be attributed to uniform instructional practices, national curriculum standards, and similar teacher expectations across Tanzanian public secondary schools. In this context, the findings are consistent with Vygotsky's theory, which suggests that learning is shaped more by immediate social interactions (Wibowo et al., 2025) than by institutional structures. Therefore, the absence of significant school-level variation reinforces the idea that the primary social setting for learning in the classroom and peer group is where ability grouping exerts its most substantial influence, regardless of school identity or context. However, future studies may aim to determine whether the situation is the same for public versus private schools.

While gender did not significantly influence students' learning experiences, it had a small but statistically significant influence on perceptions of learning, with female students generally reporting slightly more positive perceptions about learning than male students. Slight differences were also reported by Wilkinson and Penney (2024), although boys reported slightly higher perceptions of learning than girls in an ability grouping context. However, these findings are contrary to what has been reported by Anito and Gaikwad (2025); male and female students had the same neutral perceptions of ability grouping practised in the school. The small effect size suggests that gender alone does not substantially alter the impact of ability grouping; therefore, interventions aimed at supporting students in lower-ability groups should remain the primary focus to create positive learning experiences and perceptions for all students.

Having positive learning experiences and learning perceptions plays a critical role in enhancing student learning outcomes. When students encounter engaging, supportive, and meaningful learning environments, they are more likely to feel motivated, confident, and emotionally connected to their education (Dulosa et al., 2009). These experiences foster a sense of belonging, encourage active participation, and promote a more profound understanding. At the same time, students who hold positive perceptions about learning tend to believe that learning is valuable, achievable, and relevant to their lives. So, they tend to approach learning tasks with greater enthusiasm, persistence, and self-efficacy (Temel & Tekin, 2023). Together, these elements not only boost academic performance but also shape students' long-term attitudes toward learning, resilience in facing challenges, and readiness for lifelong learning (Temel & Tekin, 2023; Verma, 2019). Therefore, cultivating both positive learning experiences and perceptions of learning is essential for nurturing well-motivated and successful learners.

Overall Implications

Collectively, these findings underscore the significant impact that ability grouping has on shaping not only students' learning experiences but also their emotional and cognitive engagement with the learning process. The consistent disparity between higher-and lower-ability students in both learning experiences and learning perceptions suggests that ability grouping may unintentionally reinforce inequality within classrooms. Although intended to tailor instruction to learners' needs, such grouping practices tend to marginalise lower-ability students and limit their exposure to enriching interactions, thus reducing their opportunities to thrive. These insights challenge educators and policymakers to reconsider the balance between efficiency and equity in classroom organisation and instructional delivery. Lower-ability students may feel disconnected, frustrated, or unsupported, possibly due to unmet learning needs or misalignment with instructional approaches. Interventions should prioritise the perceptions of low-ability students, enhancing their sense of belonging, engagement, and perceived value of learning without making them feel that they are different from their counterparts.

CONCLUSION

In conclusion, this study highlights the centrality of ability grouping in shaping students' learning experiences and perceptions of learning in public secondary schools in Tanzania. While school context and gender showed minimal influence, the stark contrast between high- and low-

ability students underscores the need for pedagogical reforms that prioritise equity and inclusion. Since low-ability students report less favourable experiences and learning perceptions, this suggests a lack of effective scaffolding. Grounded in Vygotsky's sociocultural theory, the findings affirm that meaningful learning occurs through social interaction and support elements that teachers must make accessible to all learners, regardless of their ability level. Teachers must intentionally design learning activities that provide graduated support, such as modelling, questioning, or peer-assisted learning. More tailored scaffolding and differentiated instruction should go hand in hand with personalised feedback and additional learning resources tailored to the learner's developmental stage. High-ability students may possess or have access to more advanced tools or scaffolding, allowing them to construct more positive perceptions of learning. In contrast, low-ability students may lack such scaffolding, resulting in less favourable perceptions. As Vygotsky emphasised, social context mediates perception and engagement, which teachers need to reinforce to improve learning for students of all abilities.

RECOMMENDATIONS

Based on these findings, schools should adopt more inclusive and differentiated teaching strategies that respond to the diverse needs of learners within the same classroom (mixed-ability class) rather than segregating them by ability. Teachers, curriculum developers, and educational sector officials should design learning environments that are more inclusive, supportive, and responsive to diverse ability levels. Teachers' training institutions should prepare teachers on how to scaffold learning, promote peer collaboration, and support students with varying ability levels equitably. Furthermore, teachers should strengthen continuous assessment and feedback mechanisms to help all learners grow without the stigmatising effects of rigid ability group classifications.

While the study offers valuable insights, it is not without limitations. The sample was limited to two secondary schools, and the collection of data relied on convenience sampling by including students who were present; this may constrain the generalisation of the findings. Additionally, the study has encountered statistical violations related to homogeneity of variance, which, although managed with caution, warrant further validation using robust statistical techniques. Future research should include a larger and more diverse sample across multiple regions and types of schools, employing mixed-methods approaches to enrich understanding by capturing students' lived experiences and the contextual

factors that influence their perceptions. Furthermore, further studies might consider validating the instruments used for data collection to ensure validity and reliability. Finally, this study warrants further exploration, possibly to understand what drives this perceptual gap (e.g., teacher interactions, subject preference, self-efficacy).

REFERENCES

- Anito, H. D., & Gaikwad, P. (2025). 'Students' perception of ability grouping in a private international school. *European Journal of Education and Pedagogy*, 6(1), 52–60. <https://doi.org/10.24018/ejedu.2025.6.1.900>
- Blanco-Varela, B., Amoedo, J. M., & Sánchez-Carreira, M. C. (2024). Analysing ability grouping in secondary school: A way to improve academic performance and mitigate educational inequalities in Spain? *International Journal of Educational Development*, 107, 103028. <https://doi.org/10.1016/j.ijedudev.2024.103028>
- Blum-Kulka, S., & Dvir-Gvirsman, S. (2010). Peer interaction and learning. In P. Peterson, E. Baker, & B. McGaw (Eds.), *International encyclopedia of education* (3rd ed., pp. 444–449). Elsevier. <https://doi.org/10.1016/B978-0-08-044894-7.00529-7>
- Boaler, J., Wiliam, D., & Brown, M. (2000). Students' experiences of ability grouping: Disaffection, polarisation and the construction of failure. *British Educational Research Journal*, 26(5), 631–648. <https://doi.org/10.1080/713651583>
- Dulosa, S. S., Inocian, R. E., Bokeron, M. R. A., & Moneva, J. (2019). Perception of students towards education. *International Journal of Novel Research in Education and Learning*, 6(1), 35–45.
- Hallinan, M. T. (2003). Ability grouping and student learning. *Brookings Papers on Education Policy*, (1), 95–124. <https://doi.org/10.1353/pep.2003.0005>.
- Herrmann, K. J., Bager-Elsborg, A., & Parpala, A. (2017). Measuring perceptions of the learning environment and approaches to learning: Validation of the LEARN questionnaire. *Scandinavian Journal of Educational Research*, 61(5), 526–539. <https://doi.org/10.1080/00313831.2016.1172497>
- Hove, N. (2022). The inclusiveness of mixed ability grouping in Johannesburg primary schools. *South African Journal of Childhood Education*, 12(1), 1–9. <https://doi.org/10.4102/sajce.v12i1.1047>
- Kember, D., & Leung, D. Y. P. (2009). Development of a questionnaire for assessing 'students' perceptions of the teaching and learning

- environment and its use in quality assurance. *Learning Environments Research*, 12, 15–29. <https://doi.org/10.1007/s10984-008-9050-7>
- Khazaeenezhad, B., Barati, H., & Jafarzade, M. (2012). Ability grouping as a way towards more academic success in teaching EFL: A case of Iranian undergraduates. *English Language Teaching*, 5(7), 81–89. <http://dx.doi.org/10.5539/elt.v5n7p81>
- Kikaho, T. (2020). *The effects of streaming secondary school students according to their academic performance in Hai District, Kilimanjaro* (Unpublished master's thesis). Aga Khan University.
- Mansor, A. N., Maniam, P. P., Hunt, M. C., & Nor, M. Y. M. (2016). Benefits and disadvantages of streaming practices to accommodate students by ability. *Creative Education*, 7(17), 2627–2639. <https://doi.org/10.4236/ce.2016.717241>
- McLeod, S. (2024). Vygotsky's zone of proximal development. <https://www.simplypsychology.org/>
- Murphy, P. K., Greene, J. A., Firetto, C. M., Li, M., Lobczowski, N. G., Duke, R. F., Wei, L., & Croninger, R. M. V. (2017). Exploring the influence of homogeneous versus heterogeneous grouping on 'students' text-based discussions and comprehension. *Contemporary Educational Psychology*, 51, 336–355. <https://doi.org/10.1016/j.cedpsych.2017.09.003>
- Nurfaidah, S. (2018). 'Vygotsky's legacy on teaching and learning writing as a social process. *Langkawi: Journal of The Association for Arabic and English*, 4(2), 149–156. <http://dx.doi.org/10.31332/lkw.v4i2.1038>
- Petty, L. (2025). What is ability grouping in education? <https://www.highspeedtraining.co.uk/hub/ability-grouping-in-education/>
- Roka, J. (2022). Use of ability grouping in mathematics teaching. *Academic Journal of Mathematics Education*, 5(1), 29–32. <https://doi.org/10.3126/ajme.v5i1.54554>
- Rumiantsev, T., Rijst, R., & Admiraal, W. (2023). A systematic literature review of collaborative learning in conservatoire education. *Social Sciences & Humanities Open*, 8(1), 100683. <https://doi.org/10.1016/j.ssaho.2023.100683>
- Säljö, R. (2010). Learning in a sociocultural perspective. In P. Peterson, E. Baker, & B. McGaw (Eds.), *International encyclopedia of education* (3rd ed., pp. 498–502). Elsevier. <https://doi.org/10.1016/B978-0-08-044894-7.00471-1>
- Temel, V., & Tekin, M. (2023). The positive emotions: Positive perception and social well-being levels of the university students.

- Journal of Education and Learning (EduLearn)*, 17(4), 677–684.
<https://doi.org/10.11591/learn.v17i4.20978>
- Timmo, D. (2024). Student perceptions of learning and teaching questionnaire. <https://kb.wisc.edu/instructional-resources/page.php?id=129162>
- University College London. (2017). *UCL student experience survey 2017 questionnaire*. https://www.ucl.ac.uk/teaching-learning/sites/teaching-learning/files/ucl_student_experience_survey_2017_questionnaire.pdf
- Verma, G. (2019). The importance of a positive learning environment. <https://www.linkedin.com/pulse/importance-positive-learning-environment-geeta-verma>
- Walker, R. A. (2010). Sociocultural issues in motivation. In P. Peterson, E. Baker, & B. McGaw (Eds.), *International encyclopedia of education* (3rd ed., pp. 712–717). Elsevier.
<https://doi.org/10.1016/B978-0-08-044894-7.00629-1>
- Wang, H., King, R. B., & McInerney, D. M. (2021). Ability grouping and student performance: A longitudinal investigation of teacher support as a mediator and moderator. *Research Papers in Education*, 38(2), 121–142. <https://doi.org/10.1080/02671522.2021.1961293>
- Wibowo, S., Wangid, M. N., & Firdaus, F. M. (2025). The relevance of Vygotsky's constructivism learning theory with the differentiated learning in primary schools. *Journal of Education and Learning (EduLearn)*, 19(1), 431–440.
<https://doi.org/10.11591/edulearn.v19i1.21197>
- Wilkinson, S. D., & Penney, D. (2024). Students' preferences for setting and/or mixed-ability grouping in secondary school physical education in England. *British Educational Research Journal*, 50(4), 1804–1830. <https://doi.org/10.1002/berj.4000>

The Influence of Ethical Practices on the Organizational Performance: A Special Reference to Ruaha Catholic University

Florence Nakawunde^{1*}, Bukaza Chachage² and Janeth Isanzu²

¹Ruaha Catholic University, Tanzania

²Faculty of Business Management, The Open University of Tanzania

*Corresponding Email: fnakawunde@gmail.com

Abstract

Current unethical practices have heightened the scrutiny on researchers, organizations, governments and business practitioners. This study examined the influence of ethical practices on organizational performance, paying particular attention to the preconventional and post conventional stages of moral development stages of the Kohlberg's theory. 145 workers were polled using a quantitative method in a cross-sectional design based on positivism. Participants were chosen using simple random selection and stratified random sampling. Descriptive and inferential statistics were used to analyse the data, which were acquired via standardized, closed ended questionnaires. Results indicated that ethical practices based on integrity and accountability positively correlated with performance, while discipline and fear-based compliance showed a weak negative association. The study stressed the significance of developing a culture of ethical decisions-making, ethical training, ethical leadership, transparent communication, and orientation for new hires. The single-institutional sample and some other unidentified performance affecting factors were among the limitations. Future studies should look into employee motivation, communication dynamics, and the long-term effects on interventions promoting ethical behaviours on performance.

Keywords: *Ethical practices, Preconventional, Postconventional, organizational performance*

INTRODUCTION

From being a historical concern, the pursuit of ethical practices within organizations is now a crucial element of successful modern corporate operations. Research shows that ethical practices have a favourable impact on performance, and they are becoming more and more

acknowledged as essential for organizational success on a worldwide scale (Agbo, 2022; Grigoropoulos, 2019). Organizational performance serves as an indicator of managerial effectiveness, reflecting an organization's ability to align resources with operational goals in an ethical manner, which fosters a sustainable competitive advantage (Munishi, Khatri, & Pastory, 2022; Odhon'g & Omolo, 2015, as cited in Munishi, Khatri, & Pastory, 2022). Achieving high performance across financial, market, operational, and shareholder dimensions requires effective management of various factors, notably human capital (Barney, 1991; Peters & Waterman, 1982; Kaplan, 2005, as cited in Munishi, Khatri, & Pastory, 2022).

Employee ethics in higher education play an important role in shaping institutional culture, reputation, and performances (Ruben & Gigliotti, 2019). Ethical practices such as integrity, teamwork, fairness, and adherence to codes of conduct are critical, prompting firms to incorporate ethical norms and regulations across their structures (Grigoropoulos, 2019). Studies have demonstrated that ethical practices have a positive impact on organizational performance around the world. For example, Oladimeji's (2024) research examined the relationship between accountability practices, integrity systems, internal control systems, and leadership skills in Malaysia's public sector. Using descriptive statistics, ordinal regression, and structural equation modelling (SEM), the findings show a statistically significant positive relationship between integrity system practices and leadership quality. Purba and Prasetyo (2020) investigated how leadership and integrity influence employee performance, mediated by organizational commitment. Using SEM on data from 120 Bank Indonesia employees, they found that both leadership and integrity positively impact employee performance and organizational commitment. Importantly, integrity primarily drives organizational commitment, while leadership strongly influences employee performance.

The African context, Adeyeye et al. (2015) conducted a study in Nigeria to examine the effects of ethical and unethical conduct on workers' dedication and output. The study analysed data obtained from a 5-point Likert scale using structural equation modelling (SEM) and descriptive statistics. AMOS 22 was used to test hypothesis. The results showed that organizational productivity and ethical standards were significantly correlated and that productivity was negatively impacted by integrity and discipline. This detrimental impact was attributed to these moral values'

abstract nature, which takes time to manifest. The study emphasises the strong relationship between ethics and organizational performance, particularly in the setting of Nigeria. According to Anekwe et al. (2023), harsher punishments like suspension and dismissal have a detrimental influence on performance, but performance is favourably connected with positive disciplinary actions such as persuasion and warnings. This suggests that positive reinforcement is more effective in accomplishing organizational goals. Rufus and Gbemigun (2019) looked into the positive correlation between an employee's integrity and honesty and their performance.

Nonetheless, Yatich and Musebe (2018), who investigated how moral behaviour influences organizational performance in the industry, uncovered persistent moral lapses in Kenya's public health system. The effectiveness of the organization suffered as a result of these activities. In view of the same, the study conducted by Mupandanyama (2021) highlighted the negative consequences of unethical activities, including nepotism and corruption, on the efficacy of local government in Zimbabwe. The study also mentioned the advantage of having a strong work ethic and provided suggestions for encouraging moral behaviour. Over the past few decades, ethical practices in organizational settings have received a lot of attention, especially from the government and non-governmental sectors. This emphasis is particularly noticeable in initiatives involving public funding for procurement and developmental project funds, to mention a few, where ethical standards compliance is essential (Mchopa et al. 2019).

In the study by Mchopa et al. (2019), empirical data from Tanzania's Moshi District Council highlighted the significance of moral procurement standards like accountability, transparency and justice. These values have a high association with improved organizational performance, as well as being consistent with professional procurement standards. The study used a mixed-method approach and a descriptive design.

Furthermore, the Tanzania Commission for Universities (TCU) stresses effective leadership and sound management as crucial for improving performance in higher education (Nkunya, 2020). Despite TCU's guidance, some Tanzanian universities struggle with quality standards due to inadequate financial resources or leadership deficiencies, impeding quality improvement efforts.

The correlation between ethical behaviour, stakeholder trust, a healthy work environment, and overall organizational success has been highlighted by prior empirical studies. With an emphasis on the connection between employee ethics and organizational success in various settings, the current study explores the influence of ethical practices in higher education. The purpose of this study is to identify areas that require development and provide strategies for promoting moral and ethical practices, and raise overall institutional accomplishments, ethical leadership and practices are essential for businesses to succeed sustainably (Nkunya, 2020). Understanding the various organisational context and difficulties can help develop effective ways to promote ethical cultures and enhance performance. The results of the study can assist stakeholders, policymakers, and leaders in establishing moral guidelines that promote excellence, discipline, integrity, and accountability while also raising performance levels. Emeka et al. (2020) studied how non financial transparency affected performance; Arokodare and Asikhia (2020) found a correlation between strategic agility and improved performance; Ibrahim and Daniel (2019); and Alkhajeh (2018). Investigated the relationship between ethical leadership style and organisational performance. While these studies offer insights on ethical practices and organisational performance. The relationship between ethical practices and organisational performance in the higher learning institutions in Tanzania remains understudied. This study aims to fill this gap by exploring the impact of preconventional and postconventional ethical practices on organizational performance in Tanzanian higher educational institutions. Therefore, it was necessary to illuminate these matters through a careful study guided by two research objectives:

- i) To determine the extent of the preconvention stage of moral development of ethical practices as an influencing factor in organisational performance.
- ii) To assess the effect of the postconventional stage of moral development of ethical practices on organisational performance.

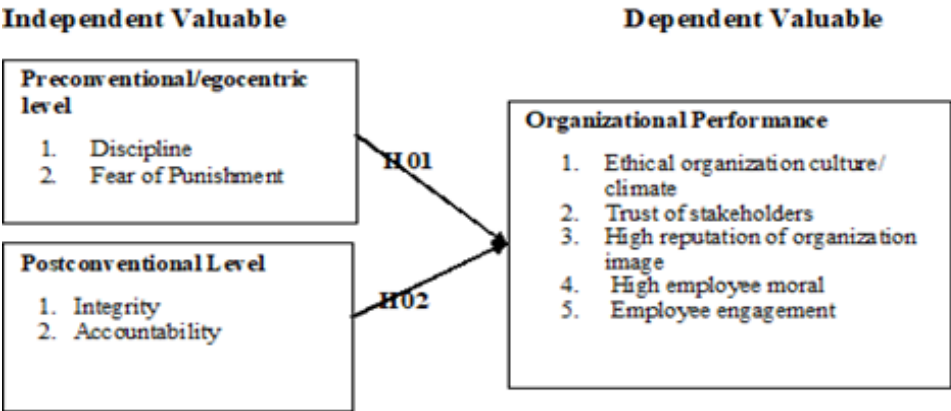
Theoretical Frame Work

The study analyses the impact of ethical practices on organizational performance using Kohlberg's theory of moral reasoning. From Piaget's (1932, 1965) work with youngsters, Kohlberg's theory developed into a six-stage model. The paradigm of moral growth, which has three levels,

characterizes the process of making ethical decisions as it advances via life events (Kohlberg, 1969, 1981). The three levels are as follows: (1) preconventional, in which people put their own interests' first; (2) conventional, in which people follow social standards; and (3) postconventional, in which people base their decisions on moral values that they have selected for themselves. Gilligan (1982; 1993) criticized Kohlberg for neglecting to consider women's care-based reasoning, which demonstrates that women value connections and care whereas men use reasoning that is justice-oriented (Moreno-Segura et al., 2023; Held, 2006) in this study, fear of punishment and discipline are preconventional variables, while accountability and integrity are postconventional. Various ethical perspectives, such as individualism, utilitarianism, moral righteousness and fairness, are used as supporting theory (Mill1873) and are in line with Kohlberg's stages of understanding ethical practices in organizational performance. The merits and flaws of these frameworks are highlighted when viewed via Kohlberg's lens, which also demonstrates how useful his model is to the study for understanding and promoting ethical development in people and organisations, eventually influencing ethical actions within the study's context.

Figure 1

Conceptual Framework: The influence of ethical practices on organizational performance.



Source: Researcher (2024)

METHODOLOGY

This study research design employed structured methods where two theories were adopted to guide the study and study variables were deducted from the theory in order to explain the influence of ethical

practices on Organizational performance. Therefore, a quantitative approach was used to study the relationship between the independent variable and dependent variables, where a cross-sectional survey research strategy was employed to collect data that helped to quantify the relationship between preconventional ethical practices (fear of punishment and discipline) and postconventional ethical practices (integrity and accountability) and perceived organizational performance. Therefore, this philosophical thinking enabled the use of positivist approach.

Area of study was Iringa Region of Tanzania, and particularly Ruaha Catholic University located in Iringa Municipal. This location was preferred because RUCU has been recognized for its commitment to ethical standards despite ongoing challenges. It presented a compelling context to investigate the influence of employee ethical practices on organizational performance.

The population and sampling of this study were crucial; the targeted population comprises management as well as teaching and non-teaching workers (234) (HR Office 2023 data) in this investigation, stratified random sampling was employed, which entailed dividing the population units into subgroups and selecting a basic random sample unit from each segment (Orton, 2018). Consequently, the total of stratum was calculated as follows: $\Sigma(N_h/N) * n = 147.99 \cong 148$, Simple random sampling is useful to guarantee a fair chance of inclusion for all population members, making them equally eligible to participate in a research project (Thomas, 2020). The research focused on RUCU staff (teaching and non-teaching) due to their relevant knowledge aligning with the study's specific focus. This ensured data generalizability within RUCU and information richness.

This study used both primary and secondary data, for purpose of primary data; the study used structured questionnaires to capture measurable data for statistical testing (Saunders, 2019). Questionnaires were considered applicable as they provide a chance to collect statistical data suitable for statistical analysis, hypothesis testing and examine the relationship between variables. While this research concentrated more on electronic based sources to search secondary data like journals, articles, electronic books and also the library data base from the Open University Tanzania,

Iringa branch, and RUCU as well as documents from RUCU Human Resource Office with permission from the RUCU management.

Validity and Reliability tests were taken into consideration, according to Kulshreshtha, (2013) test verified if the data captured the intended measurements, with a score above 0.5 indicating high adequacy. Additionally, content validity was confirmed by consulting supervisors, guaranteeing the survey items accurately reflect the research objectives and real-world context. Data should be tested for suitability, Data suitability was assessed using the Kaiser-Meyer-Olkin (KMO) test, yielding a higher score of 0.555, and Bartlett's test of sphericity, which was significant ($\chi^2 = 122.328$, $p < 0.001$). Because of the P-value of .000, which is quite significant. This indicated that there is enough correlation between the variables to support component analysis. Supervisor consultations confirmed that the survey items appropriately matched the research aims, ensuring content validity as demonstrated in Table 1.

Table 1
KMO And Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.555
Bartlett's Test of Sphericity	Approx. Chi-Square	122.328
	df	3
	Sig.	.000

Data reliability was ensured in this study by using Cronbach's alpha analysis, which measures how consistently the questionnaires capture the target constructs. A rating of 0.7 or above denotes robust consistency (Loungrath, 2018; Wang et al., 2022). The findings, which demonstrated that every scale was higher than the minimal value, confirmed the validity of the research apparatus as well as consultation with the supervisors. Table 2.

Table 2
Reliability Statistics of Cronbach's Alpha

Variables		No of Items	Cronbach's Alpha
1.	Preconventional	10	0.718
2	Postconventional	10	0.854
3	Organization Performance	5	0.863
4	Overall	25	0.864

Source Researcher, 2024

Data was edited, coded and entered into the SPSS software. Initial descriptive statistics of variables were generated to obtain frequencies, means and standard deviations. Furthermore, regression analysis was applied to establish the relationship between the independent variables: (preconventional and postconventional) and the dependent variable: (organizational performance).

RESULTS AND DISCUSSIONS

In this section, the findings appear based on the research objectives and hypotheses of the study. Before presenting data obtained as required by the research hypothesis, the researchers presented the demographic characteristics of respondents. It was from this background that it was possible for the researchers to determine the nature of respondents as reflected in Table 3.

Table 3
Demographic Characteristics of the Respondents (N = 145)

	Variable	Category	Frequency	Percentage (%)
1	Gender	Female	74	51.0
		Male	71	49.0
2	Age	20-30	37	25.5
		30-40	38	26.2
		40-50	48	33.1
		50-60	12	8.3
		61 and above	10	6.9
3	Marital status	Single	64	44.1
		Married	77	53.1
		Divorced	2	1.4
		widow/er	2	1.4
4	Education level	Certificate	13	9.0
		Diploma	10	6.9
		Advanced Diploma	7	4.8
		Degree	45	31.0
		Masters	55	37.9
		Doctorate	15	10.3
5	Duration of work with RUCU	below five years	51	35.2
		5-9	32	22.1
		10-14	40	27.6
		15 years and above	22	15.1

Source: Field Data

Table 3's results show that respondents' gender distribution is balanced, with 51% of them being female and 49% being male. A mature group capable of comprehending the ethical consequences on organizational performance was indicated by the 33% of participants who were between the ages of 40 and 50. Although the majority of respondents (53.1%) were married, suggesting a stable workforce at RUCU, the 41.1% of single respondents may cause retention problems. Results indicated enriched variety on perspectives of ethical practices by the fact that 31% of the population held a bachelor's degree and 37.9% held a master's degree. In addition, 35.2% of respondents had less than five years' experience, while 27.6% of respondents had worked for ten to fourteen years. This suggests that respondents' opinions on ethical practices at RUCU may vary due to years of experience working at RUCU.

Correlation Analysis

Table 4
Pearson correlations

Correlations		Preconventional	Postconventional	Performance
Preconventional	Pearson Correlation	1	.360**	.241**
	Sig. (2-tailed)		.000	.004
	N	145	145	145
Postconventional	Pearson Correlation	.360**	1	.717**
	Sig. (2-tailed)	.000		.000
	N	145	145	145
Performance	Pearson Correlation	.241**	.717**	1
	Sig. (2-tailed)	.004	.000	
	N	145	145	145

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Field Data

Influence of Preconventional Moral Development Ethical practices on Organizational Performance

The results in this objective indicated that both the correlations are positive and statistically significant at the 0.01 level, indicating that as scores in one variable increase, scores in the other variable tend to also increase. The weakest, yet still significant, correlation is between preconventional ethical practices (discipline and fear of punishment) and performance ($r = .241$). Hair et al. (2007) addressed the strength of the relationship between the coefficient ranges of 0.21 to 0.40 as a small but definite relationship. The value of the correlation coefficient, which is

(0.241), falls in the coefficient range of 0.21 to 0.40. This showed a small but definite relationship between moral reasoning stage preconventional and organizational performance.

Influence of Postconventional Moral Development Ethical practices on Organizational Performance

In this objective, the strongest correlation was between postconventional and performance ($r = .717$), suggesting a strong linear relationship between these two variables. In view of the same, Hair et al (2007) addressed the strength of the relationship between the coefficient ranges of 0.71 to 0.90 as high. At 0.717, the correlation coefficient falling between this range showed that the level of postconventional moral reasoning and organizational efficiency were highly correlated. The results indicate that performance and postconventional ethical practices (integrity and accountability) have the strongest positive relationship among all the factors. This is consistent with Kohlberg’s theory, which holds that people become more moral and perform better as they move through the moral phases.

Regression Analysis

In order for the regression analysis to be conducted, it was compelling for researchers to test their data set to see if they meet the required assumptions. Thus, diagnostic tests were conducted to test multicollinearity, linearity and normality as presented in the subsequent sections.

Table 5
Collinearity Statistics

	Tolerance	VIF
(Constant)		
Preconventional	.871	1.149
Postconventional	.871	1.149

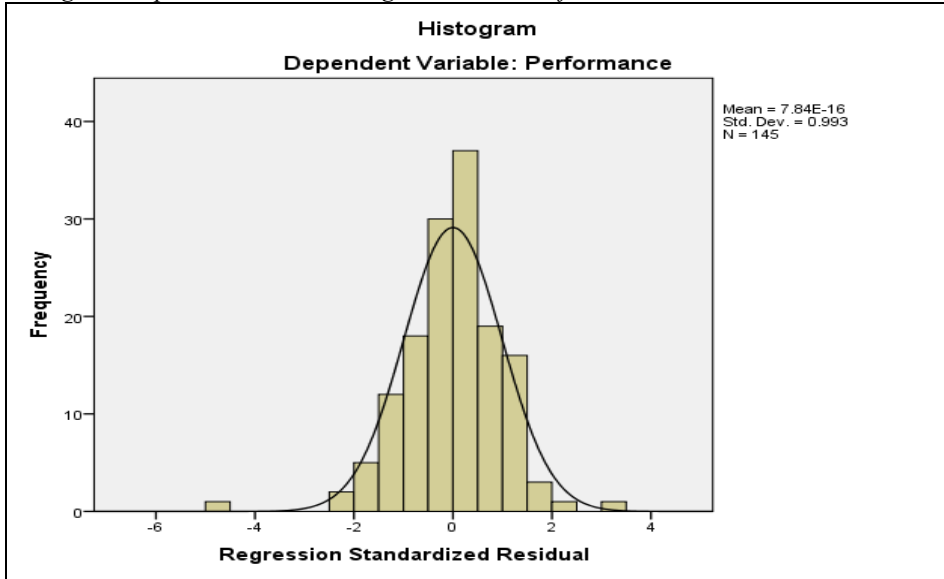
Source: Field Data

The Multicollinearity Table 5 indicated collinearity statistics; the tolerance and variance inflation factor (VIF) values suggested that there were no multicollinearity issues. Tolerance values close to 1 indicate low multicollinearity. While VIF values below 10 indicate no severe multicollinearity. Both variables preconventional and postconventional their tolerance and VIF values were 0.871 and 1.149, respectively.

For the normality assumption for regression analysis, a normality assumption was needed. To test the normality assumption, we must run the histogram and the normal P-PP in the SPSS and results are presented in figure 2 and 3.

Figure 2

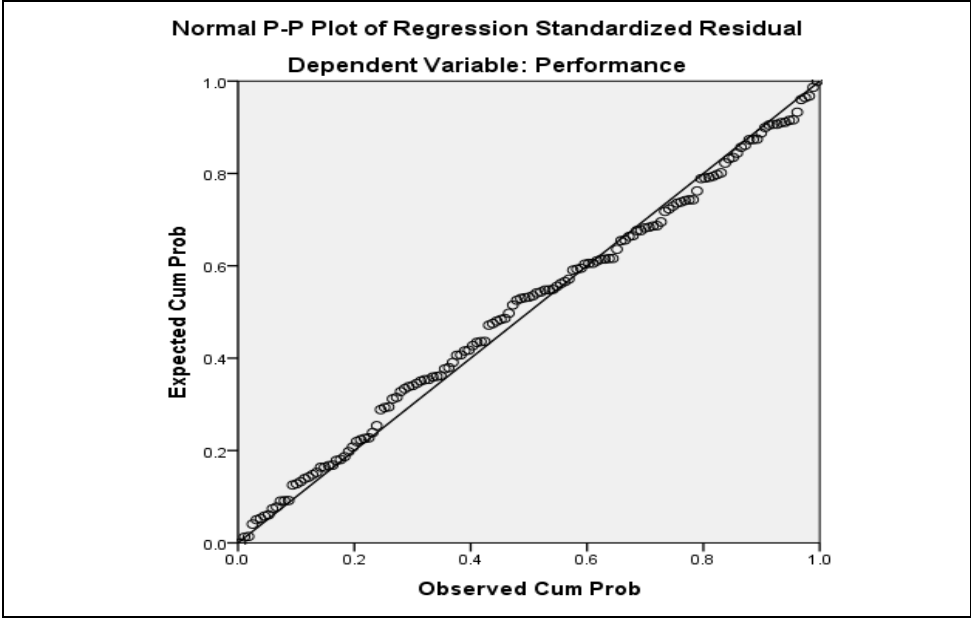
Histogram Dependent Variable: Organizational Performance



Source: Field Data

The results indicate the mean 7.84E-16, which is approximately 0, and the standard deviation of 0.99, which is approximately 1. The histogram supports the assumption of normality of residuals in regression analysis, suggesting that the regression model used is appropriate and the results can be trusted. Furthermore, looking at the P-P plot, we find that all the data on the organizational performance appear to fit in the straight line. Therefore, the conclusion is that the data was normally distributed since they have shown that the standard normal distribution has a mean of 0 and a standard deviation of 1. Also, the P-P plot shows a straight line. Therefore, the key assumptions of the regression are all satisfied; thus, the model fits the data to explain the relationship between organizational performance (dependent variables) and other independent variables: In the preconventional and postconventional ethical practices stages, a linear regression model was used.

Figure 3
Linearity of Variation



Source: Field Data

Table 6
Model Fitness Test

Model Summary ^b									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics F Change	df1	df2	Sig. F Change
1	.717 ^a	.514	.507	2.19446	.514	75.151	2	142	.000

a. Predictors: (Constant), Postconventional, Preconventional

b. Dependent Variable: Performance

Source: Field Data

Table 6: The model fitness test summary indicates that the regression model, which includes the predictors postconventional and preconventional, significantly explains 51.4% of the variance in performance ($R^2 = .514$, adjusted $R^2 = .507$). The high F statistic (75.151) and its significance level (.000) suggest that the model is a good fit for the data. The strong R value (.717) indicates a strong correlation between the observed and predicted values of performance. Only 48.6% of the variations of variables which are not included in the model. Std. Error of the Estimate value (2.19446) reflects the standard deviation of the residuals (errors) in the model.

Table 7
Analysis of Variance

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	723.805	2	361.902	75.151	.000 ^b
	Residual	683.823	142	4.816		
	Total	1407.628	144			

a. Dependent Variable: Performance

b. Predictors: (Constant), Postconventional, Preconventional

Source: Field Data

Table 7. The regression model was shown to be statistically significant by the ANOVA findings. At a significance level of .000, the F-statistic of 75.151 indicates that a considerable amount of the variance in the dependent variable (performance) can be explained by the model. This demonstrates that the predictors postconventional and preconventional are significant in explaining the variation in performance and validates the validity of the regression model.

Table 8
Regression coefficient and tests of hypothesis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.704	1.431		3.987	.000
	Preconventional	-.010	.031	-.019	-.310	.757
	Postconventional	.388	.034	.724	11.547	.000

Source: Field Data

Influence of preconventional ethical practices on organizational performance

The study aimed at comparing the contribution of each independent variable. Table 8 shows that the unstandardized coefficient (B) for the constant term is 5.704. This represents the predicted value of "performance" when the independent variables (preconventional and postconventional) are equal to zero. Preconventional level of ethical practices (Beta = -.019, p-value = .757): indicated a very weak negative association and was not statistically significant between preconvention stage of moral development of ethical practices and organisational performance. This implies that lower organizational performance is linked to higher scores on preconvention moral ethical practices, which usually place a higher priority on discipline and avoiding punishment. P-values

above 5% (0.05) indicate that the association has no meaningful influence on performance.

The findings show that, in the regression model, preconventional ethical practices were found to have a negative and low significant influence on organization performance, with a B-value= -0.010, (P=0.757,> 0.05) the null hypothesis is not rejected. H01. There is no significant influence of the preconvention stage of moral development practices on organizational performance of RUCU.

Influence of postconventional ethical practices on organizational performance

Postconventional level of ethical practices (Beta =.724, p-value = .000): There's a positive and statistically significant relationship between postconventional stage of moral development of ethical practices (which focuses on universal ethical principles of integrity and accountability) and organizational performance. This is because P-value is below 5% (0.05). This suggests that higher scores on postconventional moral ethical practices are associated with higher performance.

postconventional were found to have a positive influence on organization performance with (B-value=0.388, P=0.000<0.05, with highly significant relationships. Hence rejecting the null hypothesis H02. There is no significant influence of the postconvention stage of moral development practices on organizational performance of RUCU, and accept the alternative hypothesis H₂ that; there is a significant influence of the postconventional stage of moral development ethical practices on organizational performance of RUCU.

A simple regression model was used in determining the level of influence the independent variable has on the dependent variable, as shown below: -

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

$$Y = 5.704 + -.010X_1 + 0.388X_2 + \varepsilon$$

Preconventional ethical practice was found to have a negative influence on organizational performance in RUCU ($X_1 = -0.010$, $P = 0.0757 > 0.05$, $t = -0.310$, $\beta = -0.010$). This shows that a one-unit change in preconventional ethical practices will result in a - 0.010 unit decrease in organization performance; other factors are held constant.

Postconventional ethical practices were found to have a positive influence on organization performance in RUCU ($X_2 = 0.388$, $P = 0.000 < 0.05$, $t = 11.547$, $\beta = 0.388$). This shows that a one-unit change in postconventional ethical practices results in 0.388 unit increase in organizational performance, other factors held constant.

The discussion of findings was based on the specific objectives as follows:

The first objective was to determine the extent to which preconventional stages of moral development, namely, fear of punishment and discipline affect organizational performance. The findings show that preconventional ethics, which are characterized by fear of discipline and punishment have very little effect on performance ($P\text{-value} = 0.757$, $\beta = -0.019$). This goes against the findings of Anekwe et al. (2023), but it is in line with the suggestion made by Adeyeye et al. (2015) that an organization's success could be in danger if it depended only on these principles. Moreover, the results align with Kohlberg's moral theory, which emphasizes that while egocentric moral reasoning may have immediate advantages, it may also have long-term negative effects on organizational performance. Therefore, while all other factors stay the same, a one-unit change in these moral behaviours results in a -0.010 (-0.1%) decline in performance. Despite this difference, Nevertheless, the findings are helpful to the management of RUAHA Catholic University and relevant parties as they highlight the value of intergrading higher order moral reasoning which is beneficial.

Conversely, the second objective was to assess the effect of the postconventional stage of moral development of ethical practices on organizational performance. The study found that postconventional ethics, encompassing integrity and accountability, significantly and positively influence performance ($\beta = 0.724$, $p = 0.000$) supporting findings by Oladimeji (2024) and Rufus and Gbemigun (2019). These results align with Kohlberg's theory, emphasizing the importance of higher moral reasoning for organizational success. Additionally, a one-unit change in these ethical practices resulted in a 0.388 (38%) increase in performance, holding other factors constant.

It implies that higher learning institutions and organizations should reinforce these ethical values among employees for the success of the organisations.

CONCLUSIONS

The study revealed how crucial moral behaviours are to maintaining the effectiveness of an organization. Postconventional ethics (integrity and accountability) demonstrated a strong positive association with performance, but preconventional ethics (discipline and fear of punishment) had an insignificant negative effect. Therefore, this implies that organizations should prioritize building a solid ethical culture through the formulation of policies, training, and ethical guidelines based on postconventional ideas. Of course, discipline is important but employees should be formed trained to be men and women of integrity and accountability. For higher education institutions to embark on the formation of future professionals with a foundation in integrity and accountability coupled with honesty and responsibility moral thinking and ethical values incorporated into the curricula.

In conclusion, there is a need for transitioning from preconventional ethical values to postconventional ethics, focusing on integrity and accountability, so as to enhance organizational performance, as demonstrated by a positive correlation in the study.

REFERENCES

- Agbo, M. U. (2020). Effects of Employee Discipline on Organizational Performance (A study of Nigeria Breweries Plc, Enugu, Enugu State, Nigeria. *IOSR Journal of Business and Management*. Vol, 22, 34-40
- Al Halbusi, H., Williams, K. A., Ramayah, T., Aldieri, L., & Vinci, C. P. (2021). Linking ethical leadership and ethical climate to employees' ethical behaviour: the moderating role of person–organization fit. *Personnel Review*, 50(1), 159-185.
- Alkhajeh, E. H. (2018). Impact of Leadership Styles on organizational Performance. *Journal of Human Resources Management Research*, 1, 1-10
- Anekwe, R. I., Nwatu, I., & Nwanah, C. P. (2023). Workplace discipline: A catalyst for staff performance of money deposit banks in Anambra State, Nigeria. *International Journal of Advanced Multidisciplinary Research and Studies*, 3(4), 145-152.
- Aranda, D. A. (2003). Service operations strategy, flexibility and performance in engineering consulting firms. *International Journal of Operations & Production Management*, 1401 – 1421

- Arias-Pérez, J., Coronado-Medina, A., & Perdomo Charry, G. (2022). Big data analytics capability as a mediator in the impact of open innovation on firm performance. *Journal of Strategy and Management*, 15(1), 1-15.
- Arokodare, M. A. & Asikhia, O. U. (2020). Strategic agility: Achieving superior organizational performance through strategic foresight. *Global Journal of Management and Business Research: An Administration and Management*, 20(3), 6 – 16.
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 99-120.
- Battiston, D., Cruces, G., Lopez-Calva, L.F. et al. Income and Beyond: Multidimensional Poverty in Six Latin American Countries. Soc Indic Res 112: 291–314. <https://doi.org/10.1007/s11205-013-0249->
- Brown, M.E. and Trevino, L.K. (2014), “Do role models matter? An investigation of role modelling as an antecedent of perceived ethical leadership”, *Journal of Business Ethics*, Vol. 122 No. 4, pp. 587-598.
- Emeka, O. L., Nwadiolor, E. O. & Nweze, A. U. (2020). Effect of non-financial disclosure on performance of non-financial firms in Nigeria. *Journal of Accounting and Financial Management*, 6(1), 16 – 39.
- Fernández-Portillo, A., Almodóvar-González, M., Sánchez-Escobedo, M. C., & Coca-Pérez, J. L. (2022). The role of innovation in the relationship between digitalisation and economic and financial performance. Company-level research. *European Research on Management and Business Economics*, 28(3), 100190.
- Ghanem, K. A., & Castelli, P. A. (2019). Accountability and moral competence promote ethical leadership. *The Journal of Values-Based Leadership*, 12(1)
- Gilligan, Carol. (1982). In a Different Voice: *Psychological Theory and Women's Development*. Harvard University Press.
- Grigoropoulos, J. E. (2019). The Role of Ethics in 21st Century Organizations. *International Journal of Progressive Education*, 15(2), 167-175.
- Hair, J. F., Money, A. H., Samouel, P., & Page, M. (2021). *Research methods for business (10th Ed.)*. USA, New Jersey: John Wiley & Sons.
- Ibrahim, A. U., & Daniel, C. O. (2019). Impact of leadership on organizational performance. *International Journal of Business Management and Social Research*, 4(2), 367–374.

- Kalu, K. I., & Ott, K. (2019). Ethical issues in environmental pollution: multinational corporations (MNCs) and oil industries in tropical regions—the Nigerian Niger-delta case. *African Environmental Ethics: A Critical Reader*, 271-289.
- Kaplan, R. (2005). How the balanced scorecard complements the McKinsey 7-S model. *Strategy & Leadership*, 41 – 46.
- Kohlberg, L. (1971). *The philosophy of moral development*. HarperCollins.
- Kohlberg, L. (1992). *Psychology of Moral Development*. Desclée de Brouwer.
- Mchopa, A., Mashene, A., Mwiseje, S., & Israel, B. (2019). Ethical procurement practices and performance of public procuring entities in Tanzania: Empirical evidences from Moshi district council. [Unpublished manuscript] Moshi Cooperative University
- Munishi, E. J., Khatri, H., & Pastory, D. (2022). Influence of Firms' Staff and Skills on the Organizational Performance: A Case of the Salt Mining Industry in Tanzania.
- Mupandanyama, T. (2021). Improving Work Ethics for Organizational Performance in Zimbabwe Local Authorities. *J Pol Sci Pub Aff*, 9, 414.
- Ngniatedema, T., & Li, S. (2014). Green Operations and Organizational Performance. *International Journal of Business & Social Science*, 50 - 58.
- Njoroge, J., Ongeti, W., & Kasomi, F. M. (2016). Does External Environment Influence Organizational Performance? The Case of Kenyan State Corporations. *Management and Organizational Studies*, 41 -51
- Nkunya, M. H. H. (2020, January-June). Speech excerpt about higher education investment and quality improvement. *TCU Magazine*.
- Odhon'g, E. A., & Omolo, J. (2015). Effects of Human Capital Investment on Organizational Performance of Pharmaceutical Companies in Kenya. *Global Journal of Human Resources Management*, 1 -29.
- Oladimeji, K. A. (2024). Exploring the Role of Ethics and Accountability in Enhancing Organizational Performance: The Moderating Influence of Perceived Organizational Support in the Public Sector. *Journal of Governance*, 9(2).
- Peters, T. J., & Waterman, R. H. (1982). *In search of excellence: Lessons from America's best-run companies*. New York: Harper & Row.
- Piaget, J. (1994). *The Moral Judgment of the Child*. Editora Summus.

- Purba, C.B. & Prasetyo, H. (2020). How is the impact of employee performance influenced by organizational commitment, integrity and leadership, *Academy of Entrepreneurship Journal*, 26(4), 1-9.
- Rosmi & Syamsir (2020). The effect of integrity and professionalism on employee performance in digital era, *TIC*, 10(21/22), 1-13. DOI 10.4108/eai.21-10-2020.2311846
- Rufus, O. S., & Gbemigun Catherine, O. (2019). Accountability and public sector performance in the third world country: A case study of Nigeria. *International Journal of Trend in Scientific Research and Development (IJTSRD)*, 3(3).
- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson Education Limited. ISBN: 978-1-292-25235-5
- Thomas, L. (2020). An introduction to simple random sampling. Retrieved 12 July 2024, from <https://www.scribbr.com/methodology/simple-random-sampling/>
- Trevino, L. K., Den Nieuwenboer, N. A., & Kish-Gephart, J. J. (2014). (Un)ethical behaviour in organizations. *Annual Review of Psychology*, 65, 635–660.
- Trevino, L. K., & Brown, M. E. (2004). Managing to be ethical: Debunking five business ethics myths. *Academy of Management Perspectives*, 18(2), 69-81.
- Xin, J. Y., Yeung, A. C., & Cheng, T. C. E. (2008). Radical innovations in new product development and their financial performance implications: An event study of U.S. manufacturing firms. *Operations Management Research*, 1(2), 119–128.
- Xue, W., Li, H., Ali, R., & Rehman, R. U. (2020). Knowledge mapping of corporate financial performance research: A visual analysis using Cite Space and UCINET. *Sustainability*, 12(9), 3554.
- Yatich, K. H., & Musebe, R. (2018). Assessment of ethical behavior on organizational performance. *African Journal of Business Management*, 11(1), 12-16. Doi: 10.5897/AJBM2016.8206.

Effect of adolescents' demographic factors on reproductive outcomes affecting teenage pregnancy in Momba District, Tanzania

Harrieth Mtae

Department of Economics and Community Economic Development,
The Open University of Tanzania, Tanzania

harrieth.mtae@out.ac.tz

ORCID: <https://orcid.org/0000-0002-6059-378X>

Abstract

This study investigates the prevalence and determinants of teenage pregnancy in Momba District, Tanzania, focusing on teen background information and pregnancy rates, age at first marriage, and partner support. A stratified random sampling approach was used to ensure representation across different age groups and geographic areas focusing the five wards. The surveys included closed ended questions and data were analyzed using SPSS version 25. Descriptive statistics were used to summarize demographic data. Pearson correlation, poisson regression and multiple regression was employed to examine relationships between key variables such as age, education level, marital status, employment and reproductive outcomes. Findings show that 30.4% of respondents were pregnant at the time of the interview and among them, 41.5% were experiencing their first pregnancy. The number of pregnancies varied, with just over half having had more than one. Notably, two-thirds of these had experienced two pregnancies, suggesting that many may have had their first pregnancy at a relatively young age. Number of pregnancies was not significantly associated with any socio-demographic factors tested in the Poisson regression model (all $p > .05$). However, age at first pregnancy was strongly associated with age ($B = 1.429$, $p < .001$), indicating that older respondents tended to experience their first pregnancy later. Education level was negatively associated with age at first pregnancy ($B = -0.341$, $p < .001$), while marital status was positively associated ($B = 0.448$, $p < .001$). Regarding partner support, both education level ($B = 0.759$, $p = .024$; $OR = 2.135$, 95% CI [1.107–4.117]) and marital status ($B = 0.838$, $p < .001$; $OR = 2.311$) were significant predictors, suggesting that married and more educated respondents were more likely to receive partner support. Recommendations include enhancing education access, implementing

sexual health education, addressing early marriages, providing vocational training for girls, and improving adolescent-friendly health services.

Keywords: *Teen Pregnancy, Number of pregnancies, Age at first marriage and Partner's support*

INTRODUCTION

Over 16 million teenage girls become pregnant worldwide each year, making adolescent girls a major target group of global health and development interventions. This aligns with the interconnected nature of the Sustainable Development Goals, the Global Strategy on Women's, Children's and Adolescents' Health, and a Lancet Commission on Adolescent Health and Wellbeing. Patton et al. (2016) and WHO (2015) suggest a multisectoral policies approach with a strong link between adolescent (reproductive) health and education, including comprehensive sexuality education. Approximately 95% of adolescent births occur in low- and middle-income countries, and over 50% of women give birth before the age of 20 years in sub-Saharan Africa (WHO, 2020; Odejimi et al., 2016; Sully et al., 2020; Crooks et al., 2022). According to the estimates, half of teenage pregnancies in underdeveloped nations are unplanned and the majority of these teenage pregnancies result in abortions. Therefore, teen pregnancy is a pressing public health concern in sub-Saharan Africa, where in 2021, it was estimated that there were 6,114,000 births among girls aged 15–19 across sub-Saharan Africa (UNICEF, 2022).

East Africa has one of the highest rates of teenage pregnancy and births worldwide. In a study conducted by Worku et al. (2021) and Anadolu (2020) in East African countries including Burundi, Ethiopia, Comoros, Uganda, Rwanda, Tanzania, Mozambique, Madagascar, Zimbabwe, Kenya, Zambia, and Malawi, the prevalence of adolescent pregnancies was 54.6 percent across the region, with the highest rates in Zimbabwe (65.29 percent) and the lowest rates in Rwanda (36.15%). In Tanzania, the Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS) found that teenage pregnancy increased from 22.8% to 26.8% between 2010–11 and 2015–16 and then dropped slightly to 22% in 2022 (NBS, 2011; DHS, 2015/16; DHS, 2022). Although the 22% prevalence of teenage pregnancy reported in the 2022 TDHS-MIS for

Tanzania shows a decline from the 27% reported in the country's 2015/2016 DHS-MIS, it is still unacceptable (DHS, 2024).

The prevalence of teenage childbearing differs across regions within Tanzania. The five leading regions are Songwe (45%), Ruvuma (37%), Katavi (34%), Mara (31%), and Manyara (29%), DHS (2022). This suggests that Tanzania needs to further intensify the efforts to reduce the incidence of teenage pregnancy (DHS, 2024). This study seeks to fill this gap by exploring the relationship between adolescents' demographic characteristics and key reproductive outcomes, including age at first pregnancy, total number of pregnancies, and the level of support received from partners.

The Health Belief Model (HBM)

This study is informed by the Health Belief Model, a framework developed by sociologists in the 1950s to explain and predict health behaviors by focusing on individuals' perceptions of health risks and the perceived benefits of preventive actions. Applied to teenage pregnancy, the model posits that a teenager's perception of the severity and likelihood of becoming pregnant, as well as their beliefs about the effectiveness and benefits of using contraception, play a crucial role in shaping their contraceptive behavior.

Specifically, perceived susceptibility refers to a teenager's belief in their risk of becoming pregnant; a heightened sense of susceptibility often leads to a greater likelihood of adopting preventive measures. As a result, teens who view pregnancy as a serious threat and themselves as susceptible are more inclined to use contraception. Perceived seriousness encompasses beliefs about the severity of pregnancy's consequences, which may include health issues, social stigma, or interruptions to education and career aspirations. A strong perception of seriousness typically encourages contraceptive use. Meanwhile, perceived benefits represent beliefs about the effectiveness and advantages of contraception in preventing pregnancy. If teenagers recognize contraception as both effective and beneficial, they tend to use it more frequently. Those who hold such beliefs are also more likely to engage in consistent contraceptive practices.

On the other hand, perceived barriers involve the obstacles that may hinder contraceptive use, such as costs, accessibility, or fear of social

disapproval. When perceived barriers are high, they can deter contraceptive use, illustrating how concerns over cost or access may lead to reduced usage. Lastly, cues to action signify the external or internal stimuli that trigger preventive behaviors. These cues can come from sources like healthcare provider messages, peer support, or even events such as a delayed menstrual period. Whether it's encouragement from a healthcare professional or the awareness of a missed period, such stimuli can effectively motivate teens to adopt preventive strategies.

METHODOLOGY

Research Design

This study employed a cross-sectional design to investigate the reproductive health outcomes of teenage girls aged 13 to 19 years in Momba District, Songwe Region, Tanzania. The design allowed for the collection of both quantitative and qualitative data at a single point in time to examine relationships between demographic characteristics and reproductive experiences.

Study Area and Population

The study was conducted in five wards of Momba District: Chilulumo, Chitete, Kapele, Msangano, and Nzoka. These wards were purposively selected due to their high prevalence of teenage pregnancy. The target population comprised teenage girls aged 13–19 who were either currently pregnant or had at least one child at the time of data collection.

Sampling Techniques

A stratified random sampling approach was used to ensure representation across different age groups (15-17, and 18-19 years) and geographic areas (the five wards). Within each stratum, purposive sampling was used to identify eligible participants' pregnant or parenting teenage girls through, community health workers, and local leaders. From this eligible pool, participants were then randomly selected to ensure a representative sample. A total of 349 participants were included in the final sample. The sample size was determined using Cochran's formula, considering a 5% margin of error and a 95% confidence level.

Data Collection

Data were collected using a structured questionnaire which was pre-tested in a neighboring ward to ensure clarity and reliability. Trained research assistants administered the survey in Swahili through face-to-

face interviews. These interviews were conducted in safe and private settings to allow the participants to air their views without fear. The questionnaire captured socio-demographic information, pregnancy history, and perceptions of partner support.

Data Analysis

Quantitative data were processed, entered and analyzed using SPSS version 25. Descriptive statistics were used to summarize demographic data. Inferential statistics, specifically Pearson correlation, were employed to examine relationships between key variables such as age, education level, and reproductive outcomes. Poisson regression was used to analyze the association between socio-demographic factors (age group, education level, marital status, and employment status) and the count outcome variable representing the number of pregnancies. Goodness-of-fit tests including deviance and Pearson chi-square statistics were conducted to verify model adequacy. Multiple linear regression was performed to examine the influence of the same socio-demographic predictors on the continuous outcome variable, age at first pregnancy. Binary logistic regression was applied to assess the effect of socio-demographic variables on the likelihood of receiving partner support

Ethical Considerations

Ethical approval for this study was obtained from the Open **University of Tanzania** and the Permission was also granted from Songer Region and Momba District Council. Given the fact that some of the participants were minors (below 18yrs of age), informed consent was obtained from parents or guardians, and assent was obtained from the adolescents themselves. Participation to the study was voluntary, participants were first informed of their right to withdraw at any time to the study without any consequences. For confidentiality purpose, data were kept confidential, and the study did not collect any information that can be used to identify the respondent.

RESULTS AND DISCUSSIONS

Table 1 presents demographic data from a sample of 260 individuals. The majority of respondents fall in the 15-17 age range (55.2%), with a smaller group (44.8%) aged 18-19. In terms of education, a large proportion (55.6%) have secondary school education, contrasted with only 43.8% who had primary education. Studies in Tanzania and other East African countries (Ngoda et al., 2023; Wado et al., 2019) reported

that teenagers who had secondary education or above have lower odds of having ever had a pregnancy compared to those with primary or no formal education.

Marital status data reveal that the majority (58.4%) of participants were unmarried at the time of the study. Employment figures underscore a concerning trend, with only 0.3% of respondents employed, indicating a largely unemployed teenage population.

Table 1
Respondents' characteristics

Category	Frequency	Percent (%)
Age		
15-17	195	55.2
18-19	158	44.8
Total	353	100
Education Level		
Never attended	4	0.6
Primary	153	43.8
Secondary	194	55.6
Total	351	100
Marital Status		
Not married	53	15.1
Married	147	41.6
Divorced	153	43.3
Total	353	100
Employment		
Not employed	339	97.7
Employed	1	0.3
Self-employees	7	2
Total	347	100

As presented in Table 2, 30% of the respondents were pregnant at the time of the interview. Nearly 72% reported experiencing their first pregnancy between the ages of 18 and 19, while the remaining 28% had their first pregnancy before the age of 18. According to Ayele et al. (2018); Worku et al. (2021), and Stark (2018), older teenagers have greater odds of teen pregnancy compared to younger teenagers, a finding that agrees with other studies in Africa. This could be attributed to the fact that teenagers aged 18–19 often succumb to both internal (physiological) and external (socio-environmental) pressures for having sex after being exposed for a much longer period post-menarche when compared to younger teenagers (DHS, 2022).

Early marriage may expose teenagers to becoming pregnant in three ways; one is that married teenagers may be preoccupied with a need to procreate to meet the expectations of their husbands and in-laws (Shahabuddin et al., 2016). Second, the teens' freedom to use contraception becomes limited (de Vargas et al., 2019) as they often marry much older men who assume control over decision-making (UNFPA, 2022). Furthermore, poor girls might engage in sex in exchange for money or monetary promises out of necessity as they struggle to meet their pressing needs (Amoateng et al., 2022).

Pregnancy Status, Number of Children, and Partner Support

Pregnancy status, number of children, and partner support are crucial factors, as they provide valuable insights into teens' family dynamics, maternal health, and social support systems, which can significantly influence both pregnancy outcomes and overall well-being. The findings in Table 2 indicate that 30.4% of respondents were pregnant at the time of the interview. Among the respondents, 41.5% were experiencing their first pregnancy. The number of pregnancies varied, with just over half having had more than one. Notably, two-thirds of these had experienced two pregnancies, suggesting that many may have had their first pregnancy at a relatively young age.

Recurrent teenage pregnancy occurs when there is more than one pregnancy before the age of 20 among females (Aslam et al., 2017). Young mothers have about 30% and 50% chances of becoming pregnant again within a year and two years after the first pregnancy, respectively (Luttges et al., 2021). The care of an additional family member demands extra resources, further deteriorating the quality of life of the mother and her offspring (Pinzon, 2012). Also, recurrent pregnancy within short intervals predisposes the girl to poor pregnancy outcomes and reduces her ability to access quality education or vocational training (Maravilla, 2017). Her chances of acquiring gainful employment become a difficult task, resulting in a possible vicious cycle of poverty in her family. Teenagers who are pregnant may not continue with formal education, which negatively affects their educational attainment, apart from the fact that currently pregnant girls are allowed to continue with their studies even after giving birth (DHS, 2024). However, parents start perceiving them as adults and sometimes allow them to start their own families after pregnancy, viewing them as independent adults (Eyeberu, 2022).

The findings also reveal that a large majority (85.6%) of respondents have children with the same partner, despite only 42% being married. While 56.1% of respondents reported receiving support from their partners, a significant 43.9% indicated a lack of such support, underscoring the challenges faced by many. For those who received partner support, the majority (63.4%) indicated it was provided through health services, reflecting a strong emphasis on physical care during pregnancy. In contrast, emotional and financial support were less common, reported by only 16.5% and 11.3% of respondents, respectively (Table 2).

Table 2*Pregnancy Status, Number of Children, and Partner Support*

Category	Frequency	Percent (%)
Currently Pregnant		
Yes	106	30.4
No	243	69.6
Total	349	100
Age at First Pregnancy		
15-17	30	28.3
18-19	76	71.7
Total	106	100
First Pregnancy		
Yes	44	41.5
No	62	58.5
Total	106	100
Number of Pregnancies		
One	44	13.1
Two	112	33.4
More than two	179	53.5
Total	335	100
Whether the child's father is the same person		
Yes	249	85.6
No	42	14.4
Total	291	100
Whether the Partner Provides Support		
Yes	194	56.1
No	152	43.9
Total	346	100
The nature of support provided		
Emotional	32	16.5
Financial	22	11.3
Health services	123	63.4
No response	17	8.8
Total	211	100

A study by Cheng et al. (2016) found that women who reported low support from their partners during pregnancy had increased odds of experiencing antenatal anxiety and depression and at the same time, pregnant women with low partner support were also more likely to smoke and engage in alcohol drinking. This contention is supported by Bloch (2010); Stapleton (2012) and Dutta et al (2022) that women with low antenatal partner support have worse mental health and health behaviors than their peers who report high partner support.

Association between background information and age at first pregnancy, number of pregnancies, and partner's support

The findings on the association between background information and age at first pregnancy, number of pregnancies, and partner's support are presented in Table 3;

Age and Age at first pregnancy

Age is a significant determinant of teen pregnancy, as it directly relates to the likelihood of sexual activity, contraceptive use, and overall maturity. Younger teens may have less access to sexual health education and resources, making them more vulnerable to unintended pregnancies. Findings show a strong positive correlation ($r = 0.751$, $p = 0.000$) between age and age at first pregnancy implying that older individuals reported having their first pregnancy at a later age, possibly due to level of education, delayed marriage, or access to reproductive health services, while younger women tend to become pregnant earlier.

Age and Number of Pregnancies

Younger women may experience more pregnancies that could be associated with educational and socio-economic conditions that, in turn, can influence family size and the frequency of pregnancies over a woman's lifespan. Results show that the correlation between age and number of pregnancies was negative and not statistically significant ($r = -0.112$, $p = 0.052$).

Age and Partner support

The role of the partner is central to the psychological and emotional outcomes of teen pregnancies. Findings show a weak negative correlation ($r = -0.172$, $p = 0.001$) that suggests that as age increases, individuals may be slightly less likely to receive support from the man who got them pregnant.

Level of Education and Age at First Pregnancy

Younger age often correlates with an earlier age at first pregnancy. Results showed a strong negative correlation ($r = -0.615$, $p = 0.000$), implying that older individuals are more likely to have their first pregnancy later in life and this could be due to their engagement in pursuing higher education levels.

Level of Education and Number of Pregnancies

Higher levels of education typically correlate with a lower number of pregnancies. However, the correlation ($r = 0.047$, $p = 0.416$) was found to be not statistically significant, suggesting that education alone does not have a strong direct influence on the total number of pregnancies.

Level of Education and Partner Support

Partner support plays a critical role in the experiences of women during pregnancy and significantly influences the timing of their first pregnancy. A weak positive correlation ($r = 0.170$, $p = 0.002$) was found, suggesting that individuals with higher education levels are more likely to receive support from their child's father.

Marital Status and Age at First Pregnancy

It is assumed that marital status plays a role in the age at which women experience their first pregnancy. However, the correlation ($r = -0.001$, $p = 0.990$) is negligible and statistically insignificant, indicating that marital status does not predict the age at which someone has their first pregnancy. Married women often have earlier pregnancies than unmarried women, although this varies by socio-economic context.

Marital Status and Number of Pregnancies

There is a notable association between a woman's marital status and the number of children she has. A moderate positive correlation ($r = 0.291$, $p = 0.000$) indicates that married women are more likely to experience more pregnancies than their single counterparts.

Marital Status and Partner Support

Married individuals often report higher levels of emotional, practical, and financial support, which can significantly influence pregnancy experiences and outcomes. A moderate positive correlation ($r = 0.289$, $p = 0.000$) suggests that married individuals are more likely to receive support

from their child's father. This aligns with greater financial, emotional, or social support within a formalized union.

Employment Status and Age at First Pregnancy

Employment may shape pregnancy experiences since educated individuals are generally more likely to be employed and, consequently, may have greater autonomy in deciding when to become pregnant. Typically, employed women have a higher average age at first pregnancy, influenced by factors such as financial stability and career progression. However, the study's findings revealed a weak and statistically insignificant correlation between employment status and age at first pregnancy ($r = 0.059$, $p = 0.306$), indicating that employment may not significantly influence the timing of first pregnancies in this context.

Employment Status and Number of Pregnancies

A woman's decision regarding the number of children she has is often shaped by her employment status. A slight negative correlation ($r = -0.126$, $p = 0.030$) indicates that employed women tend to have fewer pregnancies. This may be due to the financial security and improved access to reproductive healthcare that employment offers, which can lead to delayed or fewer pregnancies.

Employment Status and Partner Support

Findings regarding partner support show that the correlation coefficient was ($r = 0.051$, $p = 0.347$), which was statistically insignificant, indicating that employment status does not strongly influence whether a partner provides support during or after pregnancy. Partner support often varies according to the employment status of women. While employed women may experience higher partner support due to shared financial responsibilities, those who are unemployed may find additional pressures that can strain partnerships.

Table 3

Correlation between background factors, Age at First Pregnancy, Number of pregnancies, and Partner support

Variables		Number of Pregnancies	Age at First Pregnancy	Partner Support
Your Age	Pearson	-.112	.751**	-.172**
	Sig.	.052	.000	.001
	N	301	310	346
Level of Education	Pearson	.047	-.615**	.170**
	Sig.	.416	.000	.002
	N	300	306	342
Marital Status	Pearson	.291**	-.001	.289**
	Sig.	.000	.990	.000
	N	301	310	346
Employment Status	Pearson	-.126*	.059	.051
	Sig.	.030	.306	.347
	N	297	306	340

Predictive Analysis of Age at First Pregnancy, Number of Pregnancies and Partner Support

The following are the findings from the regression analysis as presented in Table 4.

Number of Pregnancies

A Poisson regression analysis revealed that none of the tested predictors which are age group, education level, marital status, or employment was statistically significant (all $p > .05$). For instance, respondents aged 18–19 had slightly lower odds of reporting multiple pregnancies (OR = 0.721, $p = .323$), while those with primary education had higher odds (OR = 1.855, $p = .256$), though neither reached significance. Although the model showed acceptable fit, the predictive strength of the included socio-demographic factors was limited.

Age at First Pregnancy

Using linear regression, age was a strong positive predictor of age at first pregnancy ($B = 1.429$, $p < .001$), indicating that older adolescents reported later pregnancy onset. Education level showed a negative association ($B = -0.341$, $p < .001$), suggesting that respondents with more education had earlier pregnancies. Marital status also had a positive association ($B = 0.448$, $p < .001$), while employment status showed no significant effect.

Partner Support

Binary logistic regression showed that age was not significantly associated with partner support ($B = 0.390$, $p = .264$; $OR = 1.477$). However, education level ($B = 0.759$, $p = .024$; $OR = 2.135$, 95% CI [1.107–4.117]) and marital status ($B = 0.838$, $p < .001$; $OR = 2.311$) were significant predictors, indicating that more educated and married respondents were more likely to receive partner support. Employment status showed a strong but non-significant trend ($B = 1.519$, $p = .064$; $OR = 4.566$, 95% CI [0.917–22.727]), suggesting a possible link between economic independence and support, though further investigation is warranted.

Table 4:

Regression analysis between background factors, Age at First Pregnancy, Number of pregnancies, and Partner support

Outcome	Predictor	B	SE	Sig.	OR	95% CI
Number of Pregnancies	Age Group: 15–17	-0.283	0.306	.355	0.753	[0.414–1.373]
	Age Group: 18–19	-0.327	0.331	.323	0.721	[0.376–1.379]
	Education Level: Primary	0.618	0.545	.256	1.855	[0.639–5.393]
	Education Level: Secondary	0.045	0.123	.712	1.046	[0.822–1.332]
	Marital Status: Single	-0.184	0.113	.101	0.832	[0.667–1.037]
	Marital Status: Married	-0.098	0.129	.450	0.906	[0.704–1.168]
	Employment: Informal vs Formal	0.291	0.340	.393	1.337	[0.687–2.604]
Age at First Pregnancy	Age	1.429	0.090	.000	—	[1.252–1.606]
	Education Level	-0.341	0.088	.000	—	[-0.513–0.168]
	Marital Status	0.448	0.047	.000	—	[0.355–0.541]
	Employment	-0.113	0.216	.601	—	[-0.538–0.312]
Partner Support	Age	0.390	0.349	.264	1.477	[0.745–2.926]
	Education Level	0.759	0.335	.024	2.135	[1.107–4.117]
	Marital Status	0.838	0.190	.000	2.311	[1.592–3.356]
	Employment Status	1.519	0.819	.064	4.566	[0.917–22.727]

Limitations

Despite the use of robust regression techniques, several limitations were observed in the analysis of socio-demographic predictors for reproductive health outcomes:

- i) The Poisson regression model for the number of pregnancies showed no statistically significant predictors, suggesting that the selected

socio-demographic variables had limited explanatory power for this outcome within the study sample.

- ii) Wide confidence intervals in some predictor estimates, particularly within the number of pregnancies analysis, indicate potential imprecision due to sample size limitations and variability in participant responses.
- iii) Employment status did not significantly predict age at first pregnancy or partner support, which may reflect limited variability in this variable.
- iv) Although education level and marital status were significant predictors in certain models, the absence of significance in other variables highlights the possibility that additional, unmeasured factors may be important in determining reproductive health outcomes.

DISCUSSIONS

Age at first pregnancy

Age was a strong positive predictor of age at first pregnancy indicating that older adolescents reported later pregnancy onset. This is supported by a study by Nalwadda et al. (2010) in Uganda which reports that delayed sexual debut implies delayed exposure to the risk of pregnancy and childbearing, and this influences the fertility performance of a woman. Age at first sex has a bigger effect on fertility changes, while traditional societal norms prohibit sexual activity and pregnancy before marriage; however, many young people still engage in premarital sex (Ariho & Kabagenyi, 2020). These findings are consistent with the studies conducted in some other developing countries, which have found fertility decline to have been influenced by delayed sexual debut. For example, studies in Namibia (Indongo & Pazvakawambwa, 2012) and Rwanda (Ndahindwa, 2014) reported that age at first sex significantly influences fertility levels. The delayed sex debut can be associated with the reduction of teen pregnancies as well. A study by Owolabi, et al. (2017) reports that, comparably, a large percentage of West African adolescents use some antenatal care for their first birth; they seek care later, make fewer visits during pregnancy, and receive fewer components of care than older first-time mothers.

Age and Number of Pregnancies

Age was not found to be a predictor of pregnancy rates. However, a study conducted in Kenya by Michelle et al. (2021), found that the teenage pregnancy and motherhood rate in Kenya stands at 15%. This implies that

about 1 in every 5 teenage girls between the ages of 15-19 years have either had a live birth or are pregnant with their first child. The Kenya study also reported that the pregnancy rate increases rapidly with age from 3% among girls aged 15 to 40% among girls aged 19. Being pregnant or having children at a young age creates an additional burden to the family, whereby the majority of teenage mothers, due to their age, are not able to cope with motherhood, and they mostly depend on their parents to raise their children (Thobejane, 2015).

Age and Partner support

Age was not significantly associated with partner support based on this study. However, research from India and other LMICs shows that married girls' young age and relative inexperience can limit their support and power in marriage relationships, particularly for girls who are married below the age of 18 years (Raj et al., 2010; Santhya et al., 2010). In India, partner support and marital family support are critical in affecting young women's experience of pregnancy. Partner support becomes an essential resource for women during pregnancy as women's natal family members and peers are not easily accessible from their marital homes (Dasgupta et al., 2013; Raj et al., 2010; Santhya et al., 2010). Furthermore, due to their young age, women are dependent on their partners to negotiate support with their in-laws. Generally, women who receive high levels of emotional and practical support from their partners are more likely to feel prepared for pregnancy and motherhood. This positive support structure can also make the motherless stressed and, therefore, improve maternal mental health. This could be associated with the fact that all the participants were teens.

Level of Education and Age at First

Education level showed a negative association, however, the United Nations Development Programme-UNDP (2019) reports that, despite the decrease in the global adolescent birth rate, the current number of teenage births remains high, and Sub-Saharan Africa had the most births in the age range of 15–19-year-olds (6,114,000), while Central Asia had far fewer (68,000). In the same year, the corresponding figure for girls aged between 10 and 14 was 332,000 in Sub-Saharan Africa and 22,000 in Southeast Asia (UNDP, 2019). At these age ranges, the teenagers are still in their primary school, O-level, or not in school.

A study by Ikwara and Atwijukiire (2023) indicates that in some communities, cultural norms and family expectations may contribute to early childbearing, and women who become pregnant in their teenage years typically face additional societal pressures and limited access to educational opportunities, which can lead to a cycle of early pregnancies. Mwiinga (2025) in his study reported that over 50% of respondents who were married early in marriage tended to divert from pursuing further education, and their primary roles are often seen in the domestic sphere rather than academic or professional contexts. Which for the case of this study, all the participants were either pregnant or already had a child before

Level of Education and Number of Pregnancies

Education was not statistically significant in this study. These findings differ from those obtained by other scholars, indicating that the high pregnancy levels could be caused by reasons other than teens' education levels. According to Mulama (2024), the relationship between literacy and repeated pregnancies underscores the role of education in empowering girls to make informed choices about their reproductive health.

Eastman et al. (2019) observed that improved access to education and the resulting increase in employment prospects are linked to lower fertility rates, as individuals are more likely to prioritize personal and professional development over larger family sizes. This pattern is reinforced by research showing that women with higher levels of education tend to postpone childbirth to pursue further studies and build their careers (Cherlin, 2021).

Additionally, educated women generally have greater access to information on reproductive health and family planning, enabling more informed and deliberate decisions about when to have children (Littlejohn, 2012). Cherlin (2021) also reported that women holding university degrees typically have their first child at a later age than those with less education, indicating a deliberate choice to delay motherhood in favor of educational and career goals. Furthermore, the rate of unplanned births tends to decline as a woman's educational level increases, with highly educated women being significantly less likely to experience unwanted pregnancies.

Level of Education and Partner Support

Education was found to be a significant predictor indicating that more educated respondents were more likely to receive partner support. This is supported by Kirova and Snell (2018), that the experience of love and having children is one of the sweetest moments in most women's lives, but most women who got married in childhood did not get this experience since most of their marriages were traditional and without love and affection. Therefore, most adolescent women became pregnant accidentally, and since they had no preparation for this and had not received pregnancy knowledge in adolescence, they experienced several challenges that risked their lives and their children's health. Also, the fact that many girls were forced to drop out of school after marriage, which made them regret that they did not continue their education to have a job, and this lack of a job and sufficient literacy caused them to have less self-confidence. When partners are highly supportive, women often feel more empowered to delay pregnancies in favor of achieving personal and professional milestones. Likewise, women who feel unsupported by their partners are more likely to have unintended pregnancies, often leading them to face challenges in parenting and socio-economic stability.

Marital Status and Age at First Pregnancy

Marital status had a positive association in this study. This is supported by Singh et al., (2022) that, since fertility rates are responsive to changes in the institutional meaning of marriage, a reduction in the time spent within marriage is an important mechanism in reducing total fertility, especially in a country where non-marital fertility is low. Age at marriage plays a critical role as a population control strategy, with early marriage significantly extending a woman's reproductive period and increasing the likelihood of early pregnancies (Jain & Kurz, 2007; Malhotra & Elnakib, 2021). Therefore, promoting a higher age at marriage is vital for achieving Sustainable Development Goal (SDG) 5.6. Strengthening the enforcement of legal marriage age regulations and implementing awareness campaigns are necessary steps to reduce the prevalence of early marriage among women (Singh et al., 2023).

Marital Status and Number of Pregnancies

Marital status was not a predictor of pregnancy rate. This is supported by Laksono and Wulandari, (2021) that this trend may stem from factors such as greater reproductive stability, cultural expectations, or limited access to contraception, particularly in societies that place a high value on

larger families. Marriage often promotes childbearing, and as relationship stability grows, the likelihood of having more children increases. Additionally, early marriage has been linked to higher pregnancy rates among certain demographic groups (Elleamoh & Dake, 2019). Research by Odusina et al. (2020) found that despite numerous interventions at the individual, household, and community levels, fertility rates in West African nations remain elevated. Data from the NDHS (2013, 2018) further reveal that most births occur within marital relationships, implying that a significant decline in marital fertility would likely lead to a reduction in overall fertility rates (NDHS, 2018).

Teenage mothers often faced a lack of family support, which manifested in several ways, including opposition to their decisions, lack of cooperation, and disregard for their experiences. In some cases, family traditions and the influence of certain relatives contributed to repeated or unwanted pregnancies. These young mothers felt they had little control over decisions related to pregnancy and childbirth, which led to an increase in unplanned multiple pregnancies, inadequate antenatal care, and poor newborn care practices (Dutta et al., 2022).

Marital Status and Partner Support

Marital status was a significant predictor. According to Kalra et al., (2021), lack of emotional and practical support from male partners during pregnancy can heighten psychological stress, as it creates feelings of abandonment and insecurity, making pregnancy a difficult experience for young women. Further, many women report that their pregnancies are negatively affected by the absence of supportive care, along with neglect and mistreatment from both their husbands and in-laws (Pereira et al., 2007; Bhattachary et al., 2019). Women who entered marriage at a young age often encountered adverse life experiences, as much of their childhood and adolescence was marked by coercion and dissatisfaction. Their life circumstances differed significantly from peers, leading to feelings of regret and longing (Yoosefi et al., 2023). Early marriage frequently limits girls' access to education and employment opportunities, contributing to ongoing emotional distress and a sense of lost potential. This, in turn, has been linked to psychological challenges such as depression, suicidal thoughts and attempts, low self-esteem, and feelings of inferiority (Yoosefi et al., 2023).

Employment Status and Age at First Pregnancy

Employment was not statistically significant, nonetheless, previous studies have reported conflicting results regarding this association. In their study, Miettinen and Jalovaara (2020) reported that, for basic-level educated women, being unemployed encourages first pregnancy, especially for young women below 25 years. However, studies have shown that job commitments and career aspirations often lead female workers to plan their pregnancies more deliberately. This trend reflects a societal shift in which economic considerations affect reproductive choices, with many women prioritizing their careers over immediate family formation (Van den Broeck & Maertens, 2015). Finishing education and securing a foothold in the labor market are important milestones in the transition to adulthood, and they tend to influence decisions regarding family formation. Unemployment or an otherwise uncertain employment situation could then severely hamper entry into parenthood (Miettinen & Jalovaara, 2020). The majority of adolescent births occur in low- and middle-income countries, primarily affecting girls from poorer backgrounds with limited educational opportunities.

Employment Status and Number of Pregnancies

Employment was not statistically significant, in contrast, repeat adolescent pregnancies are often linked to early marriages and disrupted education, which can bring short-term economic benefits to young mothers (Govender et al., 2020).

Research conducted in Korea found that women with higher education levels and greater economic participation were less inclined to marry or have children. Employed women generally had fewer children than those who were unemployed. This suggests that the financial independence associated with employment enables women to make more deliberate choices about how many children to have and when to have them (Choi et al., 2024).

Again, cultural expectations surrounding motherhood often reinforce traditional gender roles, with women assuming primary responsibility for childcare and household duties. These gender norms affect women's decisions regarding workforce participation and career advancement (Bingham et al., 2025). These socio-economic consequences are observed across Africa, and to tackle repeat adolescent pregnancies, interventions

must address factors such as access to education, health care, and family planning services (Bull et al., 2020).

Employment Status and Partner Support

Employment status showed a strong but non-significant trend. A study by Msipu et al. (2023) found that financial support from partners plays a crucial role in assisting with expenses such as food, transportation, medical costs, and preparations for the unborn child, all of which contribute to better maternal and child health outcomes. Participants expressed a desire to have their partners accompany them to clinic appointments and share in the pregnancy experience. Earlier research has linked male involvement in maternal and newborn care to numerous positive outcomes, including greater maternal use of antenatal and postnatal services, enhanced maternal mental well-being, and a decrease in postpartum depression (Tokhi et al., 2018; Yargawa & Leonardi-Bee, 2015). However, expectations of partner support emotionally and financially are not usually met, resulting in disappointment, conflicts with their partners, and sometimes difficult breakups (Govender et al., 2020). The study found that experiencing an unintended pregnancy can lead to the disruption of a relationship. These findings complement the results of research showing that unplanned pregnancies are accompanied by family disruption and a decline in marital quality and the couple's relationships (Barton, 2017). In some African cultures, payment of damages for getting an unmarried young girl pregnant is perceived as a form of acceptance of paternity, and the process was perceived as a way to give a form of dignity to her family and some assurance that the father was prepared to take care of the child (Nathane-Taulela & Nduna 2014).

CONCLUSION AND IMPLICATIONS

This study provides insights into how age, education, marital status, and employment relate to adolescent reproductive health outcomes in Momba District. Poisson regression analysis showed that none of the socio-demographic variables significantly predicted the number of pregnancies. For instance, respondents aged 18–19 had slightly lower odds of having more pregnancies compared to those aged, while those with only primary education had higher odds. However, these associations lacked statistical strength. Marital status and informal employment also showed no significant effects. These findings suggest that repeat pregnancies may be shaped by deeper social, cultural, or structural factors beyond the scope of this model.

In contrast, linear regression identified strong predictors of age at first pregnancy. Chronological age emerged as a key factor, with older teens more likely to delay their first pregnancy. Surprisingly, higher education levels were associated with earlier first pregnancies, potentially reflecting vulnerability during school transitions or exposure to risk while still enrolled. Marital status was also significant with married respondents tending to delay first pregnancy possibly due to greater household stability or intentional planning. Employment status showed no significant relationship with this outcome.

Regarding partner support, both education and marital status were significant predictors. Respondents with higher education were over twice as likely to receive support, and married respondents had even greater odds. While employment status did not reach statistical significance, the magnitude of the odds ratio suggests a possible link between economic activity and relationship dynamics an area that open further investigation.

RECOMMENDATIONS

Government

Key initiatives include formalizing strengthen policies for teen mothers to facilitate their reintegration into schools, integrating sexual reproductive health education into curricula, employing trained counselors and healthcare professionals, enforcing laws against child marriage with a minimum age of 18, and developing vocational and life skills programs for out of school teen mothers.

NGOs and CSOs

Develop peer-led education sessions alongside mobile outreach initiatives aimed at reaching adolescents. Concurrently, it is essential to support income-generating initiatives and vocational training that are specifically tailored for this age group. Additionally, partnerships with schools and healthcare centers can create safe spaces for youth education and counseling, which are crucial for holistic development. Finally, documenting and sharing best practices with government and partners will help inform policy improvements and ensure that these initiatives are evidence-based and effective.

Community and traditional leaders

Community and traditional leaders should take a proactive role in transforming social norms that perpetuate early marriage and educational

exclusion. This can be achieved by leading community dialogues that challenge harmful beliefs and promote the rights of adolescent girls to education and autonomy. Leaders are encouraged to promote alternative rites of passage that celebrate maturity without linking it to early marriage, thus reinforcing the value of schooling. Public advocacy for the retention and re-entry of pregnant girls into school is also critical in reducing stigma and encouraging community support for their continued education. Additionally, leaders should collaborate with local health and social service providers to identify and refer adolescents in need of sexual and reproductive health or psychosocial support. To formalize these efforts, communities should adopt and enforce bylaws that promote delayed marriage and support girls' right to education, ensuring these protections are embedded in local governance structures.

REFERENCES

- Amoateng, A. Y., Ewemooje, O. S., & Biney, E. (2022). Prevalence and determinants of adolescent pregnancy among women of reproductive age in South Africa. *African Journal of Reproductive Health*, 26(1), 82-91.
- Anadolu, A. (2020). *Tanzania: Teen pregnancy, early marriage crushes dreams of girls*. <https://www.aa.com.tr/en/africa/tanzania-teen-pregnancy-early-marriage-crushesdreams-of-girls/2075113>
- Ariho, P., & Kabagenyi, A. (2020). Age at first marriage, age at first sex, family size preferences, contraception and change in fertility among women in Uganda: analysis of the 2006–2016 period. *BMC women's health*, 20, 1-13.
- Aslam, R. H. W., Hendry, M., Booth, A., Carter, B., Charles, J. M., Craine, N., ... & Whitaker, R. (2017). Intervention Now to Eliminate Repeat Unintended Pregnancy in Teenagers (INTERUPT): A systematic review of intervention effectiveness and cost-effectiveness, and qualitative and realist synthesis of implementation factors and user engagement. *BMC medicine*, 15, 1-13.
- Ayele, B. G. K., Gebregzabher, T. G., Hailu, T. T., & Assefa, B. A. (2018). Determinants of teenage pregnancy in Degua Tembien District, Tigray, Northern Ethiopia: A community-based case-control study. *PloS one*, 13(7), e0200898.
- Barton, K., Redshaw, M., Quigley, M. A., & Carson, C. (2017). Unplanned pregnancy and subsequent psychological distress in partnered women: a cross-sectional study of the role of relationship

- quality and wider social support. *BMC pregnancy and childbirth*, 17, 1-9.
- Bar-Zeev, S., Breen-Kamkong, C., ten Hoope-Bender, P., Sahbani, S., & Abdullah, M. (2021). UNFPA supporting midwives at the heart of the COVID-19 response. *Women and Birth*, 34(1), 4-6
- Bingham, A., Dickey, H., & Miller, A. C. (2025). *The gender employment gap: literature review*. Northern Ireland Department for the Economy. <https://www.economy-ni.gov.uk/publications/closing-gender-employment-gap>
- Bloch, J. R., Webb, D. A., Mathews, L., Dennis, E. F., Bennett, I. M., & Culhane, J. F. (2010). Beyond marital status: The quality of the mother–father relationship and its influence on reproductive health behaviors and outcomes among unmarried low-income pregnant women. *Maternal and child health journal*, 14, 726-734.
- Bull, F. C., Al-Ansari, S. S., Biddle, S., Borodulin, K., Buman, M. P., Cardon, G., ... & Willumsen, J. F. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *British journal of sports medicine*, 54(24), 1451-1462.
- Cheng, E. R., Rifas-Shiman, S. L., Perkins, M. E., Rich-Edwards, J. W., Gillman, M. W., Wright, R., & Taveras, E. M. (2016). The influence of antenatal partner support on pregnancy outcomes. *Journal of women's health*, 25(7), 672-679.
- Cherlin, A. J. (2021). Rising nonmarital first childbearing among college-educated women: Evidence from three national studies. *Proceedings of the National Academy of Sciences*, 118(37), e2109016118.
- Choi, K., Kim, G., Yoo, D., & Lee, J. (2024). Does Economic Stability Influence Family Development? Insights from Women in Korea with the Lowest Childbirth Rates Worldwide. *Economies*, 12(3), 74. <https://doi.org/10.3390/economies12030074>
- Crooks, R., Bedwell, C., & Lavender, T. (2022). Adolescent experiences of pregnancy in low-and middle-income countries: a meta-synthesis of qualitative studies. *BMC Pregnancy and Childbirth*, 22(1), 702.
- Dasgupta, A., Battala, M., Saggurti, N., Nair, S., Naik, D. D., Silverman, J. G., ... & Raj, A. (2013). Local social support mitigates depression among women contending with spousal violence and husband's risky drinking in Mumbai slum communities. *Journal of affective disorders*, 145(1), 126-129.
- de Vargas Nunes Coll, C., Ewerling, F., Hellwig, F., & De Barros, A. J. D. (2019). Contraception in adolescence: the influence of parity and

- marital status on contraceptive use in 73 low-and middle-income countries. *Reproductive health*, 16, 1-12.
- DHS (2016). *Tanzania Demographic and Health Survey and Malaria Indicator Survey*. Ministry of Health, Community Development, Gender Elderly and Children (MoHCDGEC) [Tanzania Mainland, Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS). (TDHS-MIS) 2015-16. 2016
- DHS (2022). *Tanzania Demographic and Health Survey and Malaria Indicator Survey*. Ministry of Health (MoH) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF. MoH, NBS, OCGS, ICF; 2022.
- Dutta, K., Naskar, S., Das, D. K., & Banerjee, N. (2022). Exploring challenges of teenage pregnancy and motherhood from beneficiaries and providers' perspectives: A qualitative study in a rural area of Purba Bardhaman District, West Bengal. *Journal of Family Medicine and Primary Care*, 11(11), 7272-7279.
- Eastman, A. L., Palmer, L., & Ahn, E. (2019). Pregnant and parenting youth in care and their children: A literature review. *Child and Adolescent Social Work Journal*, 36(6), 571-581.
- Edilberto L, Mengjia L. (2013). *Adolescent pregnancy: a review of the evidence*. New York, NY: UN Population Fund (UNFPA)..
- Elleamoh, G. E., & Dake, F. A. (2019). "Cementing" marriages through childbearing in subsequent unions: Insights into fertility differentials among first-time married and remarried women in Ghana. *PLoS One*, 14(10), e0222994.
- Eyeberu A, et al. teenage pregnancy and its predictors in Africa: A systematic review and meta-analysis. *Int J Health Sci. (Qassim Univ)*. 2022;16(6):47–60.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9682880/pdf/IJHS-16-47.pdf>
- Govender, D., Naidoo, S., & Taylor, M. (2020). "I have to provide for another life emotionally, physically and financially": understanding pregnancy, motherhood and the future aspirations of adolescent mothers in KwaZulu-Natal South, Africa. *BMC pregnancy and childbirth*, 20, 1-21.
- Grayson, C. E. (2018). *"Kangaroo Mother Care to Reduce Morbidity and Mortality in Low Birthweight Infants"(2016), by Agustin Conde-Agudelo and José Díaz-Rossello*. Arizona State University. School

- of Life Sciences. Center for Biology and Society. Embryo Project Encyclopedia. | Arizona Board of Regents.
<https://www.dhsprogram.com/publications/publication-FR382-DHS-Final-Reports.cfm>
- Ikwarra, A. E., & Atwijukiire, H. (2023). *Factors Associated with Repeat Pregnancies among Adolescent Mothers: Analysis of the Kenya Demographic and Health Survey Data 2022*.
- Indongo, N., & Pazvakawambwa, L. (2012). Determinants of fertility in Namibia. *African journal of reproductive health*, 16(4), 50-57.
- Jain, S., & Kurz, K. (2007). *New insights on preventing child marriage: A global analysis of factors and programs*. International Center for Research on Women (ICRW).
- Kalra, H., Tran, T. D., Romero, L., Chandra, P., & Fisher, J. (2021). Prevalence and determinants of antenatal common mental disorders among women in India: a systematic review and meta-analysis. *Archives of Women's Mental Health*, 24, 29-53.
- Kassebaum, N. J., Bertozzi-Villa, A., Coggeshall, M. S., Shackelford, K. A., Steiner, C., Heuton, K. R., ... & Kazi, D. S. (2014). Global, regional, and national levels and causes of maternal mortality during 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. *The Lancet*, 384(9947), 980-1004.
- Khanna, T., Patel, R., Akhtar, F. and Mehra, S. (2023). Relationship between partner support and psychological distress among young women during pregnancy: A mixed-method study from a low- and middle-income country. *Journal of Affective Disorders Reports*, Vol. 14. <https://doi.org/10.1016/j.jadr.2023.100672>
- Kirova, K., & Snell, T. (2018). Women's experiences of positive postnatal partner support. *Journal of Reproductive and Infant Psychology*, 37(2), 206–218.
<https://doi.org/10.1080/02646838.2018.1542120>
- Laksono, A. D., & Wulandari, R. D. (2021). The factors correlate to family size in Indonesia. *Aspirasi: Jurnal Masalah-masalah Sosial*, 12(1).
- Littlejohn, K. E. (2012). Hormonal contraceptive use and discontinuation because of dissatisfaction: differences by race and education. *Demography*, 49(4), 1433-1452.
- Luttges, C., Leal, I., Huepe, G., González, D., González, E., & Molina, T. (2021). Pregnant again? Perspectives of adolescent and young mothers who and do not experience a repeat pregnancy in

- adolescence. *International Journal of Qualitative Studies on Health and Well-being*, 16(1), 1898317.
- Malhotra, A., & Elnakib, S. (2021). 20 years of the evidence base on what works to prevent child marriage: A systematic review. *Journal of Adolescent Health*, 68(5), 847-862.
- Maravilla, J. C., Betts, K. S., e Cruz, C. C., & Alati, R. (2017). Factors influencing repeated teenage pregnancy: A review and meta-analysis. *American Journal of Obstetrics and Gynecology*, 217(5), 527-545.
- Michelle, O. R., Dogra, N., Levine, D., & Donoso, V. (2021). *Digital media and child and adolescent mental health: A practical guide to understanding the evidence*. SAGE Publications Ltd.
- Miettinen, A., & Jalovaara, M. (2020). Unemployment delays first birth but not for all. Life stage and educational differences in the effects of employment uncertainty on first births. *Advances in Life Course Research*, 43, 100320.
- Msipu, P. T., Nyamaruze, P., & Akintola, O. (2023). Perspectives about social support among unmarried pregnant university students in South Africa. *Plos one*, 18(4), e0284906.
- Mulama, A. S. (2024). A Feminist Critical Discourse Analysis of Quantitative Approaches in the Mixed Methods Baseline Study of Sustainable Development Goal 5 in Kenya. *Authorea Preprints*.
- Mwiinga, P. (2025). The Role of Women in Supporting Partners: A Perspective on Healthy Relationships. *Available at SSRN 5139038*.
- Nalwadda, G., Mirembe, F., Byamugisha, J., & Fazelid, E. (2010). Persistent high fertility in Uganda: young people recount obstacles and enabling factors to use of contraceptives. *BMC public health*, 10, 1-13.
- Nathane-Taulela, M., & Nduna, M. (2014). Young women's experiences following discovering a biological father in Mpumalanga Province, South Africa. *Open Family Studies Journal*, 6(1), 62-68.
- NBS (2011). National Bureau of Statistics, United Republic of Tanzania, ICF Macro. Tanzania Demographic Health Survey 2010. ICF Macro; 2011.
<https://www.dhsprogram.com/pubs/pdf/GF20/GF20.pdf>
- Ndahindwa, V., Kamanzi, C., Semakula, M., Abalikumwe, F., Hedt-Gauthier, B., & Thomson, D. R. (2014). Determinants of fertility in Rwanda in the context of a fertility transition: a secondary analysis of the 2010 Demographic and Health Survey. *Reproductive health*, 11, 1-9.

- Ngoda, O. A., Renju, J., Mahande, M. J., Kagoye, S. A., Mboya, I. B., & Msuya, S. E. (2023). Trends and factors associated with adolescent pregnancies in Tanzania from 2004-2016: Evidence from Tanzania Demographic and Health Surveys. *East African Health Research Journal*, 7(1), 40-48.
- Odusina, E. K., Ayotunde, T., Kunnuji, M., Ononokpono, D. N., Bishwajit, G., & Yaya, S. (2020). Fertility preferences among couples in Nigeria: a cross sectional study. *Reproductive Health*, 17, 1-9.
- Owolabi, O. O., Wong, K. L., Dennis, M. L., Radovich, E., Cavallaro, F. L., Lynch, C. A., ... & Benova, L. (2017). Comparing the use and content of antenatal care in adolescent and older first-time mothers in 13 countries of west Africa: a cross-sectional analysis of Demographic and Health Surveys. *The Lancet Child & Adolescent Health*, 1(3), 203-212.
- Patel, V., Kirkwood, B. R., Pednekar, S., Pereira, B., Barros, P., Fernandes, J., ... & Mabey, D. (2006). Gender disadvantage and reproductive health risk factors for common mental disorders in women: a community survey in India. *Archives of general psychiatry*, 63(4), 404-413.
- Patton, G. C., S. M. Sawyer, J. S. Santelli, D. A. Ross, R. Afifi, N. B. Allen, M. Arora, et al. (2016). *Our future: A Lancet commission on adolescent health and wellbeing*. The Lancet 387(10036):2423–2478. doi:[10.1016/S0140-6736\(16\)00579-1](https://doi.org/10.1016/S0140-6736(16)00579-1).
- Pereira, B., Andrew, G., Pednekar, S., Pai, R., Pelto, P., & Patel, V. (2007). The explanatory models of depression in low-income countries: listening to women in India. *Journal of affective disorders*, 102(1-3), 209-218.
- Pinzon, J. L., Jones, V. F., Committee on Adolescence, Committee on Early Childhood, Blythe, M. J., Adelman, W. P., ... & Schulte, E. E. (2012). Care of adolescent parents and their children. *Pediatrics*, 130(6), e1743-e1756.
- Raj, A., Saggurti, N., Lawrence, D., Balaiah, D., & Silverman, J. G. (2010). Association between adolescent marriage and marital violence among young adult women in India. *International Journal of Gynecology & Obstetrics*, 110(1), 35-39.
- Santhya, K. G., Ram, U., Acharya, R., Jejeebhoy, S. J., Ram, F., & Singh, A. (2010). Associations between early marriage and young women's marital and reproductive health outcomes: evidence from

- India. *International perspectives on sexual and reproductive health*, 132-139.
- Shahabuddin, A. S. M., Nöstlinger, C., Delvaux, T., Sarker, M., Bardají, A., Brouwere, V. D., & Broerse, J. E. (2016). What influences adolescent girls' decision-making regarding contraceptive methods use and childbearing? A qualitative exploratory study in Rangpur District, Bangladesh. *PloS one*, 11(6), e0157664.
- Singh, M., Shekhar, C., & Shri, N. (2023). Patterns in age at first marriage and its determinants in India: A historical perspective of last 30 years (1992–2021). *SSM-Population Health*, 22, 101363
- Stapleton, L. R. T., Schetter, C. D., Westling, E., Rini, C., Glynn, L. M., Hobel, C. J., & Sandman, C. A. (2012). Perceived partner support in pregnancy predicts lower maternal and infant distress. *Journal of family psychology*, 26(3), 453.
- Stark, L. (2018). Early marriage and cultural constructions of adulthood in two slums in Dar es Salaam. *Culture, health & sexuality*, 20(8), 888-901.
- Thobejane, T. D. (2015). Factors contributing to teenage pregnancy in South Africa: The case of Matjitjileng Village. *Journal of Sociology and Social Anthropology*, 6(2), 273-277.
- Tokhi, M., Comrie-Thomson, L., Davis, J., Portela, A., Chersich, M., & Luchters, S. (2018). Involving men to improve maternal and newborn health: a systematic review of the effectiveness of interventions. *PloS one*, 13(1), e0191620.
- United Nations Population Fund. (2022). *Motherhood in childhood: The untold story*. UNFPA.
- UNP DivisionWorld, (2019). Population Prospects: 2019 Revision.
- Van den Broeck G, Maertens M .(2015). *Female Employment Reduces Fertility in Rural Senegal*. PLoS ONE 10(3): e0122086. <https://doi.org/10.1371/journal.pone.0122086>
- Wado, Y. D., Sully, E. A., & Mumah, J. N. (2019). Pregnancy and early motherhood among adolescents in five East African countries: a multi-level analysis of risk and protective factors. *BMC pregnancy and childbirth*, 19, 1-11.
- Worku, D., Teshome, D., Tiruneh, C., Teshome, A., Berihun, G., Berhanu, L., & Walle, Z. (2021). Antenatal care dropout and associated factors among mothers delivering in public health facilities of Dire Dawa Town, Eastern Ethiopia. *BMC pregnancy and childbirth*, 21, 1-8.

- World Health Organization (2015). *Every Woman, Every Child, Every Adolescent: Achievements and Prospects: The Final Report of the Independent Expert Review Group on Information and Accountability for Women's and Children's Health*. Geneva, Switzerland: WHO.
- World Health Organization (2020). *Adolescent Pregnancy Fact Sheet, Adolescent Pregnancy FactSheet*.<https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy>. (Accessed 31 October 2024).
- Yargawa, J., & Leonardi-Bee, J. (2015). Male involvement and maternal health outcomes: systematic review and meta-analysis. *J Epidemiol Community Health*, 69(6), 604-612.
- Yoosefi Lebni, J., Solhi, M., Ebadi Fard Azar, F., Khalajabadi Farahani, F., & Irandoost, S. F. (2023). Exploring the consequences of early marriage: a conventional content analysis. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 60, 00469580231159963.

The Effective Contracts in Ground Handling: Ground Handling Services in Tanzanian Context

Omar Tuwa^{1*} and George John Nyaronga²

^{1,2} The Open University of Tanzania

*Corresponding Author

Abstract

This study was conducted purposely to investigate the underlying issues affecting effective contract involved in the provision of ground handling service in Tanzania's aviation sector emanating from contract types, stakeholder collaboration, performance criteria, regulatory compliance, and validity of the contract. A combination of qualitative and quantitative research methodologies through mixed method approach was used. The hypotheses were aligned with existing theories and empirical studies have led to the adoption of questionnaires for data collection. About 101 respondents obtained from 10 airports/ locations in within Tanzania which contribute to about 89% of total traffic volumes including number of flights, passenger, and cargo volumes were purposively and stratified selected to participate in structured questionnaires. The data were analyzed using ANOVA and Binary Logistic Regression in Microsoft Excel while qualitative data was performed by Dedoose for the identification of significant relationships between effective contract (dependent) and contract types, stakeholder collaboration, performance metrics, regulatory compliance, as well as contract validity (independents). The binary logistic regression results indicated significant positive relationships between four out of five variables (contract types, performance metrics, regulatory compliance, and contract validity) while stakeholder collaboration had statistically insignificant impact on contract effectiveness, indicating that while collaboration is important, it does not directly influence the outcomes of ground handling contracts in Tanzania's aviation sector. incorporating automated systems for performance tracking, ensuring clear dispute resolution mechanisms, and providing training for personnel involved in contract management have been given as recommendation to ensure effective contract. The study was concluded by the implementation of world accepted performance metrics, periodic contract reviews, and adherence to regulatory standards can result into effective contract in ground handling in Tanzania.

Keywords: *Contract Management, Ground Handling Services, Standard Ground Handling Agreements (SGHA), Service Level Agreements (SLA), Performance Metrics, Ground handling Contract Types*

INTRODUCTION

According to International Civil Aviation Organization-ICAO (2019), ground handling is defined as all airport services necessary for the arrival and departure of an aircraft, which are not part of air traffic services. It refers to the wide range of operations essential for the smooth functioning of flights and only applicable when the aircraft is on ground, including aircraft parking, loading, and unloading of cargo and baggage, aircraft cleaning and servicing, security screening, as well as check-in, boarding, special assistance, cabin cleaning and cabin setup (International Air Transport Association-IATA, 2012). According to study conducted by Trabelsi (2013), ground handling services facilitate efficient operation of an aircraft on while the ground to ensure the safety of an aircraft and its occupants, and smooth departure of aircrafts, on the other hand minimizing delays, and fostering the overall passenger experience.

According to IATA (2013), airlines outsource more than 50 per cent of the ground handling that takes place at the world's airports through various types of contracts. Gruneberg et. al., (2018) contract management it is a process which involves a systematic approach of selection, negotiating, executing, and overseeing agreements between contracted parties usually airlines and ground handling providers.

Objectively, this paper investigates the impact of different contract types on the effectiveness of ground handling services contracts in Tanzania's aviation sector. It also, investigate the role of stakeholder collaboration in enhancing the effectiveness of ground handling contracts. It analyzes the influence of performance metrics on the effectiveness of ground handling service contracts. It assesses the impact of regulatory compliance on the effectiveness of contracts in the ground handling sector. It is also, examine the validity of contracts used in ground handling operations.

LITERATURE REVIEW

IATA (2022), ground handling services are critical to aviation operations that ensures efficiency, and safety of aircrafts while on ground. Management of these services is governed by various contracts which

includes who's recommended by aviation experts such as Standard Ground Handling Agreement (SGHA) and Service Level Agreement (SLA) which are the keys for maintaining financial viability for both airlines and service provider, quality of service, as well as operational efficiency.

This literature review evaluates existing research on contract management as well as stakeholders' involvement in ground handling services, identifying best practices, challenges, and areas for improvement.

Theoretical Literature Review

Contract management in aviation ground handling is an important factor of service efficiency in ground handling which involves a systematic approach of selection, negotiating, executing, and overseeing agreements between contracted parties usually airlines and ground handling providers (Gruneberg & Hughes, 2018). In order to maintain consistency and implement industry standards, IATA has developed a Standard Ground Handling Agreement (SGHA), which is commonly used contract template for ground handling services (IATA, 2022). The IATA SGHA lists the key elements of in the provision of ground handling services. It originally contained 14 types of activities but was amended in 2003 in order to re-group and re-allocate them into 8 types of activities (Narendra, 2014) to ensure measurable specific terms covered and are constantly met, such as service quality, pricing, and operational flexibility. This paper adopts the Transaction Cost Economics (TCE) theory founded by Ronald Coase (1937) which explains how stakeholders structure contracts to minimize transaction costs and risks. Williamson (1985), TCE is based on following principles; asset specificity, which refers to the investments for specific transactions, like specialized ground handling equipment which are specifically designed for aircraft handling. Bounded rationality is another important concept in organizational economics which distinguishes the cognitive and informational limitations of decision makers which may lead into insufficiently contractual terms that may require review and adjustments over time (Williamson, 1985). Opportunism highlights the risk of parties may take advantage of the existing contractual gaps for self-interest, as a result it necessitates robust monitoring and enforcement mechanisms (Williamson, 1985). Williamson (1985), additionally TCE also emphasizes uncertainty and complexity, while pointing out that transactions are characterized by unpredictability or complexity that require governance mechanisms to

reduce risks. Lastly, the frequency of transactions is a key concept, which suggest that recurring interactions may justify closer relationships or internal governance to reduce costs (Williamson, 1985). This paper has in-scope the principle of opportunism, uncertainty, complexity and frequency of transactions to address the contract management issues in Tanzania ground handling sector. On the other hand, this paper has out-scope asset specificity, and bounded rationality.

Likewise, The Principal-Agent Theory proposed by Jensen and Meckling (1976) which describes the relationship between the principal and agent in ground handling services refers to airline and service provider relationship

According to the study conducted by Amoah et al., (2022), enforcement of robust contracts in ground handling services minimizes disputes, enhances efficiency, and ensures adherence to regulatory standards.

Empirical Literature Review

According to the study conducted by Avanija (2024), the operational frameworks of the aviation industry involve a complex and risky network of contracts from different categories in order to prevent unlawful practices. There are various contracts in ground handling sectors including, fixed-term contracts, ad-hoc contracts are specific for certain project or event, performance-based contracts, cost-plus contracts and joint venture contracts are contracts in which the airline and the ground handling provider form a joint venture to provide ground handling services (Avanija, 2024). IATA's SGHA and SLA have been designed to accommodate different types of contracts to ensure smooth operational activities in the conduct of ground handling services (IATA, 2022).

IATA Ground Operations is part of the ICAO Ground Operations Task Force that makes sure that the airlines' voice and opinion is heard in the regulatory environment (Joseph, 2017) with its consistent theme of IATA's work in Ground Handling Operations is collaboration with all stakeholders, from regulators to ground service providers. Cloudely (2021) developing aviation sectors, like Tanzania, face significant challenges resulting from ambiguous contractual terms, weak monitoring mechanisms, and a lack of legal enforcement capacity. Additionally, according to study conducted by Sally (2016), stakeholders have an imperative influence on project implementation since they are affected in one way or another by any project. Therefore, limited stakeholder

collaboration has been linked to inefficiencies, as airlines, regulators, and service providers often operate in silos rather than engaging in coordinated decision-making.

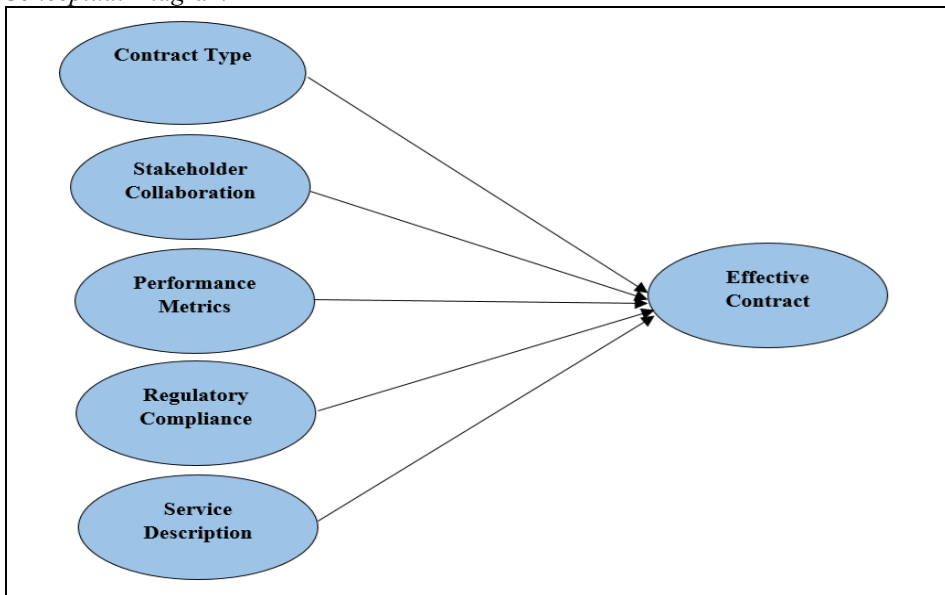
This study builds upon existing literature to explore how these challenges impact Tanzania's ground handling operations.

Conceptual Framework

A conceptual framework includes key concepts, variables, relationships, and assumptions that guide the academic inquiry (Sigh, 2023).

The figure conceptual framework within this research study which highlights the relationships amongst dependent and independent variables, the independent variable of in this study include contract type which emphasize how contractual terms are structured, emphasized, negotiated, and enforced to influence effectiveness of contract in ground handling services. Stakeholders' collaboration depicts the level of collaboration between various stakeholders involved in ground handling services including airlines, services provider, regulators and airport operators. Presence of measureable performance metrics helps to evaluate service provider towards the achievement of contractual expectations. Regulatory compliance ensures the service provider is safe, legal and aligned to international standards. Service description which describes the type of services to be delivered during the contract period to ensure all parties have mutual understanding of the service expectation. The dependent variable is effective contract which ensures that ground handling services are mutually understood by both parties and are delivered efficiently according to the agreed terms

Figure 2:
Conceptual Diagram



Source: Source: Literature review (2023)

From the conceptual diagram depicted in Figure 1 above the following hypothesis were drawn to test the validity of the cause effect between dependent and independent variables.

- H₁: Contract types (fixed-term, performance-based, cost-plus, joint ventures) significantly impact contract effectiveness.
- H₂: Stakeholder collaboration positively influences contract effectiveness.
- H₃: Performance metrics play a critical role in determining contract effectiveness.
- H₄: Regulatory compliance directly impacts contract effectiveness.
- H₅: The existing contractual framework supports the resolution of service-related disputes effectively.

METHODOLOGY

Research Design

This study employs a mixed-methods approach, integrating qualitative and quantitative research methods to evaluate the effectiveness of ground handling service contracts in Tanzania's aviation sector. The study is descriptive and exploratory, aiming to assess effective contract management practices, and stakeholder collaboration. The use of

hypotheses aligned with existing theories and empirical studies led to the adoption of a quantitative design to use questionnaires for data collection.

Study Area and Population

The study was conducted in domestic airports (Arusha, Bukoba, Tabora, Dodoma, Songwe, Mwanza, Kigoma) and international airports (Dar es Salaam, Kilimanjaro and Zanzibar) within the United Republic of Tanzania while the target population for this study consists of key stakeholders involved in ground handling services in these airports. These airports have been selected due to traffic volumes including flight frequencies, passenger and cargo volumes. According to Tanzania Airports Authority (2023), these airports have a total contribution of 89%.

Sampling Technique

A purposive sampling technique was used to ensure a representative sample from the aviation sector, including ground handling service providers, airlines, and airport operators. The study targeted 101 respondents, ensuring diversity among stakeholders to capture different perspectives.

Data Collection Methods

Data was collected using structured questionnaires distributed to four groups of stakeholders while targeting 20 respondents from ground handling service providers, 26 respondents' airline representative, 10 respondents from airports, a random selection of passengers' and cargo.

The questionnaires were designed using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree) to measure perceptions on contract effectiveness. Only 79% of the questionnaires which accounts for 80 questionnaires (12 ground handling service providers, 18 airline representatives, passengers and cargo customers 40 and 10 airports) were correctly filled out and returned for data recording and analysis. The unreturned responses, constituting 15%, were due to time constraints and unwillingness or inability to complete the questionnaires by the respondents.

Validity and Reliability

The questionnaire was validated through expert review by professionals in the aviation sector to ensure relevance and accuracy. These experts were involved to review questionnaires to ensure clarity, content validity,

and alignment with the research objectives. Furthermore, Cronbach's alpha will be used to measure the scale reliability.

Data Analysis

Data will be analyzed using Excel, applying descriptive statistics (mean, standard deviation, frequency distribution) to summarize responses. Additionally, ANOVA (Analysis of Variance) and Binary Logistic Regression in Microsoft Excel will be used to compare responses across stakeholder groups. Regression Analysis will be employed to test the relationship between contract types, stakeholder collaboration, performance metrics, and regulatory compliance with the dependent variable (contract effectiveness). The study also employed a thematic approach to analyze the qualitative data collected through interviews through Dedoose online platform. Through this approach, the gathered responses from respondents through interview were recorded, organized, reviewed, and decoded in Dedoose online platform in order to develop and explain themes to be presented in the study findings.

FINDINGS

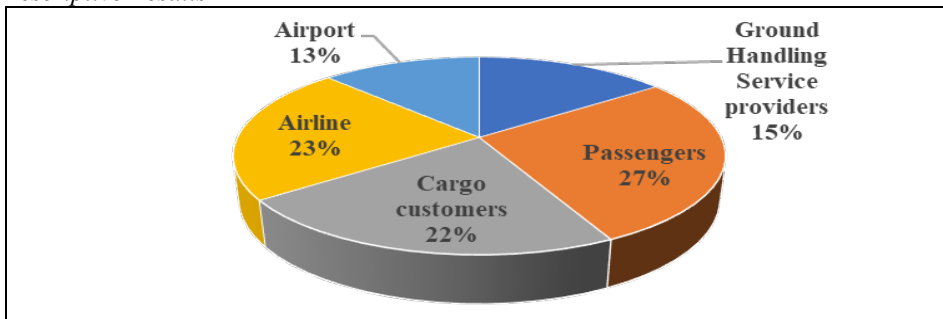
Reliability and validity test

A Cronbach's Alpha value was conducted for all four stakeholders namely Ground handling service providers, airlines, passengers and cargo customers and airport operator (station) and scored 0.917 which exceeds the commonly accepted threshold of 0.7, meaning the survey or questionnaire items used to measure variables in this study are internally consistent.

Description analysis

A descriptive analysis test was run to examine 80 respondents' 23% of respondents were airline representatives which formed the largest group, indicating their significant role in assessing contracts in ground handling services, 27% of respondents were passengers who provided critical feedback on performance metrics in ground handling contracts, 22% of respondents' cargo customers contributed valuable insights into cargo handling efficiency, security, and compliance with regulations. 15% of respondents were from ground handling service providers who provided internal perspectives on operational challenges and contract effectiveness and airport authority representatives scored 13% who shared insights on regulatory compliance and coordination between stakeholders.

Figure 3:
Descriptive Results



Source: Data Analysis (2025)

Sample Size Adequacy

Logistic Regression, a sample size which is too small will not be a true representation of the population whereas a large sample size will involve putting more individuals at risk (Gumpili, 2022). This study employed five independent variables; Contract type, stakeholders' collaboration, performance metrics, regulatory compliance, and validity. Due to the size of Tanzania aviation sector, a sample of 101 is large and enough to provide adequate data needed in this study. Variance Inflation Factor (VIF) values were used to test for multicollinearity between independent variables, since variables should not be highly correlated with one another to avoid multicollinearity (Senaviratna & Cooray, 2019). R-Square was used to represent the proportion of variance in the dependent variable that is explained by each independent variable when considered individually. Higher values indicate a stronger relationship. R-Square calculations have indicated 65.6% of Contract types variance in the dependent variable, indicating a strong relationship, Stakeholder collaboration scored 34.6% of variance, showing a moderate impact, Regulatory compliance scored 65% of variance which indicates a strong relationship, 28.4% of variance, suggesting a moderate relationship resulted from validity. R-Square in this study concludes that Contract types and Regulatory compliance are the most influential predictors, on the other hand performance metrics and contract validity contribute have moderate contribution towards effective contract. Meanwhile, Stakeholder collaboration has the least explanatory power.

Multicollinearity Test was performed using VIF to measures how much a predictor is correlated with other predictors in this study, it is noted that

all VIF values are below 5, meaning there is no serious multicollinearity in the model, Contract types and Regulatory compliance show some collinearity but remain within acceptable limits. While, Stakeholder collaboration and Performance metrics are independent of other variables.

Table 1
Binary Logistic Regression

Variables	R Square	VIF
Contract types	0.656	2.904
Stakeholder collaboration	0.139	1.161
Performance metrics	0.346	1.528
Regulatory compliance	0.650	2.857
Validity	0.284	1.397

Source: Data Analysis (2025)

Goodness of fit

The Adjusted R-Square value of 0.791 indicates that the regression model explains approximately 79.1% of the variance in the dependent variable after accounting for the number of predictors. This suggests a strong model fit, meaning that the independent variables included in the model significantly contribute to explain variations in the dependent variable. Since the Adjusted R-Square is close to the R-Square, it also confirms that the predictors are relevant and not merely adding noise to the model. Additionally, with Variance Inflation Factor (VIF) values below 5, there are no serious multicollinearity issues, ensuring that the predictors are not excessively correlated with each other.

Table 2
Logistic Regression Analysis

Variables	B	SE	Sig	Exp (B)
Contract types	0.275	0.066	0.000	1.317
Stakeholder collaboration	-0.087	0.046	0.061	0.917
Performance metrics	0.103	0.046	0.027	1.108
Regulatory compliance	0.270	0.040	0.000	1.310
Validity	0.218	0.088	0.016	1.244

Source: Data Analysis (2025)

DISCUSSION

Relationship between Contract Types and Effective Contract

As shown in table 2 above, the positive coefficient of 0.275 indicates that an increase in contract types increases the log-odds of the effective

contract in ground handling meaning that the more specific contract type in the pursuant of ground handling services more effective it becomes. Likewise, the odds ratio of 1.317 signifies that for every one-unit increase in contract types, the odds of achieving the effective contract in ground handling for almost 31.7%. Furthermore, a contract type is statistically significant, p value = 0.000 confirming that contract types have a meaningful impact on the effective contract.

Relationship between Stakeholder collaboration and Effective Contract

A negative coefficient of -0.087 indicates that any increase of stakeholders' collaboration in ground handling contract decreases its effectiveness by 8.3%. Furthermore, the p value of 0.061 obtained in stakeholders' collaboration is not statistically significant at the 0.05 level. Therefore, this study cannot confidently conclude that stakeholder collaboration has a meaningful impact on the effective contract in ground handling.

Relationship between Performance metrics and Effective Contract

A positive coefficient shows a positive relationship with the outcome, with a coefficient of 0.103 and a p -value of 0.027, indicating statistical significance. This suggests that robust performance metrics in ground handling contract are associated with an increase in the likelihood of the its effectiveness. The exponentiated coefficient of 1.108 suggests that for each unit increase in performance metrics, the odds of the outcome increase by about 10.8%. This relationship is statistically meaningful, which signify that performance metrics play a role in the outcome.

Relationship between Regulatory compliance and Effective Contract

Similarly, a positive relation of regulatory compliance and effective contract, with a statistically significant coefficient of 0.270 and a p -value of 0.000. This suggests that higher levels of regulatory compliance led to an increase of likelihood of the effective contract. The odds ratio of 1.310 means that for every unit increase in regulatory compliance, the odds of the outcome occurring increase by 31%. This result reinforces the importance of regulatory compliance in influencing the effective ground handling contracts.

Relationship between Validity and Effective Contract

Finally, validity of contracts also shows a statistically significant positive relationship with the effective contract, with a coefficient of 0.218 and a

p -value of 0.016. This suggests that greater validity is associated with a higher likelihood of the outcome. The exponentiated coefficient of 1.244 means that for each unit increase in validity of the contract, the odds of the outcome occurring rise by approximately 24.4%.

In summary, both contract types, performance metrics, regulatory compliance, and validity have a positive and statistically significant effect on the effective contract, suggesting that these factors contribute to a higher likelihood of the outcome. Conversely, this study found out that stakeholders' collaboration does not exhibit a statistically significant relationship, and its potential impact remains uncertain based on this analysis.

Table 3
Summary of Binary Logistic Regression Results

Hypothesis	Results
H1: Contract types significantly impact contract effectiveness.	Supported
H2: Stakeholder collaboration positively influences contract effectiveness.	Not Supported
H3: Performance metrics play a critical role in determining contract effectiveness.	Supported
H4: Regulatory compliance directly impacts contract effectiveness.	Supported
H5: The existing contractual framework supports the resolution of service-related disputes effectively.	Supported

Source: Data Analysis (2025)

This study was conducted to address the effectiveness of ground handling contracts in Tanzania aviation sector. These results might not apply to different airports within the context due to different environment as well as cultural diversification within each airport. Hence, a different study that includes two in-scoped variables from TCE Model, such as Bounded Rationality and Opportunism to address the issues of contracts specifically in aviation ground handling in Tanzania may be conducted in incorporate all airports in Tanzania since this study only considered only 10 airports to simply the research findings.

CONCLUSION

In conclusion, this study highlights the importance of effective contract management in the aviation ground handling sector, particularly within Tanzania's aviation industry. The findings suggest that various factors, such as contract types, performance metrics, regulatory compliance, and

contract validity, significantly influence the effectiveness of ground handling contracts. Contract types is positively related to contract effectiveness. Despite of being important, the stakeholder collaboration did not exhibit a statistically significant effect on contract performance in this study.

The role of regulatory compliance emerged as particularly impactful, reinforcing the necessity for service providers to adhere to international standards to ensure safety and operational efficiency. Moreover, the inclusion of world class performance metrics including merit for achieved targets and penalties for failures are very important in fostering the accountability and efficiency of ground handling operations.

The study also emphasizes the need for continuous review and flexibility in contracts to accommodate changing industry standards and regulatory requirements. As the aviation sector in Tanzania continues to grow, implementing automated systems for performance monitoring and dispute resolution processes will help to ensure that contracts remain effective and relevant.

Ultimately, the research offers practical recommendations for improving contract management in Tanzania's aviation sector, contributing to a more efficient, transparent, and collaborative approach to ground handling services. By addressing these areas, the industry can better support the smooth and safe operations of aircraft, thus enhance the overall passenger and cargo experience while foster a more resilient aviation sector.

RECOMMENDATIONS

Ground handling contracts must incorporate clear performance metrics and penalties for non-compliance. This will ensure that both parties understand their obligations and responsibilities towards fulfilment of the contractual terms and are held accountable for any failure that might result. On the other hand, world class performance indicators must be included as well in the contract in order to measure critical aspects of contacts as mutually agreed upon by contractual parties.

Clear dispute resolution process must be clearly stated to facilitate timely settlement of disputes to avoid unnecessary service disruptions and to

support business continuity. Arbitration clauses must be incorporated to foster quick resolution of misunderstanding between parties.

Notwithstanding, personnel responsible for monitoring and implementing ground handling contracts must be trained for the effective contract negotiation, implementation, and enforcement.

Contractual parties must continuously review ground handling contracts for them to remain relevant, flexible and dynamic to reflect changes in industry standards including regulatory requirements.

By addressing these recommendations, this study suggests that Tanzania's ground handling services can achieve improved contract effectiveness, through type of contract, regulatory compliance, validity and performance metrics.

Furthermore, this study recommends implementation of automated systems for tracking performance metrics across the industry to standardize monitoring and reporting in order to maintain transparency, real-time tracking, and timely adjustments to meet contract obligations while ensuring compliance with SLAs and SGHAs.

REFERENCES

- Amaeshi, K., & Crane, A. (2006). Stakeholder engagement: A mechanism for sustainable aviation. *Corporate Social Responsibility and Environmental Management*, 13(6), 245–260.
- Amoah, C., & Nkosazana, H. (2022). Effective management strategies for construction contract disputes. *International Journal of Building Pathology and Adaptation*. <https://doi.org/10.1108/IJBPA-01-2022-0004>
- Cloudely. (2021). Contract management challenges in aviation. Retrieved December 21, 2024, from <https://cloudely.com/contract-management-challenges-in-aviation/>
- GLOBE NEWSWIRE. (2023, December 22). Airport ground handling services market report 2024–2034. (<https://www.globenewswire.com/news-release/2023/12/22/2800488/28124/en/Airport-Ground-Handling-Services-Market-Report-2024-2034-Regulatory-Compliance-and-Safety-Standards-Upholding-Aviation-Excellence.html>).

- Gumbe, S. A. (2016). Influence of stakeholders' involvement on implementation of projects in the aviation industry: A case of Kenya Airways (Master's research project, University of Nairobi). University of Nairobi Repository.
- Hamouda, A. F. (2023, June 10). The different types of ground handling contracts in the aviation industry. Aviation HQ. <https://www.aviationhq.com/articles/test>
- International Air Transport Association. (2016). IATA Safety Audit for Ground Operations (ISAGO). Working Paper A39-WP/126, TE/47. Presented at the 39th Session of the ICAO Assembly, Agenda Item 33: Aviation safety and air navigation monitoring and analysis. International Civil Aviation Organization.
- International Civil Aviation Organization. (2019). *Manual on ground handling* (Doc 10121). ICAO.
- Suidan, J. (2017). Ground operations: The role of stakeholder collaboration. *International Airport Review*, 3, 74099. <https://www.internationalairportreview.com/article/74099/ground-operations-iata/>

Perceptions and Involvement of Parents over Girls' Secondary Education in Kisarawe District – Tanzania

Masakija John Kafullah^{1*}, Jalia Mohamed Muna¹ and Radhia Vicent Shaidi¹

¹Ardhi University, Dar es Salaam, Tanzania

*Corresponding author's email: kafullah@gmail.com

Abstract

The legal frameworks at national and international levels strongly emphasize the importance of education for both female and male children. The frameworks have changed gender-biased mindset over education in some societies in the world. Nevertheless, there are some societies with a negative perception of girls' education. This study examined the perception and involvement of parents over girls' secondary education in Kisarawe District. The study used a case study design and a qualitative approach. Data were collected using interviews and a questionnaire, and were analysed using thematic data analysis. Results show that parents have a positive perception of girls' secondary education. However, there is a great mismatch between such mere perception and involvement. Parents are hardly supporting female children in terms of school requirements such as transport, moral support, making follow-up on their academic progress and providing time for studies at home. It was discovered that parents' positive perception of girls' secondary education in the area is not intrinsically cherished but rather extrinsically driven by the Government's strict enforcement of laws against anyone who denies the rights of girls to access education. Hence, measures that can change the mindset of the community regarding girls' education should be undertaken along with legal frameworks for transformative results.

Keywords: *Parents' perception, parents' involvement, girls' secondary education*

INTRODUCTION

Education serves as an important empowerment tool for the social, economic and political betterment of girls throughout the world (UNESCO, 2000). Given such importance, societies in the developed world have a positive perception towards education, and societies in the developing countries have either positive or negative perceptions of girls' education. Negative perceptions, in most cases, adversely affect parents'

involvement in girls' education. Lindsay and Norman (1977) define perception as the process by which organisms organize, interpret and generate meaningful experience of what surrounds them. Mackay (1987) maintains that perception and action are interdependent and inseparable. That is to say, perception is action-oriented (Drayson, 2017). However, perception does not always accurately represent the outside (Eagleman, 2011). This view is also supported by behaviourists who believe that perceptions and actions are separate as related to events (Hurley, 2001).

Communities in the European and North American countries have relatively positive perceptions of girls' education. For example, in Britain and the United States, parents' involvement in girls' education is highly influenced by the positive perception attached to girls' education (Burke, 2004). On the other hand, in some Asian countries, parents have negative perceptions over of girls' education. For example, Purewal and Hashmi (2014) found that in rural Punjab-Pakistan, about 72% of the males in their study had a negative perception of girls' education. However, a study by Mercan (2010) shows that parents in Turkey have positive perceptions of girls' education, which are linked to girls' ultimate performance in education.

Studies conducted in Ethiopia and Guinea noted that parents have a negative perception of girls' education. They view it as a waste of family resources and time, as they are very concerned with the security of their female children from teachers, classmates, and other society members (Dilli, 2006; Mendy, 2008). For instance, a study conducted by Rugasa and Taha (2015) in Southern Ethiopia showed that 52.2% of parents preferred to send their male children to school rather than female children. Moreover, 39.1% gave equal access to education for both boys and girls, and only 8.7% of parents gave first priority to girls' education. One of the reported reasons for such negative perceptions is that sending girls to school reduces labour for domestic chores and outdoor economic activities at the household level.

Somani's study in Kilomo-Zambia shows that 43 % of parents have a negative perception of girls' education as they believe that girls are prone to pregnancy and other obstacles that limit them from completing their studies (Somani, 2017). On the other hand, Dizon-Ross (2016) has established evidence that most parents in Malawi only opt to send girls whom they believe are capable of performing well in their studies, hence,

ignoring the rights of other girls who seem to be incapable of achieving academic excellence.

Tanzania's education system, as per the 2014 education policy, is 1:6:4:2:3+, implying that it starts from nursery education, primary education, followed by secondary education (4 years O-level and 2 years A-level), and tertiary education. Secondary education is considered important because it contributes to the inputs of higher education and the labour force (HakiElimu, 2007). The Government of Tanzania has introduced different programmes to ensure education for all and improve student retention. These programmes include Secondary Education Development Plan I and II, Big Results Now, and now fee-free primary and secondary education. Apart from all these government efforts, some parents do not send their children (especially girls) to school.

Hekela's study (2014), for example, shows that most parents in Mbinga District (Tanzania) consider girls' education as an uneconomic venture, which results in unplanned pregnancies and sexually related diseases. Moreover, parents are reluctant to pay for indirect costs such as books, uniforms, and transportation, even though the Government provides free education. Because of poverty and cultural practices in many societies in Tanzania, some parents place heavy workloads on their girl children at home as they have low expectations of girls' performance in school or a chance to be employed and earn money. All these results in an increased school dropout among girls. For instance, in 2015, about 29,508 secondary school girls in Tanzania dropped out (URT, 2016).

The empirical evidences discussed suggest that there is a close relationship between the perception and involvement of parents over 'girls' education. By definition, parental involvement is an act of parents to talk to teachers, get involved in planning post-secondary activities, and monitor school work (Eagle, 1989). It can also refer to any interaction between a parent and a child or school that improves the child's development (Reynolds, 1996). Parental involvement includes assisting students in their learning, actively engaging in their child's education at school, sending and replying to home-school communications, partnering in their child's education, and being involved in decision-making by being members of various committees. Parental involvement usually takes various forms such as helping students with homework, attending school meetings, or having high expectations for students' performance and future

life in general. Stakeholders (Maynard and Howley, 1997; Jeynes, 2005) in education believe that parental involvement is necessary if girls are to succeed in their schooling.

McNeal (2001) lists four elements of parent involvement. The first element is a parent-child discussion. In this, the amount of conversation time that is spent at home discussing education issues is taken into consideration. The second element is the involvement of parents in parent-teacher organizations. This is the extent to which parents visit classrooms, speak with teachers or volunteer in school activities. The third one is monitoring, which means keeping up with the child's progress regularly. The fourth element is direct involvement, which refers to the amount of time that is spent by a parent in school activities.

Educational stakeholders agree that when parents are involved in education, their children put more effort into their studies and improve their achievement. For example, Jeynes (2005) did a meta-analysis of 41 studies and found that parental involvement had a significant relationship with the academic success of urban school students. In a similar vein, children who are encouraged and helped by their parents at home tend to exhibit growth and academic success (Maynard and Howley, 1997). Moreover, parent involvement enhances classroom learning. It contributes to the overall school community relationship and teacher efficacy. When parents attend school meetings and events regularly and get involved with their children at home, they motivate their children and instill in them feelings of greater confidence and competence. As a result, these students perform better in academics.

Most of the reviewed literature hardly links the perceptions and involvement of parents to girls' education. This study is intended to examine the link between parents' perceptions and involvement in girls' secondary education in Kisarawe. Inhabitants of Kisarawe, like other societies in coastal areas in Tanzania (such as Mtwara, Lindi and Tanga regions), pay little attention to education. The community's little concern for education and remoteness of schools pose a number of challenges to girls' education in the area.

Theoretical Background

The study is guided by Epstein's (2009) model of parenting, which identifies six major types of parental involvement: Parenting (Type 1);

parenting, assisting families with basic parenting skills and encouraging home conditions to support children in the educational process, and assisting schools to understand families. Communicating (Type 2) refers to parent-initiated and school-initiated contact regarding school programmes and student progress. Volunteering (Type 3) includes providing parents and students with opportunities at school events or other community events related to education. Learning at Home (Type 4) requires parents to provide a good home learning environment for doing homework and extracurricular learning activities. Decision-making (Type 5) refers to families participating in school decision-making and may also participate in school committees. Collaborating with the Community (Type 6) refers to coordinating resources and services from the community for families, students, and the school to support learning.

METHODOLOGY

This research used a case study design in its intention to obtain in-depth information from Kisarawe District as the study area. Kisarawe was chosen because it is among the coastal areas that pay little attention to education. In addition, Kisarawe is covered by forests and highlands, resulting in a low and scattered population, coupled with few governments secondary schools (only 15), which are also scattered.

The study employed a mixed methods approach, and data were collected using semi-structured interviews and a questionnaire. A questionnaire was used so as to supplement the qualitative data collection tool(s). A total of 285 respondents were involved in the study: 100 parents, 5 Heads of schools, 5 Village Executive Officers, and 2 Community Development Officers who participated in the interview. These respondents were obtained through purposive sampling. Female students (173) were obtained through convenience sampling, and they participated in filling out the questionnaire. Female students were studied from five secondary schools located in five villages; 28 from Janguo Secondary School, 56 from Kibuta Secondary School, 23 from Maneromango Secondary School, 21 from Gongoni Secondary School and 45 from Masaki Secondary School. Data from the interview were thematically organized and analysed, while questionnaire data were processed using SPSS version 16.

Table 1
Composition of Respondents and Data Collection Tools Used

S/N	Category of Respondents	Projected Number	Actual Number	Data Collection Tool
1	Female-Students	180	173	Questionnaire
2	Parents	100	100	Structured interview
3	Heads of Secondary Schools	5	5	Semi-structured interview
4	Village Executive Officers	5	5	Semi-structured interview
5	Community Development Officers	3	2	Semi-structured interview
Total		293	285	

FINDINGS AND DISCUSSION

Parents' Perception of Girls' Education

In the context of Tanzania, parents and the community in general have different perceptions of girls' secondary education. Some of them have a positive perception, as they believe that both girls and boys should get equal access to secondary education. On the other hand, some parents are against girls' secondary education due to several reasons, including challenges faced by girls such as sexual relationships with boys and pregnancy, which can drop them out of school. Other parents refute girls' education on the basis that they expect little or no financial/material returns from the schooled girls, particularly after being employed and getting married.

Findings of this study have established evidence that about 100 (100%) of interviewed parents have positive perceptions towards girls' secondary education. They commented that they take both male and female education seriously. They had the view that when girls are educated, they will help their families later when they get employment. They also explained that girls' education is important for the betterment of girls themselves, as asserted by a parent from Kibuta village:

“...education will enable my daughter to get employment and be able to get better life to be manifested with her ability to meet well her requirements as well as our requirements. Therefore, as parents, we do whatever we can to meet our daughter's schooling requirements...” [29 November, 2017]

The study went further in investigating the reasons why most parents in the area have such a positive perception of girls' secondary education. In an interview with the Headmasters, Village Executive Officers (VEOs), and Community Development Officers, it was revealed that parents' decision to send their children to school and positive expression over girls' secondary education is largely influenced by the Government's strict enforcement of rules and laws pertaining to girls' education. In fact, the Headmaster of Janguo Secondary School had this to say:

“...there is an increased reporting and registration of form one female students who join secondary school for the first time after passing standard seven final examinations. Correspondingly, there is a considerable high retention rate of the enrolled female students manifested with high net intake ratio of students who complete O-level education since parents fear the government punishments for either failure of standard seven passed pupils to join secondary school or truancy and drop out of female students due to marriage and other reasons...” [20 November, 2017]

Similarly, the Village Executive Officers, in collaboration with teachers, have often been tracing truants and female students who have dropped out for reasons other than illness. For instance, at Msanga, two parents were caught and executed under the law for the dropout of their daughters due to marriage. This was revealed in an interview with the Village Executive Officer of Msanga. Furthermore, according to Masaki's Community Development Officer, three pregnant cases were reported and executed before the law.

“...We have a sort of network with the heads of schools and local government officers in tracking marriage and pregnancy cases among schooling girls and execute parents who either force or allow their daughters to be married. Similarly, in collaboration with the heads of schools, we used to identify pregnant girls. For instance, following our recent follow up at Masaki Secondary school, we were able to know that three girls were impregnated and we still make follow up to identify men who committed that illegal and immoral behaviours for execution before the law...” [1st December, 2017]

Hence, legal frameworks that the Government sets compel parents and guardians to allow their daughters to access education. This was also revealed in a study by Temba *et al.* (2013) that the positive perception of the Maasai (at Monduli District-Tanzania) over girls' education is 80 percent influenced by the Government's legal frameworks.

However, the study's examination of parents' involvement in girls' education revealed a mismatch between parents' positive perception of girls' secondary school education and their level of involvement in supporting it. Basically, parents' positive perception of girls' education is rhetoric as it is only expressed extrinsically through speaking rather than practice. Their level of involvement is explained below.

Parents' Communication with the School Management on Girls' Progress

In an interview with heads of schools, it was revealed that about 84% of parents do not make follow-up at school. Therefore, these parents can hardly know the attendance, discipline status, and academic performance of their children. One of the pieces of evidence of evidence in this case is hereby drawn from the headmaster of Masaki Secondary School:

“...I have never seen any parent or guardian coming to school for academic follow-up of his/her children here at school. You can at least see some of parents coming to school solely upon called by the discipline master or class teacher for disciplinary issues of their children. This gives me feedback at glance that they are less concerned with education affairs of their respective children...” [2 December, 2017]

Learning from the quotation above, the situation implies that parents, to a greater extent, do not value the education of their female children. That is why they do not make any follow-up unless they receive a special call from teachers or when called by a Village Executive Officer to discuss disciplinary issues of their children. According to Epstein's Model for Parental Involvement, in terms of communication, she insisted that parents need to communicate with schools on the progress of their children as well as general school programmes. This creates a two-way communication channel between school and home by involving parents in school matters. 'Parents' communication with the school will also help parents to understand school policies, get feedback on the behaviour and attendance of their children, and other aspects related to student conduct. Studies on parents' perception and involvement suggest that there is a positive correlation between parents' involvement in academic affairs and students' performance (Marzano, 2003). Precisely, when parents are aware of their children's progress, they will be able to identify the problems their children face and find appropriate solutions. However, with these results, it is obvious that girls are not getting appropriate assistance from their parents in matters related to their schooling.

Parents' Moral Support to Schooling Girls

With regard to moral support, 65% of parents do not provide moral support (such as encouragement and insistence on pursuing education and exposure to important role models in education), which can foster a learning curiosity in their schooling girls. As education is offered free, the Government expects parents to play their part by encouraging their daughters to work hard. However, this is not the case in Kisarawe, as parents view education as a burden. Only 35% of parents take time to communicate with their daughters on school matters. This was reported in the questionnaire that was distributed to secondary school girls in the selected schools. The findings are summarised in the table below:

Table 1

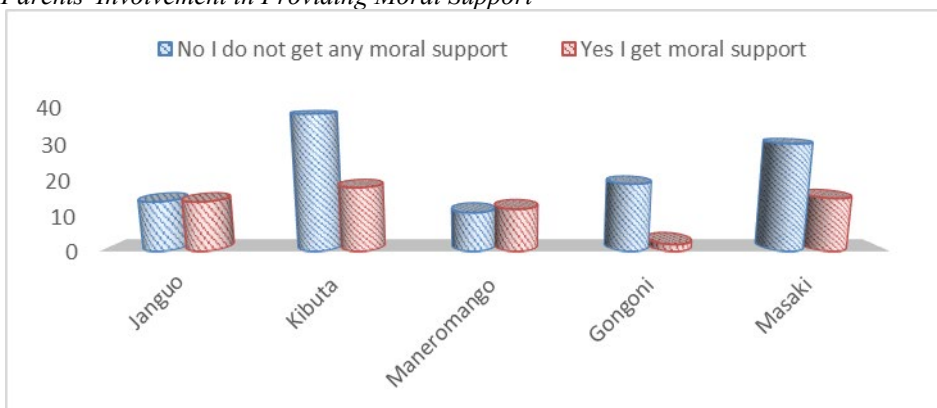
Parents' Involvement in Providing Moral Support

School	No, I do not get any moral support	Yes, I get moral support
Janguo	14	14
Kibuta	38	18
Maneromango	11	12
Gongoni	19	02
Masaki	30	15
Total	112 (65%)	61 (35%)

Source: Field work (2017)

Figure 1

Parents' Involvement in Providing Moral Support



Relating these findings to Epstein's model, parents need to help their children set goals and develop strategies to achieve them. Parents should, for instance, provide students with moral and material rewards that will serve as catalysts for them to achieve their goals. The relationship between parents' moral support and student outcomes other than

achievement is not extensively researched. However, few studies suggest that there is a correlation between parents' moral support and students' attitudes towards schooling and social behaviour (Cotton and Wikelund, 1989).

Parents' Provision of Time for Studies at Home

In creating a good learning environment, parents are responsible for providing their daughters with time to do their homework and other schoolwork at home. During the study, researchers wanted to know if female students in Kisarawe have sufficient time for studies at home. In this respect, 61% of consulted girls reported that their parents do not give them time for studies at home. These girls are being involved in household chores such as fetching water and cooking, as it was widely reported in the questionnaire answered by schooling girls, as shown below:

Table 2

Provision of Time for Revision

School	No, I am not given time to study	Yes, I am given time to study
Janguo	11	17
Kibuta	54	02
Maneromango	18	05
Gongoni	05	16
Masaki	17	28
Total	105 (61%)	68 (39%)

Source: Field work (2017)

When female students were asked to tick activities, they do at home after class hours and during weekends (note: they were allowed to tick multiple choices), responses were as follows:

Table 3

Domestic works that involve girls

School	Cooking	Fetch water	Collect firewood	Doing small business	Domestic cleanliness	Others
Janguo	10	9	6	5	7	2
Kibuta	45	50	6	10	51	9
Maneromango	2	11	0	3	12	0
Gongoni	3	2	1	3	4	0
Masaki	8	2	3	12	14	7
Total	68 (65%)	74 (70%)	16 (15%)	33 (31%)	88 (84%)	18 (17%)

Source: Fieldwork (2017)

The findings show that most students are not given time to study at home, and the problem is comparatively severe at Kibuta Secondary School. With reference to Epstein's model of parental involvement, parents need to create a good learning environment for their children. For example, they should give their children time to do homework as well as time for revision. This is not the case in Kisarawe, where girls claim to be loaded with domestic work and lack time to study. Parents are supposed to reduce domestic work for their children (especially girls) and, if possible, give them time for refreshment. This observation is concurrent with Rwegasira (2017), who witnessed that the majority of female students at Kishapu District were heavily involved in home-based activities to the extent that they did not have time to revise what they were taught at school. Lack of time to revise the contents taught at school may have a negative impact on secondary schoolgirls' education, especially on their performance. Many girls walk long distances when fetching water, which results in tiredness and hence loss of concentration when they engage in school activities. At the same time, their counterpart (boys) is left out doing school activities. The situation forces girls to drop out of studies and those who remain tend to have poor performance.

Provision of Transport to and from School

Most of the students walk long distances to school. However, only 10% of them are being supported with transport. About 90% are not supported with transport services such as bicycles or transportation, even though they live far from school. This was reported through a questionnaire by schoolgirls as presented below:

Table 4
Provision of Transport

School	I am not supported with transport	I am supported with transport
Janguo	25	03
Kibuta	50	06
Maneromango	21	02
Gongoni	17	04
Masaki	42	03
Total	155 (90%)	18 (10%)

Source: Filed work (2017)

In an interview with parents, they were asked how they help their daughters get to school easily. These parents responded that they do not

have money to assist their daughters with transport fare daily as they have many children to attend. The Village Executive Officers, Heads of schools and the Community Development Officer had the following to say related to this matter and the nature of Kisarawe District.

Girls are traveling a total of 10 kilometres everyday as they go to school and come back home (the Village Executive Officer-Msanga village [22 November, 2017])

The village is far from school and students live far away from here, about 7 kilometres and most of them do not have bicycles, the situation is so challenging to girls as they arrive home late, tired and at the same time they are given other domestic works to do (the headmaster- Masaki Secondary School [5 December, 2017])

Students have to travel around the highlands which surround us and the school is located far away from the settlement (the Community Development Officer- Masaki village [4 December 2017])

The fact that schools are located far away from students' residences and the lack of transport facilities may affect female students in different ways. For example, low concentration in teaching sessions due to tiredness, hunger (as a lot of calories are consumed for walking long distances), which can also be coupled with sleepiness and eventually poor academic performance. Apart from that, long walking distance highly exposes girls to snares of boys (men) who can use such a loophole to entice them into sexual activities of that always have an adverse impact to their studies. These findings are related to Rwegasira (2017), who observed that secondary school girls in Kishapu who walk very long distances to school have poor academic performance.

CONCLUSION AND RECOMMENDATIONS

The findings of the study provide evidence that there is a mismatch between perceptions and involvement in girls' secondary education among parents and guardians in Kisarawe District. The positive perceptions of parents of girls' secondary education have not been translated into practices to enhance the academic performance of female students. In fact, these positive perceptions of girls' secondary education among parents in the area are mainly due to the Government's strict enforcement of laws as enforced by different authorities. On the other hand, some parents use economic hardships as the umbrella to camouflage their failure or reluctance in undertaking some other crucial roles for academic

betterment of their children which actually do not involve financial capabilities as one can also consider the fact that the Government largely covers some costs in secondary education. Lack of parents' involvement adversely affect girls' education. In the course of finding out solution, the following are recommended.

- i) Government's enforcement of laws pertaining to girls' education among societies need to be undertaken along with the efforts of changing mind set of people so that the importance of education can be instilled into their minds and be intrinsically and sustainably translated into practices.
- ii) Material-based support for schooling girls should be associated with provision of moral support which can positively reinforce such female students.
- iii) Hostels should be built especially for female-students whose residences are far away from school.
- iv) Campaigns should be undertaken to awaken consciousness among schooling girls about the importance of education and the urgency of refraining from doing sexual activities and other risking behaviours to their academic endeavours.
- v) The Government in collaboration with other stakeholders should continue to combat gender inequality in provision of education.
- vi) A forum should be prepared in order to expose female students and parents with successful role model women who can inculcate learning curiosity among schooling girls and challenge perceptions and practices of parents over girls' education.
- vii) Knowledge and skills on income generating activities should be imparted to the community so as to increase their capabilities to support schooling girls.

REFERENCES

- Burke, D. (2004). *Making parental involvement a key process in primary education: An action research project in a junior primary school*. Unpublished M.A Thesis, National University of Ireland.
- Cotton, K & Wikelund, K. R. (1989). *Parent involvement in education*. Office of Educational Research and Improvement. Washington, D.C.: U.S. Department of Education.
- Dilli, C. (2006). *Zorunlu eğitim çağında bulunan kız çocuklarının okula gitmeme nedenleri: Şirnak ili örneği*. Unpublished MAThesis, Fırat University, Elazığ.

- Dizon-Ross, R. (2016). *'Parents' beliefs and ' 'children's education: Experimental evidence from Malawi*. Chicago: University of Chicago
- Drayson, Z. (2017). *What is Action-Oriented Perception?* California: University of California
- Eagle, E. (1989). *Socioeconomic status, family structure, and parental involvement: The correlates of achievement*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Eagleman, D. (2011). *Incognito: The secret lives of the brain*. New York: Random House.
- Epstein, J. (1995). School/Family/Community partnerships: Caring for the children we share. *Phi Delta Kappan*, 92 (3) 701-712.
- Gwija, M. (2016). *The role of parents in enhancing academic performance in secondary schools in Metro-central Education District-West Cape*. MA Dissertation, University of South Africa.
- Hekela, L.P. (2014). *Exploring factors contributing to female students drop out rates in community secondary schools in Tanzania: A case of Mbinga District*. Unpublished MA Dissertation. Open University of Tanzania.
- Jeynes, W. (2005). A Meta-Analysis of the relation of parental involvement to urban elementary school student academic achievement. *Urban Education*, 40(3), 237-269.
- Kamaldeen, A.S., Buhari, A.S.M., & Parakoyi, D.B. (2012). Perception, attitude and practices of parents in Okene, Nigeria towards girl-child education. *International Journal of Scientific and Research Publications*, 2, (8) 1-7
- Lindsay, P. & Norman, D.A. (1977). *Human information processing: An introduction to psychology*. Harcourt: Brace Jovanovich, Inc.
- Marzano, R. J. (2003). *What works in schools: Translating research into action*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Maynard, S., & Howley, A. (1997). *Parent and community involvement in rural schools*. Charleston: ERIC Digest.
- McNeal, R.B. Jr. (2001). Differential effects of parental involvement on cognitive and behavioural outcomes by socioeconomic status. *The Journal of Socio-Economics*, 30(2), 171.
- Mendy, A. C. (2008). *Moving toward parity education and the Sub-Saharan African Girls*. Unpublished MA Thesis, University of Colorado

- Mercan, P. (2010). *Perceptions of parents regarding to 'girls' education: Siva case*. (Unpublished MA Thesis), Graduate School of Social Sciences of Middle East Technical College.
- Purewal, N., & Hashmi, N. (2014). *Parental attitudes towards 'girls' education in rural Punjab, Pakistan*. London: Routledge.
- Regasa, G., & Taha, M. (2015). Perceptions of parents towards the academic performance of female students: The case of Kutto Sorfella Primary School, Sodo Zuria Woreda, Southern Ethiopia in *Journal of Education and Practice*, 6 (22), 73-79.
- Reynolds, A.J. (1996). Cognitive and family support mediators of pre-school effectiveness: A confirmatory analysis. *Child Development*, 67, (3) 1119-1140.
- Shahzad, S., Ali, R., Qadeer, M. Z., & Khan, M. S. (2011). Community attitude towards female education. *International Journal of Academic Research*, 3(1) 1-12.
- Somani, T. (2017). Importance of educating girls for the overall development of society: A global perspective. *Journal of Educational Research and Practice*, 7(1), 125-139
- Temba, E.I., Warioba, L., & Msabila, D.T. (2013). Assessing efforts to address cultural constraints to 'girls' education among Maasai in Tanzania: A case study of Monduli District. *Journal of International Cooperation in Education*, 15(3), 21-37.
- UNESCO (2000). *Education for all, monitoring reports*. Paris: UNESCO. Retrieved on 9 March, 2019 from http://www2.unesco.org/wef/countryreports/country_all.html.

Strategic Training Needs Assessment in Tanzania's Public Sector: Insights from the Addie Model at NHIF

Mariam Mustafa Kuhenga^{1*} and Mohammed Bakari²

¹Tanzania Public Service College, Dar es Salaam, Tanzania

²University of Dar es Salaam.

Corresponding Author's Email: mariam.kuhenga@tpsc.go.tz

ORCID: <https://orcid.org/0009-0005-7568-7649>

Abstract

Effective training in the public sector requires a structured and strategic approach to identifying and addressing employee competency gaps. This study explored the application of the ADDIE model, comprising Analysis, Design, Development, Implementation, and Evaluation in guiding Training Needs Assessment (TNA) practices at the National Health Insurance Fund (NHIF) in Tanzania. Employing a mixed-methods approach, the study collected quantitative data from 152 NHIF employees and qualitative insights from 12 key informants through semi-structured interviews. Quantitative findings revealed a significant positive correlation between the Analysis phase of ADDIE and employee performance, with regression analysis confirming it as the strongest predictor of effective training outcomes. However, qualitative data highlighted key challenges, including informal and inconsistent needs analysis, generic training content, and weak post-training evaluation mechanisms. The study concludes that while NHIF's training initiatives reflect elements of the ADDIE model, gaps in systematic analysis, content customisation, and outcome evaluation hinder their strategic impact. The findings offer practical implications for strengthening TNA frameworks in Tanzania's public institutions and contribute to the broader discourse on human resource development in the Global South.

Keywords: *Training Needs Assessment, ADDIE model, Public Sector, Strategic Training, Human Resource Development*

INTRODUCTION

Training is among the most critical activities to improve productivity in an organisation and give it a competitive advantage. Training is necessary for the workforce to acquire the knowledge, skills and attitudes needed to effectively carry out their jobs as greater knowledge and practice in tasks increase competency (Yawson & Greiman, 2023). Training can help

overcome the performance issues triggered by a lack of adequate job knowledge on the part of the staff. Globally, public sector institutions are increasingly under pressure to enhance efficiency, accountability, and service delivery amid rapid technological advancements, fiscal constraints, and growing citizen expectations (Mfaume, 2020). To meet these demands, strategic investment in employee capacity development has become imperative. Effective Training Needs Assessment (TNA) is a critical component of workforce development, as it ensures that training initiatives are aligned with actual performance gaps, organisational goals, and evolving service requirements (Ebru, 2020).

Training needs assessment is a critical component of the training system, as it provides essential data to determine who should undergo training, which training programmes are required, and how the outcomes of training programmes should be evaluated (Amegayibor, 2021). Inadequate or incomplete training can potentially exacerbate performance deficiencies in extreme cases (ILO, 2020). Therefore, initiating training without conducting a thorough needs analysis risks inefficacy and squandering organisational resources (Mahmud, 2019; Mugizi & Turyakira, 2021). In summary, a needs assessment is regarded as a fundamental prerequisite for effective training programmes.

Internationally recognised instructional design models such as ADDIE (Analysis, Design, Development, Implementation, and Evaluation) offer a structured framework for planning, delivering, and evaluating training interventions (Nduka & Ololube, 2020; Yeh & Tseng, 2019). However, despite widespread endorsement of TNA best practices, many public institutions continue to adopt ad hoc and reactive approaches to training, often driven by compliance, donor requirements, or budget availability rather than evidence-based workforce planning (URT, 2021).

In Sub-Saharan Africa, public sector training remains a significant concern due to issues of poor planning, weak institutional capacity, and limited evaluation mechanisms (ILO, 2020). Many government training programs lack strategic orientation, resulting in misalignment between training content and public service delivery needs (Tessema et al., 2020). Moreover, the absence of comprehensive needs assessments often leads to resource wastage, low knowledge retention, and limited behavioural change among public servants (African Capacity Building Foundation (ACBF), 2020). Studies across African countries have consistently pointed

to the ineffectiveness of training programs that do not incorporate systematic analysis of performance gaps and contextual challenges (Ebru, 2020; Nduka & Ololube, 2020). The problem is exacerbated by reliance on external trainers, limited follow-up mechanisms, and a lack of alignment with national development agendas.

Tanzania's public sector has undergone several reform initiatives aimed at enhancing institutional performance, including the Public Service Reform Programme (PSRP) and the National Framework for Training and Development (URT, 2021). Despite these efforts, capacity gaps persist in various government agencies. Many training interventions are reportedly generic, donor-driven, or implemented without adequate follow-up, raising questions about their effectiveness in addressing actual performance deficits (Mfaume, 2020; Mgobela & Mtengeti, 2021). Literature indicates that many training programmes are driven by personal desires rather than identified needs, with TNA often conducted haphazardly or without due diligence (Othayman, 2022; Yawson & Greiman, 2023). Hayes (2022) contends that most organisations fail to implement TNA adequately, perceiving it as costly and time-consuming. Abdullah (2021) suggests that a comprehensive approach to TNA is rare, with organisations often resorting to less systematic procedures influenced by tradition, office politics, and internal/external pressures. Despite numerous studies on the relationship between training and employee efficiency, a gap regarding the impact of training phases on employee effectiveness still exists. Therefore, this study is set to address this gap by examining the benefits of TNA for organisations and elucidating its relationship with employee efficiency.

Training Needs Analysis (TNA) is widely acknowledged as the cornerstone of all training endeavours, which is essential for delivering appropriate and effective training that meets both individual and organisational needs while ensuring value for money (Huie, Cassaberry & Rivera, 2020; Ochieng & Hossain, 2021; Hayes, 2022). Over the past few decades, TNA approaches have evolved, with numerous models and methods proposed and implemented to aid professional development (Haryono, Supardi & Udin, 2020; Ebru, 2020). In today's rapidly changing environment, TNA must be adaptable to align with unplanned learning requirements (Abdullah, 2021; Hayes, 2022).

This challenge is especially concerning for a dynamic institution like NHIF, which must navigate frequent policy changes, digital transformation, and increasing stakeholder expectations. Without a structured TNA framework, NHIF risks misallocating training resources and failing to build the institutional capacity needed for effective service delivery.

The study is significant as it provides empirical insights into how the ADDIE model can be applied to improve strategic TNA practices within the Tanzanian public sector. Additionally, it contributes to the limited body of research on structured training frameworks in public institutions, particularly within health financing agencies. Moreover, it informs policy-makers and HR practitioners on the need to institutionalise TNA processes that are evidence-based, role-specific, and outcome-driven. By identifying practical gaps in the analysis, design, and evaluation of training at NHIF, the study helps to bridge the disconnect between training investments and organisational performance. The findings have policy relevance for other government institutions undergoing reforms and capacity-building efforts in Tanzania and similar contexts in the Global South.

Although there is substantial literature on public sector training and human resource development, empirical studies focusing on the strategic application of the ADDIE model to TNA in Tanzania's public institutions remain scarce. Most existing research tends to focus on general training challenges, such as funding and attendance, rather than the design, planning, and evaluation of training initiatives using structured models like ADDIE (Jeon & Song, 2020; Mensah, Kwame & Asefa, 2023; Ochieng & Hossain, 2021). Furthermore, while government frameworks advocate for systematic TNA, there is little evidence of how these guidelines are operationalised at the institutional level.

This study fills that gap by examining the extent to which NHIF applies the ADDIE model to guide its training needs assessment practices, providing quantitative and qualitative evidence on the effectiveness and limitations of current TNA processes, highlighting the disconnect between policy prescriptions and actual practice in training planning and evaluation, offering context-specific recommendations for improving the strategic alignment of training with institutional goals. Overall, effective TNA is essential for identifying training needs at various levels, ensuring

alignment with organisational objectives, and ultimately enhancing organisational performance. However, there remains a gap in understanding the impact of TNA effectiveness on employee efficiency, highlighting the need for further research in this area. This study aims to address this gap by examining the applicability of the ADDIE model in guiding TNA practices in public organisations, using NHIF as a case study.

MATERIALS AND METHODS

This study adopted a convergent parallel mixed-methods design, integrating both quantitative and qualitative approaches to gain a comprehensive understanding of Training Needs Assessment (TNA) practices at the National Health Insurance Fund (NHIF). The mixed-methods design was selected to allow triangulation of findings—quantitative data offered measurable patterns, while qualitative data provided contextual depth and meaning. The use of the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) as a theoretical framework further supported the integration of both data types in assessing strategic training processes at NHIF.

The research was conducted at NHIF's Headquarters in Dodoma, along with its four regional offices in Dodoma, Kinondoni, Ilala, and Temeke in Dar es Salaam. These locations were selected due to their significance as NHIF operational hubs and their representative employee populations. NHIF is a crucial government healthcare funding mechanism in Tanzania, established by Act of Parliament No.8 in 1999, dedicated to providing medical care services to its members through monthly contributions (NHIF, 2013). NHIF was chosen for its proactive approach to employee training and development, essential for addressing operational complexities such as increasing claims and membership, as well as evolving technologies requiring continuous skill updates.

The target population consisted of NHIF employees across various cadres, including: human resource officers, departmental heads, technical and administrative staff, and Employees who have participated in recent training programs (2020-23). This population was selected due to its direct involvement in training planning, implementation, and benefit, making them appropriate informants for assessing the effectiveness of TNA. To ensure representation across different departments and staff levels, a stratified random sampling technique was used. The population

was divided into strata based on job category (HR, claims, finance, ICT, etc.), and random samples were drawn proportionally from each stratum.

A total of 152 respondents were selected to participate in the quantitative survey. The sample size was determined using Yamane's formula (1967) for a known population size, with a 95% confidence level and a 5% margin of error. For the qualitative component, 12 key informants were purposively selected based on their roles, experience, and involvement in training processes at NHIF. These included: Senior HR officers, Training coordinators, Department heads, and Selected training beneficiaries. Purposive sampling allowed the selection of information-rich participants who could provide in-depth insights into the strategic application of the ADDIE model in training needs assessment and training planning.

To ensure accessibility and convenience, the questionnaire was distributed in both hardcopy and softcopy formats. The items included in the questionnaire were directly aligned with the study's objectives to maintain focus and relevance. To enhance the accuracy and interpretability of the findings, weighted mean analysis based on a Likert scale was employed to collect quantitative data. This method provided a more refined understanding of the degree of agreement or disagreement, rather than relying solely on frequency counts. The weighted mean approach is recognised for balancing variations in response intensity, mitigating the influence of outliers, and facilitating meaningful comparisons across different items (Kothari & Garg, 2019). This method was cost-effective, ensured anonymity, and was appropriate for literate respondents familiar with NHIF operations.

Qualitative data were collected through semi-structured interviews, allowing for flexibility in probing deeper into participants' experiences and opinions. An interview guide was developed based on the ADDIE model, covering how training needs are identified (Analysis), how training is designed and developed and how training is implemented and evaluated. Interviews were conducted face-to-face and digitally (where necessary), recorded with consent, and later transcribed for analysis. This method was chosen to explore underlying issues, challenges, and contextual realities that quantitative tools might overlook.

Quantitative data were analysed using Statistical Package for the Social Sciences (SPSS) version 26. Techniques used included Descriptive statistics (means, frequencies, and standard deviations), Pearson's correlation to examine relationships between ADDIE phases and employee performance and multiple regression analysis to determine the predictive power of ADDIE phases on training outcomes. These statistical tools provided both summary trends and inferential insights into the influence of training practices.

Qualitative data were analysed using thematic analysis. The process involved Transcription and familiarisation with the data, coding based on emerging patterns and ADDIE framework categories, identification of key themes and sub-themes and integration of direct quotations to support thematic findings. Thematic analysis was suitable for capturing recurring ideas and variations in perspectives across participants.

To ensure content validity, the questionnaire and interview guide were reviewed by academic experts in training and human resource development. A pilot study involving 10 NHIF staff was also conducted to assess the clarity and relevance of the tools. Expert validation and piloting enhanced the appropriateness and precision of the instruments in capturing the intended constructs.

The internal consistency of the quantitative instrument was assessed using Cronbach's Alpha, which yielded an acceptable value of $\alpha = 0.81$, indicating strong reliability. Reliability testing ensured that the tool consistently measured the intended variables across respondents.

To ensure ethical considerations, ethical clearance was obtained from NHIF through official channels. Informed consent was obtained from all participants, with full disclosure of the study's purpose, voluntary nature, and right to withdraw. Anonymity and confidentiality were ensured through the use of codes and secure data storage. Data use was strictly limited to academic and policy research purposes. Adhering to ethical standards ensured the protection of participant rights and promoted trust and openness during data collection.

RESULTS AND DISCUSSIONS

Presentation of Quantitative Findings

Table 1
Descriptive Statistics

N=152

Variable	Mean	Standard Deviation	Minimum	Maximum
Analysis	3.12	0.74	1.80	4.50
Design	3.05	0.79	1.60	4.40
Development	2.98	0.83	1.40	4.20
Implementation	2.87	0.81	1.50	4.00
Evaluation	3.01	0.76	1.70	4.30
Employee Performance	3.14	0.71	1.80	4.40

Source: Field Data (2023)

On a 5-point Likert scale, all ADDIE phases scored close to 3.0, indicating neutral to slightly low perceptions of effective implementation. The lowest mean score was in Implementation (M=2.87, SD=0.81), suggesting that even when training needs were identified, they were not fully translated into well-executed training programs.

Table 2
Pearson's Correlation Analysis

Variable	Employee Performance (r)	p-value
Analysis	0.441**	0.000
Design	0.428**	0.000
Development	0.395**	0.000
Implementation	0.371**	0.000
Evaluation	0.439**	0.000

Source: Field Data (2023)

Note: $p < 0.01$ indicates significance at the 99% confidence level.

While all phases show a moderate, positive, and significant correlation with employee performance, the coefficients are notably lower than those typically seen in effective training environments. This implies that although TNA has a theoretical and statistical link to performance, the actual level of practice is not strong enough to generate a higher impact.

Table 3
Multiple Regression Analysis
Model Summary

R	R ²	Adjusted R ²	Std. Error of Estimate
0.553	0.306	0.282	0.602

ANOVA

Source	SS	df	MS	F	p-value
Regression	14.136	5	2.827	7.801	0.000
Residual	31.912	146	0.219		
Total	46.048	151			

Coefficients

Predictor	β (Beta)	Std. Error	t	p-value
Constant	1.482	0.298	4.97	0.000
Analysis	0.184	0.085	2.165	0.032
Design	0.172	0.087	1.977	0.050
Development	0.158	0.091	1.736	0.085
Implementation	0.134	0.088	1.523	0.130
Evaluation	0.179	0.084	2.131	0.035

Source: Field Data (2023)

The model explains only 30.6% of the variance in employee performance ($R^2 = 0.306$), indicating that factors beyond the ADDIE-based TNA process influence a substantial portion of performance outcomes. Only the Analysis and Evaluation phases have significant predictive power ($p < 0.05$). Implementation and Development show no statistically significant effect, suggesting major weaknesses in translating identified needs into actionable and effective training programs.

The findings reveal that while TNA is statistically linked to employee performance, its practical application at NHIF is weak. Most phases scored close to neutral on the Likert scale, and the regression model shows a modest explanatory power. The low mean scores and moderate correlations indicate that the process is recognised as important in theory but insufficiently executed in practice, particularly in Implementation and Development, where gaps in follow-through are evident.

Presentations of Qualitative Findings

Qualitative data were collected through semi-structured interviews with 12 NHIF staff, including training officers, departmental heads, and employees who had participated in training programs. Many respondents expressed concerns over the ad hoc and informal nature of Training Needs Assessments (TNA) at NHIF. Instead of being data-driven or competency-based, TNA was reported to rely on managerial discretion, personal requests, or budget availability, rather than a systematic performance gap analysis. This resonated with some respondents,

“The training nominations come from supervisors. Sometimes they just pick whoever is available or likely to benefit personally.” (Interview 3, December 2023)

One of the HOD explicitly showed that TNA was minimally conducted as expressed,

“We do not conduct skills audits or performance reviews to determine training needs. It is just assumed that departments know what is required.” (Interview 3, December 2023)

This lack of strategic alignment reflects a weak application of the “Analysis” phase of the ADDIE model, which stresses the need to diagnose gaps between existing competencies and desired outcomes (Olufayo & Akinbo, 2021). The research findings demonstrated that during the analysis phase, the training needs analysis (TNA) process played a crucial role in pinpointing the disparity between the current and desired competencies of NHIF employees. These findings underscored the organisation's practice of delineating learning objectives and tailoring training initiatives accordingly. Moreover, the assessment encompassed the examination of the learning environment and the existing proficiency levels of the learners.

At NHIF, it was observed that the identification of training needs was predominantly overseen by the HR Department at the Headquarters, with support from Heads of Department (HODs) across various sectors. HODs conducted performance evaluations for their respective subordinates, utilising the outcomes to ascertain the rationale and scope of the required training interventions. Semi-annual (in December) and annual (in June) individual performance appraisals were conducted to determine performance gaps or issues, guiding the selection of suitable training interventions. Subsequently, training plans were executed in alignment with the identified needs. While the OPRAS report, a TNA methodology, confirmed the conduct of TNAs, the report did not provide evidence of the targeted training for employees who were identified with performance gaps.

Interviews with supervisors, administrators, and employees were instrumental in identifying areas of performance deficiency and determining which skills necessitated enhancement. Additionally, customer feedback, often manifested through complaints about service

delivery, served as a valuable resource for pinpointing performance shortcomings. These insights gleaned from customer complaints informed the formulation of training strategies aimed at rectifying the identified deficiencies and enhancing service quality. One of the HR Managers, during the interview with the researcher, clearly stated,

"The selection procedures for training purposes are primarily dependent on the needs identified through Training Needs Analysis (TNA), customer complaints, and the availability of funds as outlined in our training policy. Employees are sponsored based on the requirements of the Fund's departments. When there is adequate funding for sponsorship, approvals are granted based on the timing of applications (Interview 3, December 2023)."

From the foregoing discussion, it appears that participants were partially chosen through a rigorous corporate Training Needs Analysis (TNA) process based on the identified skill gaps. The selection process was reported to occur annually. The analysis from the OPRAS report, using one of the TNA methods, suggested that TNA was indeed conducted. However, there was no evidence to confirm whether employees identified with performance gaps were subsequently selected for training. Instead, some employees seemed to be chosen on an ad hoc basis, as reported by some respondents.

The study also highlighted several strategies implemented to address training capacity issues. For instance, training officers and supervisors prioritised their training schedules. Mandatory training, such as induction or orientation sessions, took precedence, as recruits were required to undergo this basic training annually. Similarly, training that aligned with strategic organisational needs and specific position requirements was also prioritised. Finally, training and workshops aimed at enhancing individual competence, such as interpersonal skills, accounting and auditing, legal processes, and medicine/pharmacy services workshops, were given minimal priority.

Nevertheless, the findings indicated that some employees attended both long-term and short-term training, without being included in the employer's training calendar and plans, simply because they could sponsor themselves. Additionally, in some cases, the selection for training was based on employee requests or recommendations from Heads of Department (HODs). This implies that needs assessment was only

conducted for certain employees. Consequently, some employees were chosen for training without consideration of their skills or knowledge gaps, leading to numerous complaints citing corruption and favouritism as drivers in the training selection process. One of the respondents, for example, had this to say,

"Here, the selection to attend training favours employees who are closely associated with the Human Resources (HR) Department and Heads of other Departments. It is noticeable that certain employees consistently attend short courses every year, while others are overlooked, and some are denied sponsorship altogether" (Interview 2, December 2023).

This suggests that the procedures for selecting employees for training were not fair enough, despite the good intentions of the training policy. This is because some employees were sponsored quite often, while others remained on the waiting list or were not considered at all. The respondents were also asked to provide their views on how often the organisation conducts TNA. The findings reveal that 64 per cent of participants reported that their organisation conducts TNA regularly every two to three years. However, conducting TNA regularly does not always reflect the effectiveness of conducting a TNA process.

The researcher believes that this view of managers responsible for training is not based solely on the annual plan for training, but also on the needs analysis process. It is not necessary to conduct TNA every year, but it must be done when the organisation needs it. This demonstrates that the purpose of TNA is to ensure that the objectives of each type of training are compatible with the strategic objectives of the organisation. Nevertheless, the practice of TNA at NHIF was limited due to financial constraints, inadequate support from top management, including some managers' indifference towards training, and a shortage of skilled HR personnel for conducting TNAs, among other reasons. Consequently, some employees received training without consideration of their performance gaps, resulting in training that was somewhat irrelevant and had little impact on both their performance and organisational training objectives.

Some HR Officers were asked for their views on "When is training provided for employees?" to establish the reasons behind the training. The supervisors reported that "when employees are newly recruited" (43%) is the most common reason. This is followed by "*on new equipment*" (17%)

and then by "*the creation of new jobs*" (11%). Other reasons reported include; "*on new working methods*" (11%), "*based on the results of training needs analysis*" (11%); "*when requested by top management*" (10%); "*when performance appraisal assessment shows some gap*" (7%); and "*when customers complained about particular services*" (7%) in that order.

These findings provide a reasonably clear picture that supervisors were not qualified and not able to analyse training needs; therefore, they cover the required numbers for training annually through a list of new employees or candidates running new equipment or due to changes in working systems or methods. Moreover, line managers were dependent upon discussions and direct observation when nominating their subordinates for training courses. They do not need to use analytic techniques or the link between the needs of individuals and the needs of the organisation. This is another indication of the lack of experience, knowledge, and skills in the identification of needs. In principle, training needs ought to be understood and catered for at all three levels; and an ideal training design addresses the varying needs of the employees, the tasks to be performed, and the overarching goals and objectives of the organisation.

Therefore, it could be argued that, in general, the officials identifying training needs in NHIF lacked experience in the field of TNA. This finding was supported by findings from Senior Managers about TNA personnel in their organisation, who reported that their organisation lacked well-qualified, experienced TNA employees who need to be specialised and know how to conduct effective training programmes. Their comments indicated a lack of expertise in carrying out the training needs analysis process, in identifying training needs in the current situation based on personal experience for line supervisors, as well as the views of workers in the selection of training programmes that suit them. This finding, namely, the lack of qualified and experienced staff, has harmed training and developing employees, as found by many other researchers and authors, including (Garavan, Carbery, & Rock, 2022; ILO, 2020; Ebru, 2020; and Branch, 2021).

The proposal to implement the ADDIE model presents a promising solution to these challenges. By integrating systematic feedback loops and evaluation stages throughout the training process, NHIF can improve the

quality and relevance of its training initiatives. This approach not only ensures that instructional materials meet design specifications but also enables ongoing refinement to optimise training outcomes. Given that the ADDIE model involves creating a needs analysis report as the foundation for the instructional design process, the model aids in identifying the audience, training objectives, and project constraints. Moreover, the model facilitates the creation of a project plan and the determination of the necessary resources to complete the project (Almelhi, 2021). Therefore, the model can effectively guide the training needs assessment and training process at NHIF; it can also ensure that individuals with performance deficiencies are identified and provided with relevant training to enhance their knowledge, skills, and competencies.

Discussion of Findings

The quantitative results confirm that the Analysis phase is central to effective training outcomes, which aligns with qualitative narratives describing the need for structured performance gap analysis. However, despite its strategic importance, the actual practice at NHIF reflects inconsistencies, suggesting a disconnect between policy and execution.

Similarly, while Design and Development phases show moderate positive correlations with outcomes, qualitative evidence exposes content and contextual gaps. This suggests that NHIF needs to adopt a more learner-centred and role-specific design framework for training. Analysis Phase – Strategic Disconnect in Needs Assessment. These findings resonate with the findings by Othayman (2022), who argued that if clear objectives are not set in a training programme, it is less likely to succeed. The findings of this study have shown that the majority of training programmes seem to be based on the programme creator's desires and beliefs rather than actual employee training needs. This finding is consistent with Karanja and Anyieni (2022), who noted that many training programmes are based on personal wants rather than identified needs, and that TNA is based on trial and error and conducted unfairly.

The findings show that NHIF lacks a formal, organisation-wide TNA framework. This is a critical failure point within the Analysis phase of the ADDIE model, which serves as the foundation for all subsequent training interventions. According to Smith and Brown (2022), effective TNAs must be systematic, involving organisational analysis, task analysis, and person analysis. However, NHIF's reliance on intuition and non-

standardised nomination processes results in training that may not address fundamental skill gaps.

This is echoed by Tessema et al. (2020), who found similar issues in East African public institutions where training is often driven by available funding rather than strategic workforce planning. In this regard, NHIF's approach lacks alignment with Strategic Human Resource Management (SHRM) principles, which advocate that all HR functions, including training, should support the strategic direction of the organisation (URT, 2020). The qualitative data indicate a weak application of the Design and Development phases of the ADDIE model. These stages require careful planning of content, selection of delivery methods, and customisation to the learners' needs and context (Othayman, 2022). The absence of defined learning outcomes or competency frameworks results in low engagement and transfer of learning.

This reflects findings by Smith (2024), who argues that training effectiveness in the public sector is compromised when training content is overly generic or does not reflect contextual realities. In NHIF's case, heavy dependence on outsourced facilitators with minimal institutional knowledge further weakens the learning process. The ADDIE model emphasises the importance of involving subject matter experts and internal stakeholders in the design process, a component largely absent at NHIF.

Finally, although Implementation and Evaluation were statistically significant predictors, they had the lowest explanatory power. This reflects the perception among staff that post-training evaluation is weak or non-existent, a common issue in many public sector institutions across Africa (Kitone, 2022; Mosha & Milanzi, 2020).

Globally, studies (Doe, 2024; Gaite, Asiimwe, Emurugat, & Mugenyi, 2023) emphasise the importance of strategic TNA in aligning workforce competencies with institutional goals. In Africa, weaknesses in needs assessment and evaluation are cited as significant obstacles to training effectiveness (Ampofo, 2020; ILO, 2016).

In Tanzania's public sector context, this study confirms prior observations by URT (2021) that training tends to be budget-driven rather than needs-driven. The application of the ADDIE model shows potential but is not

fully institutionalised at NHIF. The Implementation and Evaluation phases also show serious gaps. Despite regular training delivery, qualitative data suggest that participants return to their roles with limited support or monitoring, making the sustainability of training impact questionable. Furthermore, post-training evaluation is not conducted rigorously, violating the ADDIE model's expectation for formative (during training) and summative (after training) evaluations (Branch, 2021; Nduka& Ololube, 2020; Molenda, 2015).

These findings are consistent with Kirkpatrick's Four-Level Model (1996), which emphasises the importance of evaluating not only reactions and learning, but also behaviour change and results. In NHIF, training evaluations are limited to reaction-level assessments and are not systematically used for performance improvement.

Scholars like Almelhi (2021) and Phillips & Phillips (2003) emphasise the need for ROI-based evaluation and follow-up coaching as part of effective training implementation practices, which are missing at NHIF due to ineffective training needs analysis.

The qualitative findings, interpreted through the lens of the ADDIE model and contemporary training literature, suggest that NHIF's training system is partially aligned with strategic goals but lacks the rigour, structure, and feedback loops required for transformative capacity development. The Analysis phase is the most underdeveloped yet foundational, while Design, Development, and Evaluation suffer from poor contextualization and lack of systematic monitoring.

CONCLUSIONS

The findings from the study highlight several key issues in the Training Needs Assessment (TNA) process at NHIF and suggest that the ADDIE model could provide a structured framework to address these challenges. The study reveals that while TNA was conducted, there was a lack of evidence showing how employees identified with performance gaps were selected for training. Thus, the ADDIE model's needs analysis phase can help address this problem by systematically identifying performance gaps and determining the specific training needs of employees based on the identified gaps. Furthermore, the study concludes that the utilisation of customer complaints is a valuable source of information for identifying performance deficiencies. The ADDIE model's needs analysis phase can

incorporate this feedback by including methods to gather and analyse customer complaints as part of the needs assessment process.

Implication of the Findings

Therefore, the systematic approach provided by the ADDIE model can help overcome constraints on resources and managerial support, ultimately leading to more effective training outcomes. By applying the ADDIE model to guide the TNA process, NHIF can ensure that training initiatives are strategically aligned with organisational objectives, efficient utilisation of resources, and that employees receive training that addresses their specific performance needs.

NHIF and similar public institutions must shift from reactive, compliance-oriented training to strategic, performance-based training that is integrated into broader organisational development efforts. This requires a cultural shift in how training is perceived from a cost to an investment in institutional excellence.

The study contributes to the growing body of literature on strategic human resource development in the public sector by demonstrating how the ADDIE model can serve as a diagnostic and planning tool for aligning training with institutional performance. It also highlights the importance of contextual adaptation of global instructional design models in developing country settings.

NHIF should adopt a formal TNA process anchored in the ADDIE model, beginning with routine performance gap analyses, skills audits, and stakeholder consultations. This will ensure that training is proactive, data-driven, and aligned with strategic priorities.

Training programs should be developed based on specific job roles and institutional contexts. Greater involvement of internal subject matter experts during the Design and Development phases can enhance the relevance and effectiveness of content delivery.

NHIF should implement a multi-level evaluation system, drawing from Kirkpatrick's model to assess training impact at the levels of learning, behaviour change, and organisational performance. Follow-up coaching and on-the-job assessments should be integrated.

NHIF should invest in digital tools and HR analytics systems to automate needs assessments, track training participation, and generate real-time insights on training effectiveness.

ACKNOWLEDGEMENTS

This work would not have been completed without the assistance or contribution of various individuals. I am thankful to everyone who aided me in different capacities towards the successful completion of this task. I would like to express my gratitude to the management of the National Health Insurance Fund (NHIF) for permitting me to use their organisation and for their assistance and guidance during my data collection at the Head Office, Dodoma, and the regional offices of Temeke, Ilala, Kinondoni, and Dodoma.

REFERENCES

- Abdullah, M (2021). Does Training Needs Analysis (TNA) Matter for Training Effectiveness? – A Survey of some Manufacturing firms. *Chattogram. School of Arts Humanity and Social Sciences*, 9(6), 275-280.
- African Capacity Building Foundation (ACBF). (2020). *Repositioning public sector training institutions in Africa*. <https://elibrary.acbfpact.org>.
- Almelhi, A. M. (2021). Effectiveness of the ADDIE Model within an E-Learning Environment in Developing Creative Writing in EFL Students. *English Language Teaching*, 14(2), 20-36.
- Amegayibor, G. K. (2021). Training and development methods and organizational performance: A case of the local government organization in Central Region, Ghana. *Journal of Social, Humanity, and Education (JSHE)* ISSN 2746-623X, Vol 2:1, 35-53 <https://doi.org/10.35912/jshe.v2i1.757>.
- Ampofo, S. (2020). In-service teacher training in Ghana: An analysis of its effectiveness and implementation challenges. *International Journal of Educational Research*, 98, 100-115.
- Bin Othayman, M., Mulyata, J., Meshari, A., & Debrah, Y. (2022). The challenges confronting the training needs assessment in Saudi Arabian higher education. *International Journal of Engineering Business Management*, 14, 18479790211049706.
- Branch, R. M. (2021). *Instructional design: The ADDIE approach* (2nd ed.). Springer. <https://doi.org/10.1007/978-3-030-53455-3>.

- Ebru, K. O. Ç. (2020). Design and Evaluation of a Higher Education Distance EAP Course by Using the ADDIE Model. *Elektronik Sosyal Bilimler Dergisi*, 19(73), 522-531.
- Garavan, T. N., Carbery, R., & Rock, A. (2022). Re-imagining public sector training in the Global South: A learning systems perspective. *Human Resource Development International*, 25(1), 1–20.
<https://doi.org/10.1080/13678868.2021.1955432>.
- Haryono, S., Supardi, S., & Udin, U. (2020). The effect of training and job promotion on work motivation and its implications on job performance: Evidence from Indonesia. *Management Science Letters*, 10(9), 2107-2112.
- Hayes, K. (2022). *Strategic human resource development*. Routledge.
- Huie, C. P., Cassaberry, T. and Rivera, A. K. (2020). The Impact of Tacit Knowledge Sharing on Job Performance. *International Journal on Social and Education Sciences*. Vol. 2: 1. Pp.34-40.
<https://files.eric.ed.gov/fulltext/EJ1264026.pdf>.
- International Labour organisation (ILO). (2020). *Public sector capacity development in Africa: Challenges and strategies*.
<https://www.ilo.org>.
- Jeon, S., & Song, S. (2020). Effects of Formative Training Evaluation on Partial Work Performance Mediated by Self-efficacy and Organisational Commitment. *International Journal of Human Resource Management*, 31(1), 2144-2165.
- Karanja, P., & Anyieni, A. (2022). Influence of training needs assessment on employee performance in public sector organisations in Kenya. *International Journal of Human Resource Studies*, 12(1), 45–61.
- Kirkpatrick, D. L., & Kirkpatrick, J. D. (1996). *Evaluating training programs: The four levels* (rev. ed.). Berrett-Koehler.
- Kitone, E. (2022). Training and employee performance in private hospitals in Uganda: A case of Kisubi Hospital. Student Thesis, Nkumba University Repository. Uganda.
<https://pub.nkumbauniversity.ac.ug/xmlui/handle/123456789/881>.
- Kothari, C. R., & Garg, G. (2019). *Research methodology: Methods and techniques* (4th ed.). New Age International.
- Maduningtias, L. (2020). The effect of working discipline and training on employee performance (at PT. Transkom Indonesia in Tangerang). *PINISI Discretion Review*, 1(2), 65-72.

- Mahmud, K. T., Saira Wahid, I., & Arif, I. (2019). Impact of training needs assessment on the performance of employees: Evidence from Bangladesh. *Cogent Social Sciences*, 5(1), 1705627.
- Mensah, J., Kwame, D., & Asefa, T. (2023). The impact of structured training policies in Ghana, Uganda, and Rwanda. *African Human Resource Journal*, 5(1), 102-115.
- Mfaume, H. (2020). The Role of Training in Enhancing Public Sector Performance in Tanzania. *Journal of African Administrative Studies*, 12(2), 88-103.
- Mgobela, H., & Mtengeti, P. (2021). Challenges of Training Evaluation in Tanzanian Public Sector: The Case of NHIF. *East African Public Policy Review*, 9(3), 65-82.
- Molenda, M. (2015). In search of the elusive ADDIE model. *Performance Improvement*, 59(5), 40-42. <https://doi.org/10.1002/pfi.21918>.
- Mosha, S., & Milanzi, P. (2020). The challenges on the implementation of employees training program in Tanzania.
- Mugizi, W., & Turyakira, P. (2021). Strategic training practices and employee performance in African public sector organisations. *African Journal of Management*, 7(3), 291-309. <https://doi.org/10.1080/23322373.2021.1939406>.
- Nduka, E., & Ololube, N. P. (2020). Evaluating training effectiveness in Nigerian public sector organisation s: An ADDIE model perspective. *International Journal of Public Administration*, 43(14), 1212-1224. <https://doi.org/10.1080/01900692.2019.1668416>.
- Ochieng, J. A., & Hossain, M. J. (2021). The role of training and development in employee performance at the Kenya National Hospital. *International Journal of Health Services Research and Policy*, 6(4), 21-30. <https://doi.org/10.20431/2455-5309.0604003>.
- Olufayo, B. A., & Akinbo, T. M. (2021). Training gap identification as determinant of employees' job performance in gas and energy company in delta state, Nigeria. *Journal of Human Resource Management*, 9(4), 108-119.
- Phillips, J. J. (2003). *Return on investment in training and performance improvement programs* (2nd ed.). Routledge. <https://doi.org/10.4324/9780080516257>.
- Smith, J. (2024). Challenges in implementing effective in-service training programs: The role of school administration. *Journal of Education Leadership*, 18(3), 45-60.

- Smith, J., & Brown, L. (2022). Challenges in educator professional development: A comprehensive review. *Educational Policy Journal*, 18(3), 40-50.
- Tessema, M. T., Ready, K. J., & Embaye, A. B. (2020). Public service training in Sub-Saharan Africa: Policy implications and institutional gaps. *Journal of African Public Affairs*, 12(2), 45–61.
- United Republic of Tanzania (URT). (2021). *Human Resource Development Policy for the Public Service*. Dar es Salaam: President's Office – Public Service Management and Good Governance.
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper & Row.
- Yawson, R. M., & Greiman, B. C. (2023). Strategic alignment of training in public institutions: Evidence from developmental states. *Journal of Human Resource and Sustainability Studies*, 11(1), 78–94. <https://doi.org/10.4236/jhrss.2023.111006>.
- Yeh, H. C., & Tseng, S. S. (2019). Using the ADDIE Model to Nurture the Development of Teachers' CALL Professional Knowledge. *Journal of Educational Technology & Society*, 22(3), 88-100.

Community Service Orders and Prison Congestion in Tanzania

Alexander Ndibalema

The Open University of Tanzania

alexander.ndibalema@out.ac.tz or alekaija@gmail.com

Abstract

There is a problem with overcrowding of inmates in Tanzania's prisons, which community service orders could significantly reduce. However, sentencing data show that judges rarely impose community service orders for reasons not well supported by research. In this context, this study explored why law enforcement officers tend to avoid issuing community service orders. The research was carried out in Keko, Segerea, and Ukonga Prisons in Dar es Salaam. As an ethnographic study, it used a phenomenological qualitative research design. Data was collected through structured questionnaires, in-depth interviews, and documentary review from 40 respondents selected purposively and randomly. The qualitative data were analyzed using Atlas.ti software. The study found that community service orders were rarely applied to eligible offenders. It revealed that the decision to impose these orders depended more on the magistrate's discretion than on legal requirements. Consequently, magistrates often chose imprisonment over non-custodial sanctions. Based on these findings, the study recommended that the barriers preventing the use of community service orders should be addressed by all stakeholders. Enforcers should consider the benefits of this sanction for the state, offenders, society, and families of offenders.

Keywords: *Non-custodial measures; community service orders; prisoners; imposition; law enforcers*

INTRODUCTION

Prisons and detention centers have long been used to punish offenders, prevent future crimes, and promote social harmony. However, the reality inside jails often does not meet the standards for humane treatment of inmates. Around the world, overcrowded prisons with unsanitary conditions put prisoners' lives at risk. Fair and Walmsley (2022) in the World Prison Population List state that about 11 million people are held in penal institutions worldwide, mostly as pre-trial detainees, remand, or

sentenced prisoners. It reveals that the prisoner population has increased by 20% from 2008 to 2022. According to NACTA's (2018) report on reducing pre-conviction detention in Pakistan to address jail overcrowding, this remains a major issue. Prison overcrowding is a persistent global problem. As per PRI (2021), the COVID-19 pandemic worsened this issue, as some countries failed to follow health protocols. This resulted in a significant number of 532,100 COVID-19 cases and 3,931 deaths in prisons worldwide. In response, there was a rise in alternatives to incarceration, although their effectiveness varied.

As stated by the US (2023) in its Country Reports on Human Rights Practices, prison overcrowding in Africa is still marked as an insolvable problem in many countries. Prison conditions in Angola for instance, remained poor, with local activists and media highlighting overcrowding and violence. Adapted from Awopetu (2014), who evaluated jail overcrowding in Nigeria, this statement indicates that Guinea, Libya, Tunisia, and Nigeria have all suffered similar prison conditions. Consider the Owerri Prison in Nigeria, where 100 inmates share a cell that is 32 feet long by 28 feet wide and only has one toilet. The situation at Guinea's largest prison facility, which was built to house 300 inmates and is in the country's capital Conakry, deteriorated in 2016. Martin (2017), on the other hand, while examining the acceptance of human rights, stated that the situation in Uganda was worse because there were now 50,000 more convicts than the prisons could hold.

LHRC (2016;2020;2023) reported that the capacity of prisons in Tanzania is still designed to hold a total of 29,552 prisoners and remandees, while the number of prisoners has exceeded the capacity of more than 33,000 inmates. In the year 2020, overcrowding was contributed to by remands, whose number is more than 56% of all inmates in Tanzania prisons. Multiple sources, including speeches by Tanzanian Ministers of Home Affairs (2015;2018;2023;2024) and HRW reports (2017), consistently acknowledge that prison overcrowding in Tanzania persists despite ongoing efforts to alleviate congestion. From 2015 to 2023, the total number of prisoners and remandees in Tanzania has exceeded the prison capacity to accommodate, as per the Prison Management Regulations, 1968. The capacity has remained at 29,902, while the number was 33,027 prisoners in 2015 and 30,901 in 2023, whereas 18,857 are prisoners and 12,044 are remandees over and above the capacity. Referring to an Editorial (2017) from Daily News on Tanzania Prison Life, a sample of

Segerea prison in Ilala, Dar es Salaam Region, Tanzania, in December 2018, the number of all inmates was 2,036, among whom only 224 were imprisoned, and the rest 1,812 were on remand, while the official capacity stands at 920. As reported by Said (2019), Keko Prison in Temeke, Dar es Salaam Region, Tanzania, had 1,140 prisoners with an official capacity of 420, whereas Dodoma Central Prison had 1,338 with its official inmate capacity of 784, just to cite a few. Prison overcrowding in Tanzania exacerbates human rights violations through inadequate food, poor sanitation, and substandard health facilities, thereby increasing inmates' vulnerability to contagious diseases.

Whereas there are international protocols, and regional and national laws promoting adherence to prison-acceptable standards per square meter, the congestion of prisoners is still on the rise. Considering that there are non-custodial measures such as community service orders aiming to decongest the prisoners, the situation seems out of hand. This implies a knowledge gap regarding what constitutes the less-in-use of these non-custodial measures based on the scenario regarding the overcrowding in Tanzanian prisons and the alternative sentences that appear to not have been applied effectively even though there is space in the penal laws for doing so. The negative impacts of prison overcrowding could be mitigated by the proper application of community order sanctions. This study, therefore, investigates why Tanzanian law enforcers are reluctant to implement these sanctions, despite their potential benefits for offenders, their families, society, and the state.

METHODOLOGY

The study was carried out in prisons located in Keko, Ukonga, and Segerea prisons in Ilala and Temeke districts, Dar es Salaam. The selection considered that Dar es Salaam has recorded the highest criminal incidences in the nation, as well as the overcrowding in particular jails. According to URT (2020), the total assessment of crimes in Tanzania, reveals that minor offences have been more prevalent in the areas of Kinondoni (55,521), Mwanza (48,086), Ilala (40,021), and Temeke (34,386) taking the lead of regions in Tanzania Mainland with a high rate of crime commission by 27% of all minor offences committed (143,628 of 526,941 minor crimes) (Table 1).

Table 1

Number of Minor Criminal Offences by Police Force Regions and Type of Offence, Tanzania, January – December 2020

Region	Greed-related offences	Violations against Humanity	Moral Transgressions	Total
Arusha	11,668	6,831	6,797	25,296
Ilala	19,878	8,793	11,350	40,021
Temeke	15,120	12,625	6,641	34,386
Kinondoni	24,928	14,134	16,459	55,521
Dodoma	11,286	7,893	1,604	20,783
Geita	6,318	5,641	6,445	18,404
Iringa	5,295	2,109	2,830	10,234
Kagera	6,907	5,351	3,321	15,579
Katavi	3,365	2,422	1,921	7,708
Kigoma	4,224	3,216	2,674	10,114
Kilimanjaro	9,702	7,995	9,924	27,621
Lindi	3,463	2,011	533	6,007
Mara	4,770	5,764	552	11,086
Manyara	5,103	3,723	2,429	11,255
Mbeya	8,426	10,539	1,930	20,895
Morogoro	12,226	8,640	4,275	25,141
Mtwara	4,689	2,185	1,769	8,643
Mwanza	22,198	15,219	10,669	48,086
Njombe	3,753	1,952	1,814	7,519
Pwani	7,091	3,354	2,345	12,790
Rufiji	2,730	1,573	813	5,116
Rukwa	3,534	2,680	2,269	8,483
Ruvuma	5,169	2,632	2,289	10,090
Shinyanga	7,910	4,021	2,100	14,031
Simiyu	2,969	2,376	1,415	6,760
Singida	5,658	4,400	2,763	12,821
Songwe	3,676	2,014	1,677	7,367
Tabora	6,448	5,792	2,396	14,636
Tanga	9,625	7,738	1,304	18,667
Tarime - Rorya	3,900	6,746	668	11,314
Wanamaji	61	26	-	87
Reli	150	30	50	230
Tazara	54	12	32	98
Viwanja vya Ndege	50	5	30	85
Bandari	32	18	17	67
Tanzania Bara	242,376	170,460	114,105	526,941

Source: Tanzania Police Force, 2020

This is an ethnographic study that adopted a phenomenological qualitative research design to assessing the applicability of community service orders

towards reducing overcrowding in Tanzania Prisons. The method was chosen because it provides details on two major phenomena: non-custodial punishment and overcrowding in Tanzanian prisons. All respondents who had some involvement in punishing and rehabilitating offenders made up the study's population. It included all the chosen respondents who were enrolled in any of the systems and facilities for correction and rehabilitation. Purposive and random sampling strategies, as well as probability and non-probability sampling, were used in this investigation. These two sampling techniques were chosen with consideration for the various roles and purposes of the samples chosen, since some respondents were chosen on purpose while others were chosen at random from their respective clusters. In this qualitative phenomenological study, the sample size of 40 respondents was determined by the saturation factor based on the number of in-depth interviews and Focus Group Discussions (FGD) administered to each category of respondents (Table 2). According to Marshall et al. (2013), the secret to outstanding qualitative data is saturation. It suggests continuously enrolling new participants in the study until all relevant data have been collected.

Table 2
Distribution of respondents and Sampling Frame

SN	Respondents	Number
1	Community members other than leaders	6
2	Ward Executive Officers	3
3	Religious leaders	3
4	Prison Staff Officers	3
5	Court Officials	5
6	Police Officers	5
7	Probation and Community Service Department Officials	2
8	Probation Officers	2
9	Resident Magistrate	3
10	Judge	1
11	Parole Board Members (DPP, RMO, SWO, Senior Officer from RC)	4
12	Prisoners	3
Total		40

Source: Ndibalema, 2021

In achieving the set objectives of the study, different methods and tools for collecting data were employed. Those included in-depth interviews, FGD, and documentary reviews. Qualitative data collected were analyzed

using Atlas.ti software. The Atlas.ti software assists in the accomplishment of thematic content analysis. The content analysis software formulated by Laurence Bardin (2011) is one of the useful resources for data analysis in qualitative research. The study was based on Grounded Theory in adherence to saturation point, inductive thematic analysis; data, and thematic/code saturation approaches as per Guest, et al., (2020). The base size, the run length, and the new information threshold were the three components that made up the approach for operationalizing saturation points. Strict compliance with all ethical standards was maintained. All material obtained during this research was kept confidential and was dedicated for use in only this academic research. The inquiries made were not insensitive to any respondents or institutions. In assuring rigour and increasing the trustworthiness of the findings, the conditions of validity and reliability were taken into consideration.

Regarding theoretical framework, numerous theories could explain the causes of overcrowding and, on the same note, indicate the potential solutions to the situation in various prison setups. Nonetheless, the current study opted for Deterrence and Reformatory Theories categorized as theories of punishment to explain the reasons for either prison overcrowding or avoidance of congestion by application of other measures than incarceration. Deterrence, according to deterrence theorists, functions in two distinct ways. An offender would first be imprisoned to deter him from committing another crime for a predetermined amount of time. Second, this incapacitation is intended to be so unpleasant that the other perpetrator will be deterred from continuing his unlawful activity. It implies that privatization is the most effective method for preventing crime since it aims to remove offenders from society and prevent them from committing crimes again. According to Mishra (2016) as opposed to Deterrence Theory, Reformatory Theory dwells in the concept that one should hate the offence, not the criminal. This is because no one is born a criminal; rather, criminal behaviour is the result of the environment in which a person grows up. As a result, events and circumstances are malleable. As argued by Rai (2010); and complemented by Mishra (2016) and Aina (2018), however, punishment in the Deterrence Theory is based on the consequences, not on the root causes. Unlike reformatory theory where punishment is inflicted to rehabilitate the criminal not in the form of harm, incarceration, and the like but psychologically oriented approaches based on treatment,

committing a crime is a psychosocial problem. The Reformatory Theory tries to propose the intended solution to the research problem of what should be focused on addressing the overcrowding state in prisons. It discourages the overuse of incarceration approaches towards dealing with offenders. Unlike other preventive methods, this is more of ensuring humane treatment for the offenders. However, the theory fails to differentiate between minor and major offences in the context of letting society treat the offenders equally. Major offences in nature cause great damage that leads to total social disharmony. Thus, it is dangerous for the accused to stay in society as the victims may seek revenge and cause harm. Incarceration in some special cases may be vital for the benefit of both parties, the victimized society, and the criminal. Besides, Reformatory Theory supports the application of non-custodial measures as a measure towards tasking society to reform its wrongdoers as it plays a part in creating crime incidences.

FINDINGS AND DISCUSSION

The findings were presented based on the themes and sub-themes as per the research-specific objective. The main theme was about what caused the shunning of law enforcers in Tanzania from imposing community service order sanctions that would alleviate this dire situation. Connected to this theme, was the extent to which the application of community service order sanctions relevant to the number of those serving the sanction in the localities.

The shunning of law enforcers in Tanzania from imposing community service order sanctions

In this section, the researcher sought information on what could be the causes of the shunning of law enforcers to effectively impose community service order sanctions on eligible convicts. In line with this, the study sought to determine how many convicts were performing community service orders within that locality as compared to those eligible. This was connected to the extent that the community service orders were applied by law enforcers as far as their establishment was concerned. The study also sought to determine the degree to which law enforcement's perception of crime and offenders may affect their reluctance to impose community service order sanctions.

Figure 1 presents the calculations on how the saturation point of data was obtained. After considering the calculation and rationale to meet the

saturation point, the final number of interviews from different categories of interviewees was stopped at the 11th participant. The base size, run length, and the relative amount of incoming new information, or the new information threshold, were the three main factors used in the calculation. The term "base size" describes the bare minimum of data collection activities, such as interviews. The number of interviews required to find and calculate new information is known as the "run length". Like how a p-value of 0.05 or 0.01 is used to establish whether there is sufficient evidence to reject a null hypothesis in statistical analysis, these "new information thresholds" were used as benchmarks. Guest et al. (2020) created the computation and method used in this study to attain the data saturation point.

Figure 1

Distribution: Median number of interviews to reach saturation and degree of saturation at different base sizes and run lengths

Interview number	1	2	3	4	5	6	7	8	9	10	11	Total
New Themes per IDIs	10	2	4	2	1	0	1	1	0	0	0	21
New Themes in Run	18				1		1	2	1	0	0	
% change over base					5%		5%	11%	5%	0%	0%	

Base of 4 Runs of 2

Source: Ndibalema, 2022

The applicability of Community Service Orders on convicts

The goal of the study was to determine whether shunning by law enforcers hindered the administering of community service order sanctions to prisoners in Tanzania to reduce overcrowding of prisoners. Data was collected from the key informants and selected participants including magistrates, court officials, police and prison officers, social welfare officers, and community leaders. In-depth interviews were used to collect data, where the saturation point was the determinant of reaching the intended information from the sample, as illustrated in Figure 1. The applicability of community service orders was determined by the presence of prisoners serving the community service orders, and the inmates eligible for the sanction, yet were imprisoned. In responding to the

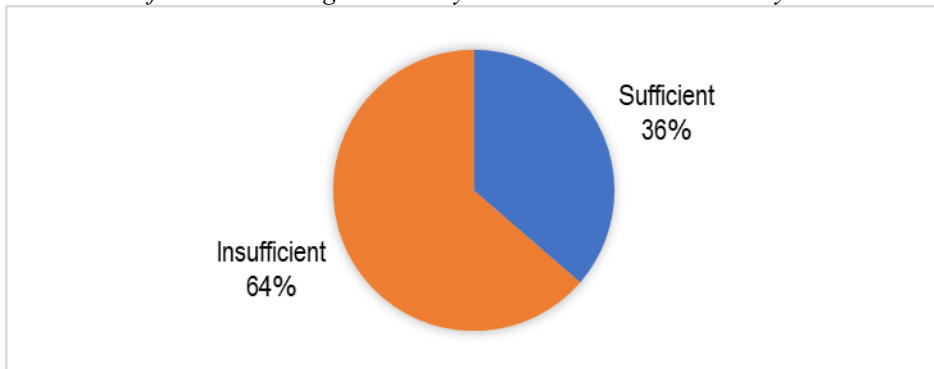
statement concerning the number of prisoners serving community service orders in their localities, one of the participants indicated that,

“Yes, I have seen convicts serve community service orders. However, the number is not as high as I had anticipated, considering that I think a large portion of the jail population deserves this imposition but does not gain anything from it.”

The findings regarding the applicability of community service orders reflected in the number of those serving the penalty are indicated in Figures 1 and 2. The results illustrated in Figure 2 indicate that the quantity of prisoners serving community service orders, as per interviews, is comparatively insufficient, leading to an increase in jail overcrowding.

Figure 2

The Number of convicts serving Community Service Orders in the locality



Source: Ndibalema, 2023

According to URT (2023), the Ministry of Home Affairs report presented to the Tanzanian Parliament during the 2023–24 budgetary session, in support of the presented data, revealed that 1,770 inmates were serving community service orders and other non-imprisonment measures as of May 2023. Nonetheless, the total number of prisoners remained higher than Tanzania's prison capacity. NBS (2023) reports that Tanzanian crime statistics indicate that 23,403 prisoners received sanctions for minor offenses, accounting for 80% of the 29,282 prisoners who received different sanctions. Of the 23,403 prisoners sanctioned for minor offenses in Tanzania, only 151 were freed from prisons in Dar es Salaam, (Keko, Ukonga, and Segerea inclusively), a city known for having a high rate of criminal acts, and the second among the Tanzanian regions with the highest number of freed prisoners. 5,105 prisoners, accounting for 21

percent of all 29,282 prisoners, were the beneficiaries of that release in total. This suggests that 79% of prisoners sanctioned for crimes under the minor threshold remain behind bars. Examining the findings that were provided, the order is not as applicable when comparing the number of convicts carrying out community service orders to the number of prisoners who are eligible for the sentence but are incarcerated. Based on the deterrence theory as discussed by Mishra (2016), both the penal code enforcers and society believe in incarceration as the best way to deter offenses from occurring and place the offender away from society. The impact of this theory causes the law's enforcers to give it less weight when applying this sanction to individuals who qualify.

The law enforcers' perception of crime and offenders toward shunning imposing community service order sanctions.

The study wanted to know the contribution of the law enforcers' perception against imposing community service orders on convicts. Similar calculations as in Figure 1 regarding the saturation point to obtain the intended data were applied. Data was obtained through in-depth interviews and FGDs from different categories of participants, including court officials, police and prison officers, community and religious leaders, social welfare officers, and local people. The saturation point at 0% thresholds was reached at the 15th + 3 interview runs. Sixty percent (60%) of the respondents believed that Judges and magistrates are not influenced by negative perceptions of crime and offenders when imposing community service order sanctions. In this view, they are not shying away from imposing community service order sanctions. On the same note, it was added that the offense's severity and the statute governing community service orders are considered when determining the appropriate sentence.

"I always apply the appropriate penalties to the guilty by the laws controlling that kind of punishment, never otherwise. As magistrates, we uphold everyone's rights without bias. It was said by one of the magistrates.

Forty percent (40%) of the participants held a contrary opinion, believing that law enforcement officials choose to imprison criminals as a harsh form of punishment because they have a bad opinion of crime and offenders. They held that being imprisoned and removed from society teaches a person a lesson. They were of the view that the shunning of imposing community service order sanctions on those eligible is much

contributed by the law enforcers' discretion rather than the requirements of the law governing alternative sentences. Besides, the number of those eligible for the sanction is still high and the prisons are still overcrowded. As per the URT (2023), prisoners are still overcrowded by nine-point-seven percent (9.7%) apart from the efforts to apply Extra Mural Labor (EML) measures to decrease the number. As a result, there is less of a correlation between the high proportion of findings regarding the applicability of community service orders and the number of people fulfilling the sentence.

Viewing the presented reason from another angle as per the participants, the Community Service Orders Act, of 2004, impacted the shunning of law enforcers to impose the sanction. This is the reality that to enforce community service orders, bureaucratic legal procedures governing their administration must be followed. The management and enforcement of community service orders include the National Community Service Orders Committee, Executive Committee, National Coordinator, Regional, District, Ward, and Village Community Service Orders Committees, as well as Supervising Officers. Delayed justice, investigations, appeals, bail constraints, and case adjournments contribute significantly to prison overcrowding by leading to an overpopulation of remands. Committees tasked with addressing this issue could have been more proactive in advocating for community service orders for eligible individuals. This would help alleviate the pressure on correctional facilities and offer a more constructive alternative to incarceration for non-violent offenders. Apart from the fact that they are less conspicuous, their designated functions under the Act are not beyond the law enforcers' jurisdiction. Taking this into account, the law enforcers have the full power to decide whether they impose alternative sentences or incarcerate the convicts. According to data on jail overcrowding, incarceration appears to be the most practical and quick solution for law enforcers. But apart from law enforcers' knowledge of the prisons' low capacity to accommodate the inmates, the hygiene situation, and inadequate meals, they still shy away from imposing non-custodial measures.

As per findings, on the other hand, the shunning of law enforcers to impose community service orders was also attributed to the low number of supervising officers where the prisoners had to reside. Based on the Community Service Orders Act of 2004 and the Probation of Offenders Act, the community service officers are also the supervising officers.

Given the number of social welfare officers (Regional, Council, and Assistant Social Welfare Officers) in Dar es Salaam as per URT (2021) which was 120 serving in 5 Districts and 102 Wards, with 82% deficit at ward level, the number is still questionable to fulfill the supervising roles according to the requirements of the Community Service Orders Act as compared to the number of offenders. However, the report on the social welfare services in Tanzania carried out in the year 2020/21 mentions only the data on juvenile offenders' services in Dar es Salaam, totaling 216, accounting for 11% of all juvenile services handled in the whole country. Despite the small number of social welfare officers aimed to serve as probation officers, the report does not include data on jail supervision, which is one of their primary responsibilities. This scenario informs of the unavailability of convicts serving community service orders in their places and the lesser involvement of the social welfare officers in the community service procedures. Furthermore, the legal system recognizes social welfare officers' roles in court proceedings. In this light, the missing of community service officers in supervising the adult convicts in the report tells of the denial of the law enforcers to use them in court proceedings hence shying away from imposing community service orders.

Additionally, the degree to which non-custodial measures can be applied in this instance to reduce the number of prisoners eligible for the sentence is still minimal. The low application of community service orders suggests the impact of the Deterrence Theory, which holds that the goal of incapacitating someone is to make their situation so bad that the other offender is discouraged from carrying out their illegal behavior. It also suggests that since incarceration tries to remove criminals from society and keep them from committing crimes in the future, it is wrongly believed to be the most effective way to reduce crime. In this case, the pace of declining prison overcrowding stays quite low.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The United Republic of Tanzania Non-custodial Measures Acts (1947, 1994, 2004) define community service orders as types of supervised non-waged tasks for criminals sentenced under non-imprisonment measures that were intended to serve the objective of alleviating congestion in prisons. They were established to serve as both punitive and restorative

measures for individuals convicted of less serious crimes against the law. Moreover, they were put in place to lessen jail overcrowding and increase opportunities for the public to assist in the rehabilitation of individuals found guilty of crimes. These actions were a reaction to the United Nations (1977) standard minimum criteria for the treatment of offenders, which stipulated that all accommodations must meet all health requirements to prevent congestion and respect for human rights. However, from 2015 to 2023, the total number of inmates and remandees in Tanzania has exceeded the prison capacity to accept, as per the Prison Management Regulations, 1968.

Contrary to the goals, the low implementation of these measures has lessened the efforts to decrease jail congestion in Tanzania. This implies that there is still very little room for community service orders to be used in this case to lower the number of prisoners eligible for the punishment. The findings depicted in Figure 2 show that there are relatively few prisoners carrying out community service orders, which contributes to a rise in jail overcrowding. Comparing the number of prisoners completing community service orders to the total number of inmates who qualify for the sentence but are detained, the data show that the order is less applied. The reason behind this is as discussed by Mishra (2016), that according to the Deterrence Theory, jail is regarded by both society and those enforcing the penal law as the most effective means of deterring future offenses and removing the offender from society. When imposing this sentence on those who meet the requirements, the implications of this theory make law enforcement disregard it and shy away from imposing it. Law enforcement officials do not lack knowledge of the legislation on community service orders. Likewise, it is not that they have not been participating in different national and international workshops regarding the application of community service orders as alternative sentences to reduce overcrowding in prisons and rehabilitate offenders. However, the law enforcers seem to ignore the essence of the sanction and hold their drives and negative perceptions about crime and criminal behaviors.

Had community service order sanctions been applied effectively, they could have contributed much to reducing overcrowding in Tanzania prisons. Ngetich, C. K., Murenga, H., & Kisaka, W. (2019) noted that, by applying community service orders to convicts, it was intended that these criminals would serve their sentences and receive meaningful community rehabilitation. Thus, community service orders were quite effective in

lowering the rate of recidivism among criminals. Supporting Ngetich, et al.'s comments, Mutisya, J. C. (2020), added that by performing unpaid activities for the community, offenders can atone for their transgressions through community service orders. This makes the perpetrator feel more accountable. The community service officer's proper supervision enables the offender to adhere to the directive and fulfill the requirements of their sentence. The application of community service orders so far embraces rehabilitation and Reformatory Theories. According to these theories, committing a crime is a psychosocial problem, and is socially rooted. Thus, the punishment meted out to the offender is psychologically oriented and focused on treatment rather than pain, incarceration, or other similar measures.

RECOMMENDATIONS

Prisons, in Dar es Salaam, are overcrowded beyond their capacity to hold. In the context of social work, jail overcrowding is a social phenomenon that arises when a jurisdiction's prison capacity is not met by the demand for space. Increased gang activity within jails, a surge in mental health problems among individuals, violence and racism, the spread of disease, and staff stress are all consequences of the growing overcrowding. Sentencing convicts to perform pro bono unpaid service has numerous benefits. It gives offenders the chance to atone for their crimes and acquire skills that could help them find employment, and it is less expensive and damaging than a brief stay in jail. One of the most popular alternatives to incarceration nowadays is community service, commonly known as community payback or unpaid labor. However, it has been realized that community service orders as one of the measures aimed at depopulating prisons, have not been effectively applied. The less use of this sanction was the result of law enforcers shying out from applying the sanction as per the reasons discussed in the previous sections. Thus, the study recommends that;

First, so long as the Community Service Orders as per URT (2004) intended to prevent minor offenders from being imprisoned; law enforcers should put these into consideration for the benefit of the state, the offender, the society, and the entire family by penalizing a criminal through performing community-benefiting work where they live; ensuring the offender's rehabilitation while preserving their relationship with their family or their employment; and cutting down on the number of criminals entering jail, which will lessen the cost of keeping them there. They

should consider minor offenses as socially constructed, and so society must bear the burden of reforming its wrongdoers. They should keep in mind to administer justice fairly and accept the latest changes to the criminal justice system. Instead of only punishing offenders, their primary goal in sentencing should always be to reform them. Humanity ought to take the lead, not inhumanity, in imposing sanctions relevant to the crime.

Second, Community Service Orders are punitive measures intended to help criminals change. Currently, a social reintegration method is suggested to be used to enforce this, guaranteeing that offenders would be monitored in placement facilities and at home to offer psychosocial support, promote rehabilitation, and facilitate restitution with the victim. For these to be feasible, the law enforcers and all human rights stakeholders should make society aware of the penalty, and its benefits, and be encouraged to participate in the rehabilitation process; enlist the aid of local institutions to assist criminals in acquiring the mindset and conduct necessary to contribute positively to society; encourage civic engagement, capacity building, and psychosocial assistance to increase the social acceptance of offenders in the community; encourage social cohesion and reconciliation between offenders, victims, and community members. Law enforcers, social welfare officers, and community leaders should plan for societal awareness on the issues mentioned. These measures will ultimately decrease the shying-out tendency of the law enforcers to administer the sanction; society's negative perception of the sanctions, the convicts, and the sources of criminal behavior, hence impacting the reduction of prison overcrowding.

Thirdly, the Community Service Orders Act should be amended to put more emphasis on extending the jurisdiction powers of the committees and boards on issues regarding community service orders. The amendments should also be done by reviewing the roles and responsibilities of the community service committees and boards, not to end in the court proceedings, but to perform their roles to make society responsible for the rehabilitation services.

REFERENCES

- Aina, A. (2018). Retributivist theory of punishment: Some comments. *Balkan Journal of Philosophy*, 10(1), 63-70.
- Awopetu, R. G. (2014). An assessment of prison overcrowding in Nigeria: Implications for rehabilitation, reformation, and

- reintegration of inmates. *IOSR Journal of Humanities and Social Science*, 19(3), 21-26.
- Bardin, L. (2011). BARDIN, L. Análise de conteúdo. São Paulo: Edições 70, 2011. *Community Service Act 2004* (Cap 291), G.N. 36 (URT)
- Editorial. (2017). Tanzania: Prison Life - a Heart Rending Scenario, *Daily News*.
- Fair, H. and Walmsley, R. (2021). *World prison population list* (13th ed.). London: Institute for Criminal Policy Research.
- Fazel, S., & Wolf, A. (2015). A systematic review of criminal recidivism rates worldwide: Current difficulties and recommendations for best practice. *PloS one*, 10(6).
- GlobalTV (Producer). (2019, 26th March, 2019). Mbowe afunguka yanayofanyika gerezani 'kesi za kusingiziwa'. *Streamed Live*
- Guest, G., Namey, E., & Chen, M. (2020). A simple method to assess and report thematic saturation in qualitative research. *PloS one*, 15(5), e0232076.
- Human Rights Watch (2017). *Human rights world report, 2017*. New York, USA: HRW. Retrieved from <https://www.hrw.org/world-report/2017> Accessed on 11th August 2018
- Legal and Human Rights Centre (2015). *Tanzania human rights report 2015 Tanzania Mainland*. Dar es Salaam, Tanzania: LHRC.
- Legal and Human Rights Centre (2016). *Tanzania human rights report 2016 Tanzania Mainland*. Dar es Salaam, Tanzania: LHRC.
- Legal and Human Rights Centre (2017) '*Unknown assailants*': *A threat to human rights*. Dar es Salaam, Tanzania: LHRC
- Legal and Human Rights Centre (2020) *Tanzania human rights report 2020*. Dar es Salaam, Tanzania: LHRC.
- Legal and Human Rights Centre (2023) *Tanzania human rights report 2020*. Dar es Salaam, Tanzania: LHRC.
- Marshall, B., Cardon, P., Poddar, A., & Fontenot, R. (2013). Does sample size matter in qualitative research?: A review of qualitative interviews in is research. *Journal of Computer Information Systems*, 54(1), 11 - 20. <https://doi.org/10.1080/08874417.2013.11645667>
- Martin, T. M. (2017). Scrutinizing the embrace of human rights in Ugandan prisons: An ethnographic analysis of the equivocal responses to human rights watch reporting. *Journal of Human Rights Practice*, 9(2), 247-267.
- Ministry of Home Affairs (2015) *Makadirio ya mapato na matumizi ya Wizara ya Mambo ya Ndani ya Nchi kwa mwaka 2015/16*. <https://www.moha.go.tz/document/speeches>

- Ministry of Home Affairs (2018) *Makadirio ya mapato na matumizi ya Wizara ya Mambo ya Ndani ya Nchi kwa mwaka 2018/19*.
<https://www.moha.go.tz/document/speeches>
- Ministry of Home Affairs (2020) *Makadirio ya mapato na matumizi ya Wizara ya Mambo ya Ndani ya Nchi kwa mwaka 2020/21*.
<https://www.moha.go.tz/document/speeches>
- Ministry of Home Affairs (2023) *Report of the budget, 2023–24*.
<https://www.moha.go.tz/document/speeches>
- Ministry of Home Affairs (2024) *Report of the budget, 2024–25*.
Retrieved from <https://www.moha.go.tz/document/speeches>
- Mishra, S. (2016). Theories of punishment – A philosophical aspect. *Imperial Journal of Interdisciplinary Research (IJIR)*, 2(8), 74.
- Mutisya, J. C. (2020). *Effectiveness of probation and community service order sentencing on offenders: A case study of Nairobi County* (Doctoral dissertation, University of Nairobi).
- NACTA, C., ICRC. (2018). *Addressing overcrowding in prisons by reducing pre-conviction detention in Pakistan*.
<https://www.icrc.org/en/document/overcrowding-pakistan-prisons-holding-57-more-inmates-capacity>
- National Bureau of Statistics (2019) *Tanzania National Census, 2012*. Dodoma, Tanzania: NBS. <https://www.nbs.go.tz/>
- National Bureau of Statistics (2015) *Crime statistics report, January - December 2014*. Dar es Salaam, Tanzania: NBS.
- National Bureau of Statistics (2023). *Crime Statistics; Crime and Traffic Incidents Statistics Report, January – December 2020*. Dodoma, Tanzania: NBS.
- Ngetich, C. K., Murenga, H., & Kisaka, W. (2019). Effectiveness of community service orders in rehabilitating offenders' behavior in Kericho county, Kenya. *International Academic Journal of Law and Society*, 1(2), 58-77.
- Prison Reform International (2021) *Global Prison Trend 2021; Prison in Crisis*. Netherlands: PRI. Retrieved from <https://www.penalreform.org/global-prison-trends-2021/> Accessed on 1st September 2022
- Rai, N. (2010). *Theories of punishment with a special focus on reformatory theory*. LLB, Kathmandu, Kathmandu.
- Said, K. (2019). TLS's Fatma Karume censures criminal justice, *The Citizen*. Retrieved from <https://www.thecitizen.co.tz/tanzania/news/national/tls-s-fatma-karume-censures-criminal-justice-2669840> Accessed on 22nd January 2020

- Standard Minimum Rules for the Treatment of Prisoners, 2076 (LXII) C.F.R. (1977).
- US Department of State (2023). *2022 Country Reports on Human Rights Practices*. Dar es Salaam, Tanzania: U. S. D. o. State.
- Yang, L., QI, L., & ZHANG, B. (2022). Concepts and evaluation of saturation in qualitative research. *Advances in Psychological Science*, 30(3), 511.

Accessibility of Marine Tourism Resources and Community Livelihood in Tanzania: A Case of Bagamoyo and Kilwa Coastal Communities

Thereza Israel Mugobi

Ministry of Natural Resources and Tourism

Affiliated to

Department of Tourism and Hospitality Management

Open University of Tanzania

tmugobi@gmail.com

ORCID: 0000-0002-8707-6782

Abstract

This article explores the link between the accessibility of marine tourism resources and sustainable livelihoods in Tanzanian communities, guided by the sustainable livelihood's framework. Data was gathered through convenience sampling from Kilwa and Bagamoyo's coastal populations between March and April 2025. Out of 280 distributed questionnaires, 161 (73.9%) were analyzed using SPSS and SEM (AMOS). Results indicated that access to various types of livelihood assets, including financial, human, social, and physical resources, significantly benefits sustainable livelihoods in these coastal areas. Stakeholders should aim to achieve the 2030 Sustainable Development Goals (SDGs), especially SDG 14, which emphasizes the importance of marine tourism resources for coastal communities. Promoting access and sustainable use of these resources can aid conservation efforts and sustainable development. The study offers strategic recommendations for government and private sector investment to ensure equitable access to ocean resources for coastal communities.

Keywords: *Marine tourism resource, coastal communities, financial assets, human assets, social assets, and physical assets.*

INTRODUCTION

The world faces difficulties in eradicating poverty to achieve the 2030 Agenda for Sustainable Development, especially SDG 14. "Life Below Water" is a vital goal aimed at conserving and sustainably using oceans, seas, and marine resources (Henderson, 2019:1). About 2.75 billion

people live near coasts, relying heavily on marine and coastal resources for their livelihoods. A livelihood refers to how people use their skills, abilities, and resources to earn a living and support themselves (Gacutan et al., 2022; Lockerbie et al., 2024). A livelihood is considered sustainable when marine and coastal resources are utilized in a manner that meets current needs without compromising the ability of future generations to meet their own needs (Loureiro et al., 2022). Therefore, the global community must take essential actions to ensure that low-income coastal communities, whose survival depends on healthy oceans and seas, have access to livelihood capital, such as access to finance, social networks, and physical assets, for them to meet their basic needs sustainably (Lockerbie et al., 2024).

Marine tourism resources have been adopted as a key strategy for poverty eradication and ensuring sustainable livelihoods (Henderson, 2019). If managed well and supported, marine tourism resources will continue to provide ecosystem services to humans and other living things (Chen et al., 2020). More than 3 billion people worldwide rely on marine tourism activities, including tourism, recreation, fisheries, coastal protection, biodiversity conservation, boat building, craft making, singing, and tour guiding (Chen et al., 2020).

Marine tourism involves visiting new destinations for activities such as fishing, whale watching, reef walking, provisioning cruise ships, and attending yacht events (Ery, 2022). It also encompasses other coastal tourism activities, including accommodations, restaurants, food services, attractions, and vacation rentals. To support marine tourism, infrastructure such as retail stores, transportation hubs, marinas, and activity providers is essential, which ultimately provides access to livelihood assets for the coastal community (Kimasa, 2013).

Coastal communities offer a range of employment opportunities, including fishing, boat building, tour guiding, craft production, arts, and conservation efforts for coral reefs and mangroves, as well as supporting shipping routes and coastal defenses (Ery, 2022; Lockerbie et al., 2024). However, the growth of marine tourism and coastal investments relies heavily on strong institutional backing within the country (Kimasa, 2013). Despite these economic opportunities, many coastal areas remain impoverished, with residents often living below the poverty line and earning less than \$1 per day (Hafidh, 2021; Kimasa, 2013; Torel et al.,

2017). These communities face high vulnerability to natural resource depletion and overexploitation (World Wide Fund for Nature report, 2020).

In these communities, the average life expectancy is only 48 years. About 40% of residents are illiterate and lack access to proper sanitation (Kimasa, 2013). Climate change has caused rising sea levels and increased the frequency of natural disasters, such as floods and droughts, jeopardizing the safety and homes of coastal residents. Consequently, marine tourism has not yet provided substantial benefits to these populations (Sohn et al., 2021; Torell et al., 2017).

A significant challenge involves addressing issues that hinder the industry's ability to support coastal communities in developing sustainable livelihoods. Climate change poses a significant threat to South African coastlines, leading to increased flooding, storms, and land pollution (Dube et al., 2021). In Surabaya, many coastal residents have low educational attainment and belong to lower-income groups (Gai et al., 2017). Similarly, in Pemuteran, Indonesia, communities face high poverty levels, limited English skills among village leaders, and weak management systems (Erapartiwi, 2019). This study examines whether coastal communities in Kilwa and Bagamoyo can achieve sustainable livelihoods through diverse marine tourism activities and provides policy recommendations to enhance their long-term resilience.

Numerous studies have investigated the role of marine tourism in promoting sustainable livelihoods. Some research has focused on how activities related to aquatic tourism can tackle global issues and support the long-term growth of coastal communities. Some have focused on the potential benefits that marine activities could offer to coastal communities (Ery, 2022; Hafidh, 2021; Lockerbie et al., 2024; Sohn et al., 2021; Torell et al., 2017). Kimasa (2013) examined how the growth of marine tourism and coastal investments relies on supportive institutional frameworks within the country. Additionally, studies have shown that marine tourism can play a role in reducing poverty in coastal areas, like in Pemuteran (Erapartiwi, 2019). Research also suggests that access to sustainable livelihood resources is crucial for reducing poverty in coastal regions (Gai et al., 2017).

Research on how access to marine tourism resources impacts sustainable livelihoods in Bagamoyo and Kilwa communities is limited. In contrast, Holly et al. (2022) examined how marine tourism resources support coastal communities. Furthermore, Cooper (2022) explored the challenges, responsibilities, and opportunities faced by heritage professionals managing coastal cultural assets. This study aims to examine the relationship between access to marine tourism resources and the sustainable livelihoods of coastal communities.

This study examines the relationship between access to finance, social networks, physical assets, and sustainable livelihoods. The paper is organized as follows: Section 2 lays out the theoretical background, including a conceptual framework and hypothesis development. Section 3 explains the methods used to collect data for this study. Section 4 presents the findings, and the team concludes by summarizing the results and discussing their implications.

THEORETICAL BACKGROUND AND HYPOTHESIS

In 1992, Chambers and Conway advanced the concept of sustainable livelihood, aiming to understand the challenges faced by impoverished communities through the analysis of factors affecting their everyday lives. This idea can inform the development of new projects and assess how existing activities support livelihood sustainability (Scoones, 2000). A livelihood is described as access to resources needed for earning a living, while a sustainable livelihood enables individuals to access resources, cope with stress, and recover from setbacks, ensuring these advantages are passed on to future generations without harming the environment (Scoones, 2000). The core principle of Sustainable Livelihood Theory (SLT) is that empowering people should be at the heart of efforts in rural development, poverty reduction, and environmental preservation. The ability to pursue different livelihood strategies depends on vital assets, including material, social, tangible, and intangible resources.

Chamber & Conway (1992) highlighted that for coastal communities to sustain their livelihoods, they must have access to and control over diverse assets: financial, human, social, physical, and natural. Financial assets include cash, credit, and savings; human assets encompass knowledge, skills, and the workforce; social assets comprise networks, social ties, and memberships; physical assets consist of infrastructure. The

first step in assessing sustainable livelihoods involves identifying barriers to accessing these assets.

Many scholars have applied the sustainable livelihood theory, including Gai et al. (2018), who used it to examine poverty reduction in Surabaya's coastal region. Their successful application showed that access to human resources—such as knowledge and skills—has a 65% significant effect on reducing poverty. Dai et al. (2019) used the theory to identify factors influencing livelihood diversification among different household types in Northwestern China. Their results indicated that access to livelihood assets—like financial, human, and social resources—is unevenly distributed. Additionally, Roy & Basu (2020) investigated the factors driving livelihood diversification strategies among farmers in Bangladesh's coastal areas. Their findings confirmed that access to natural assets, including fishing, rice cultivation, and domestic bird rearing, is vital for diversification. In Tanzania's Kilombero district, a study found that access to financial resources, mainly through cash credit, is significantly linked to livelihood diversification (Akyoo, 2021).

Many previous studies (e.g., Akyoo, 2021; Dai et al., 2019; Gai et al., 2018; Roy & Basu, 2020; Torell et al., 2017) have explored the links between poverty reduction, sustainability, livelihood determinants, or diversification. To the researcher's knowledge, no work has specifically looked into the factors affecting access to marine tourism resources in the context of the sustainable livelihoods of coastal communities. Additionally, no research has focused solely on livelihood resources within Tanzania's coastal populations. This study contributes to the literature by examining how access to marine coastal resources supports sustainable livelihoods in these areas. These aspects are adapted from various studies that also employed Structural Equation Modeling (SEM). Specifically, for financial assets, access to financial institutions for cash credit will be analyzed; for human capital, entrepreneurial skills will be considered; and access to social interaction will be examined under social capital.

Drawing on the Sustainable Livelihood Theory and a review of existing literature, we present a model (see Figure 1) that explores how access to marine tourism resources influences sustainable livelihoods. The decision to analyze the relationships among these variables as determinants of sustainable livelihood stems from the limited evidence on these

constructs, despite their recognized importance (Dai et al., 2019; Gai et al., 2018; Roy & Basu, 2020). Access to financial assets requires support from financial institutions. In contrast, access to human assets is reflected in entrepreneurial skills, representing the efforts of coastal communities to acquire business knowledge and leverage marine tourism resources. Additionally, access to social assets through social interactions encompasses the community's efforts to build networks for marketing their marine tourism products to broader markets, while access to physical assets through.

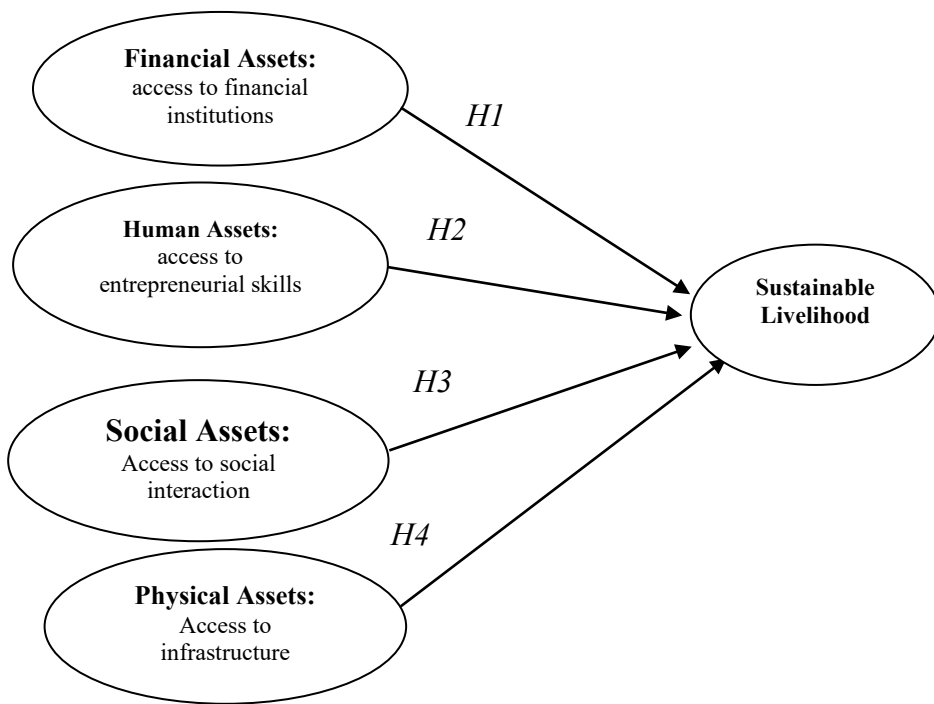


Figure 1: Theoretical model and hypotheses.
Source: Bennett et al. (2018)

The model examines how access to marine tourism resources can enhance sustainable livelihoods, building upon earlier research. We anticipate gaining new insights by examining the factors that affect access within Tanzania's coastal communities. According to Bennett et al. (2018), the model indicates that having access to various livelihood assets—such as

financial, human, social, and physical— is crucial for fostering sustainable development in these areas.

The proposed model includes four theoretical constructs (i.e., access to finance capital through financial institutions, access to human capital through entrepreneurial skills, access to social capital through social interaction, and access to physical capital through tourism infrastructure) from the sustainable livelihood framework, along with their respective sets of indicators, chosen as testable. These were depicted sequentially, reflecting access to livelihood assets and the pursuit of sustainable livelihoods. These insights formed the basis for conceptualizing and proposing a general theoretical framework for Tanzania's coastal communities. In addition, these constructs contributed to the theory by explaining the factors influencing access to marine tourism resources and their impact on the sustainable livelihoods of Tanzania's Coastal communities. The proposed model suggests that a sustainable livelihood depends on access to financial institutions through cash credit, access to human resources through entrepreneurial skills, access to social capital through social interaction, and access to physical assets through tourism infrastructure. Therefore, the study found it necessary to investigate these relationships further for policymakers.

Access to Financial Assets (FA) and Sustainable Livelihood

Access to financial resources has a significant impact on the sustainable livelihoods of coastal communities. Such support can come from savings, credit access, bank loans, as well as inflows like pensions and remittances (Mathenge et al., 2021). Numerous studies have demonstrated that access to financial institutions enhances the performance of small and medium-sized enterprises in coastal areas (Amevenku et al., 2019; Azima et al., 2018; Mathenge et al., 2021; Morara et al., 2018). Gai et al. (2018) explored the concept of poverty reduction in Surabaya's coastal region, focusing on sustainable livelihood through a qualitative research approach using a causal framework.

It was found that financial assets accessed through cash credit were the most significant factor affecting poverty in the coastal area of Surabaya, as fuel expenses could not be compared to the income from fishing. Morara et al. (2018) investigated approaches currently used in Kenya to sustain local livelihoods through coastal fisheries utilizing the capital theory approach. Their findings indicated that individuals or households

with access to financial assets were more likely to be effective in eradicating poverty (Amevenku et al., 2019). Despite the preceding discussion on access to financial assets and sustainable livelihood, the author is unaware of any study examining the relationship between the two constructs in Tanzania's coastal communities. Thus, the following hypothesis is proposed.

Hypothesis 1: There is a positive relationship between access to financial assets through financial institutions' cash credit and sustainable livelihood among Tanzania's coastal communities

Access to Human Assets (HA) and sustainable livelihood

Human assets are flexible resources that underpin sustainable livelihoods (Mathenge et al., 2021). They include factors such as age, gender, education, experience, skills, training, family size, dependency ratio, labor capacity, and the ability to adopt new technologies (Mathenge et al., 2021, Pg 4; Metcalf et al., 2015). These resources are vital for leveraging other types of resources (UNDP, 2015). Smith et al. (2013) examined the feasibility of adaptation strategies in Soc Trang Province, Vietnam, part of the Mekong Delta facing rising pressures on coastal livelihoods. Using participatory workshops and interviews, they identified limited access to human resources as a significant barrier to achieving their primary objectives.

Dai et al. (2019) employed the sustainable livelihood framework to investigate the factors influencing livelihood diversification. They found that labor capacity, a proxy for human assets, significantly supports livelihood diversification among coastal communities in Northwestern China. Similarly, Roy & Basu (2020) examined the factors driving livelihood diversification strategies among farmers in Bangladesh's coastal areas. By applying multiple regression, along with the Simpson index, Herfindahl index, and Priority index, they observed that human assets—measured by age and education—are positively linked to diversification strategies. This suggests that access to human assets can enhance sustainable livelihoods, while limited access may hinder them. These conclusions are based on panel data, as none of the studies employed structural equation modeling to analyze the relationships between these variables. Based on this, the following hypothesis is proposed.

Hypothesis 2: There is a positive relationship between access to human assets through entrepreneurial skills and sustainable livelihood among Tanzania's coastal communities

Access to Social Assets and Sustainable Livelihood

Social assets are defined as an individual's or household's ability to access benefits through networks, trust, membership, reciprocity, and relationships (Mathenge et al., 2021). These assets are accessible within a community owing to shared norms and values. Amevenku et al. (2019) explored how social assets influence livelihood diversification choices among fishing households in the Volta Basin, Ghana, employing questionnaires and non-hierarchical K-means clustering. Their results showed that social assets positively affect the variety of diversification strategies that households pursue.

Mathenge et al. (2021) discovered that access to social capital in rural households enhances resilience and encourages the adoption of climate change strategies. Likewise, Roy and Basu (2020) examined livelihood diversification in Bangladesh's coastal regions, finding that increased access to social networks is associated with more diversification strategies, suggesting that greater social participation fosters diversification. Regression analysis was used to explore this relationship. Although a link between social assets and sustainable livelihoods has been established, the author should review existing studies on this topic. Based on these findings, the following hypothesis is proposed.

Hypothesis 3: There is a positive relationship between access to social assets through Access to social interaction and sustainable livelihood among Tanzania's coastal communities

Access to physical assets and sustainable livelihood

Physical assets include tools and equipment necessary for households or individuals to sustain their livelihoods, such as affordable transportation, secured shelter, roads, buildings, sufficient water supply, sanitation, clean and affordable energy, access to information and communication, and agricultural implements (Amevenku et al., 2019; Gai et al., 2018; Mathenge et al., 2021). Gai et al. (2017) studied the coastal region of Surabaya using a rationalistic approach and determined that physical assets constitute 60% of the sustainable livelihood framework.

Fishermen in the village still relied on traditional fishing gear and struggled to achieve sustainable livelihoods, as most could only optimize one asset at a time. The community's access to physical support was limited, with many traders continuing to use traditional gear, and some lacking land and title deeds, which prevented them from accessing financial capital from formal sources (Makame et al., 2018). It was also suggested that physical assets could serve as collateral, enabling coastal communities to secure loans and credit from banks and other financial institutions.

Metcalf et al. (2015) examined community adaptation strategies to climate change through a case study of three Australian coastal communities. They found that barriers included heavy dependence on a single employment sector and a lack of physical assets. Similarly, Roy & Basu (2020) identified that limited access to physical assets—such as modern boats, signal systems, and fishing equipment—hindered fishers' adaptation efforts. Multiple studies (Amevenku et al., 2019; Gai et al., 2018; Mathenge et al., 2021) have confirmed a significant positive relationship between access to physical capital and sustainable livelihoods. However, none of these studies focused on Tanzanian communities. We argue that, regardless of their location, Tanzanian coastal communities also need improved access to tourism infrastructure. Therefore, unlike the previous studies, this research emphasizes that coastal communities require better access to tourism infrastructure to utilize marine tourism resources for sustainable livelihoods. Access to livelihood assets, in general, is assumed to enhance sustainability eventually. Based on this, we propose the following hypothesis:

Hypothesis 4: There is a positive relationship between access to physical assets through Access to tourism infrastructure and sustainable livelihood among Tanzania's coastal communities

METHODOLOGY

Sample and Data Collection Techniques. This study analyzes data from research conducted in Tanzania's Kilwa and Bagamoyo districts (see figure 2), chosen for their similar socio-economic conditions and reliance on marine tourism. These towns are among the two most historic sites along the Tanzanian coast of the Indian Ocean, each holding significant historical and cultural importance. Kilwa was selected because it is a UNESCO World Heritage site, renowned for its ancient ruins (Nakamura,

2009; Ichumbaki, 2017). It is also a popular destination for tourist cruises. Bagamoyo is known for its historical role as a major trading port and its well-preserved Stone Town. It hosts one of the region's largest craft markets, where guides bring tourists to buy locally made handcrafted products. Both districts are recognized for their traditional fresh fish markets, which both hotels and communities depend on for daily fish supplies. Their economies are closely tied to marine resources, making them ideal for comparative analysis.



Figure 2: Coastal Community of Tanzania

Source: Nordie Development Fund (2014)

The study used a self-administered questionnaire based on the Sustainable Livelihood Analysis (SLA) framework, as recommended by the Department for International Development (DFID) (1999). The questionnaire was divided into four sections: financial assets, human capital, social capital, and physical capital. To ensure accurate representation, data collection took place during working hours on weekdays in Tanzania, specifically in March and April 2025. The survey targeted individuals from various coastal community groups, including village groups of six people, local tour guides, boat builders, fishermen, cultural singers and dancers, artists, handicraft traders, art groups, and sculptors. Since exact data on the target population size was unavailable, convenience sampling was chosen as the most appropriate method for this research.

This process ensured the collection of high-quality, relevant data aligned with the research objectives. Out of 280 questionnaires distributed, 161 (73.9%) were suitable for analysis, while 26% were discarded due to incomplete responses. The reasons for dropping some questionnaires are as follows: some were only partially completed, focusing on the respondent's characteristics, while others covered only the access to finance factor, omitting other variables. Due to time constraints and some participants requesting compensation to complete the entire questionnaire, the researcher chose to exclude the remaining questions and focus solely on the data from the completed questionnaires. Despite this, various rules of thumb in the use of Structural Equation Modeling (SEM) suggest that a sample size of 100 or 200 would be sufficient (Boomsma, 1982, 1985).

The data were first entered into SPSS version 24, and an initial normality assessment was conducted using AMOS (Arbuckle, 1995). This involved analyzing the KMO and Bartlett's Tests. Exploratory Factor Analysis (EFA) was then performed to validate the variables and determine which factors to retain, supported by a pattern matrix and Scree plot. Finally, Structural Equation Modeling was employed to examine the relationships among the variables.

The data collection employed measurement scales based on a well-established livelihoods framework. Items were evaluated using five-point Likert scales. All variables—covering financial, human, social, and physical assets—were grounded in prior research and specifically adapted to the marine tourism resources of Kilwa and Bagamoyo (Su *et al.*, 2019;

Ma et al., 2018; Su et al., 2019; Jayaweera, 2010; Sigalla, 2014; Njoel, 2011). Access to social assets was assessed with six items sourced from Njole (2011) and Su et al. (2019); access to human assets was measured by seven items from Kamaruddi & Samsudin (2014) and Su *et al.* (2019); access to financial assets was evaluated with six items adapted from Lindenberg (2002) and Ma et al. (2018); and access to physical assets was evaluated with seven items drawn from Jayaweera (2010) and Sigalla (2014).

RESULTS

Respondents' characteristics

A multiple regression analysis was performed. Table 1 displays the key characteristics of respondents from a cross-sectional sample. As shown, males engage more frequently in marine tourism activities compared to females, and their monthly income reflects the poverty level.

Table 4: Characteristics of Respondents

Characteristics	Distribution of answers
Gender	Male:80%; Female: 15.6%
Age	Below 20:6.9%; 20-39: 51.4%; 40-59:35.8%; 60-79:1.2%; 80 & above:0.6%
Education	Primary school:4.0%; High school:62.4%; Certificate/Diploma: 13.9%; Bachelor degree: 17.9%; Master degree:1.7%; I did not go to school. 0%
Marital Status	Single:24.9%; Married:63%; Divorced:5.2%; Widow:2.3%; Widower:0.6%
Job position	Tour guide: 13.3%; Singer: 12.7%; Boat Builder:15%; Fisherman:45.7%; c Others:9.2%
Job Experience	Less than a year: 2.9%; Between 1-5 Years: 17.9%; Between 6-10 years: 39.3%; Between 11-15 years: 16.2%; Between 16-20 years: 19.1%; More than 20 years: 0.6%
Information related to their Marine tourism activities	
Characteristics	Distribution of answers
Place of residence	Kilwa: 55.5%; Bagamoyo:44.6%
Monthly Income	0-50,000: 30.6%; 50,000-100,000: 31.2%;100,000-200,000: 22%; 200,000-300,000: 11.6%; 300,000-above:0.6%
Number of Customers per Month	0-50:4.0%;50-150:82.1%; 12.1%; 1.79%
Range of price per product	0-20,000: 4.0%; 20,000-40,000:55.5%; 40,000-60,000:20.2%; 60,000-80,000:8%; 80,000-above 14.5%

Source: Researcher, 2025

Results from Multicollinearity Test

In testing the multicollinearity, the Variance Inflated Factor (VIF) and Tolerance values were applied. The cut-off points by Hair *et al.* (2011) were considered. The authors posit that VIF values greater than 5 and Tolerance values less than 0.2 indicate the presence of multicollinearity. Table 4.2 shows that there was no multicollinearity issue in the current study, as the tolerance and VIF values did not exceed the threshold values.

Table 2: Multicollinearity Statistics

Model	Correlations			Collinearity Statistics	
	Zero-order	Partial	Part	Tolerance	VIF
(Constant)					
FC2	.282	.153	.127	.870	1.111
SC	.287	.219	.193	.862	1.143
HC	.921	-.176	-.109	.812	1.197
PC	.872	.314	.240	.824	1.421

Source: Researcher, 2025

Exploratory Factor Analysis (EFA)

EFA was used to validate the study's variables before conducting the analysis and measuring the relationship between the variables. Kaiser-Mayer-Olkin's measure of sampling adequacy (KMO) and Bartlett's Test of Sphericity were used to assess the suitability of the variables (see Table 3).

Table 3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.880
Bartlett's Test of Sphericity	Approx. Chi-Square	6442.290
	Df	990
	Sig.	.000

Source: Researcher, 2025

To verify the adequacy of each variable and the overall model, ensuring the data is appropriate for factor analysis, the Kaiser-Meyer-Olkin (KMO) measure was used, as it assesses the proportion of variance among variables. While KMO values range from 0 to 1, values between 0.8 and 1 are considered indicative of adequate sampling. In this study, the KMO was 0.880, and Bartlett's Test of Sphericity was significant at $p < 0.000$. These findings are summarized in Table 3. For EFA application, a KMO value of at least 0.6 is recommended (Tabachnick & Fidell, 2007).

Acceptable Loadings

A pattern matrix and Scree plot were employed to decide the number of factors to retain, based on those meeting the threshold and excluding those with minimal values. The threshold applied was all elements exceeding a value of one. Only variables with acceptable loadings were considered at this stage. The detailed pattern matrix for the retained factor, including its loadings, is shown in Table 4.

Table 4: Pattern Matrix

	Factor				
	1	2	3	4	5
CH4	.977				
CH3	.947				
CH5	.932				
CH2	.924				
CH1	.799				
FC2		.940			
FC1		.905			
FC3		.868			
FC4		.540			
FC5		.412			
TC1			.989		
TC2			.855		
TC4			.808		
TC3			.443		
ACC3				.960	
ACC4				.830	
AC5				.799	
LV2					.828
LV1					.800
LV4					.725
LV3					.580
Extraction Method: Maximum Likelihood.					
Rotation Method: Promax with Kaiser Normalization.					
a. Rotation converged in 6 iterations.					

Source: Researcher, 2025

Results from the Convergent Validity Test

Convergent validity is confirmed when all items in a measurement model are statistically significant. Calculating the Average Variance Extracted (AVE) is also essential to ensure validity. An AVE of at least 0.5 for each factor indicates convergent validity. In this study, all items in the measurement model were statistically significant at $p = 0.000$, specifically, $FC=0.70705$; $SC=0.62098$; $HC=0.674088$; and $PC=0.56432$.

Given these findings of AVE, it is concluded that the measurement scale has achieved convergent validity.

Results from Reliability Analysis

The present study employs an alternative internal consistency metric, composite reliability (CR), based on CFA results. CR assesses the internal consistency of a latent construct, with a threshold of greater than 0.6 indicating acceptable reliability. It is computed using the formula from Hair et al. (2010), $CR = (\sum \lambda)^2 / [(\sum \lambda)^2 + (\sum 1 - \lambda^2)]$, with the outcomes summarized in Table 5.

Where λ = factor loading of every item and n = number of items in a model.

Table 5: Composite Reliability (CR) for the Measurement Model

Financial Assets (FC)	Social Assets (SC)	Human Capital Assets (HC)	Physical Assets (PC)
0.905512	0.73414	0.78345	0.89438

Source: Researcher, 2025

Structural Model Results

When testing the structural model for the entire sample, the analysis began by assessing goodness-of-fit indices. The results indicated that the model satisfied the recommended guidelines for fit, with CMIN/DF = 2.817, GFI = 0.960, TLI = 0.946, CFI = 0.959, and RMSEA = 0.105. A summary of these results is provided in Table 6. These findings suggest an excellent model fit, confirming the appropriateness of testing the study's hypotheses.

Table 6: Standardized and Unstandardized Estimates for the Direct Effect of the Structural Model

			Estimate	S.E.	C.R.	P	Label
LAVA	<---	CH	-.014	.077	-1.188	***	.011
LVA	<---	FC	-.004	.055	-.066	***	.004
LVA	<---	TC	1.100	.099	11.127	***	.946
FC4	<---	FC	1.000				.947
FC2	<---	FC	1.004	.028	35.671	***	.993
TC4	<---	TC	1.000				.789
TC3	<---	TC	.686	.093	7.380	***	.568
TC2	<---	TC	1.039	.088	11.869	***	.850
CH4	<---	CH	1.000				.931
CH3	<---	CH	.979	.036	27.336	***	.978
CH1	<---	CH	.959	.063	15.318	***	.808
FC5	<---	FC	1.019	.027	38.365	***	1.002
CH5	<---	CH	1.009	.045	22.220	***	.925
LVA1	<---	LVA	1.000				.944
LVA2	<---	LVA	.380	.062	6.180	***	.451
LVA5	<---	LVA	.987	.052	18.807	***	.901

Source: Researcher, 2025

Beginning with H1, which concerns access to financial assets for sustainable livelihoods, a positive and significant relationship was found between financial assets and sustainable livelihood ($\beta = 0.294$; $P = 0.000$; H5b). This hypothesis was supported, as shown in Figure 3.

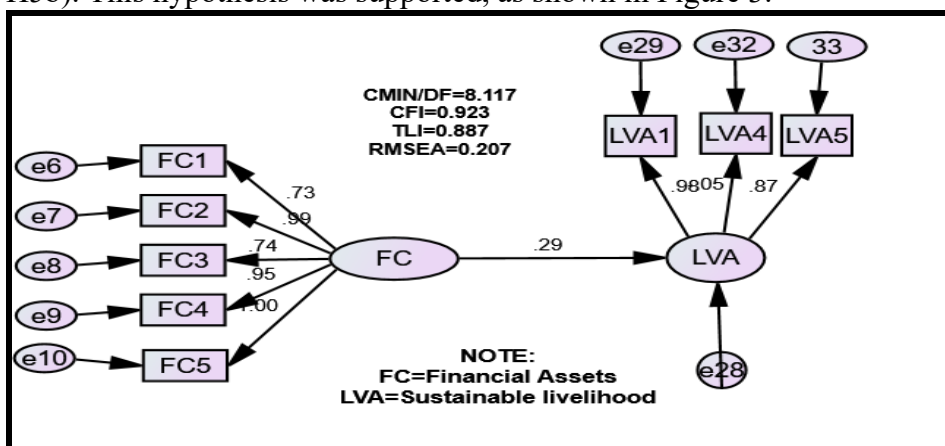


Figure 3: Model Path Coefficients between Access to Finance assets and Sustainable Livelihood

Source: Researcher, 2025

Respectively, H2 Access to social Assets ---Sustainable livelihood, a positive and significant relationship was found between social assets and sustainable livelihood, with $\beta = 1.004$; $P = 0.000$; H5c. Therefore, this hypothesis was supported and is depicted in Figure 4.

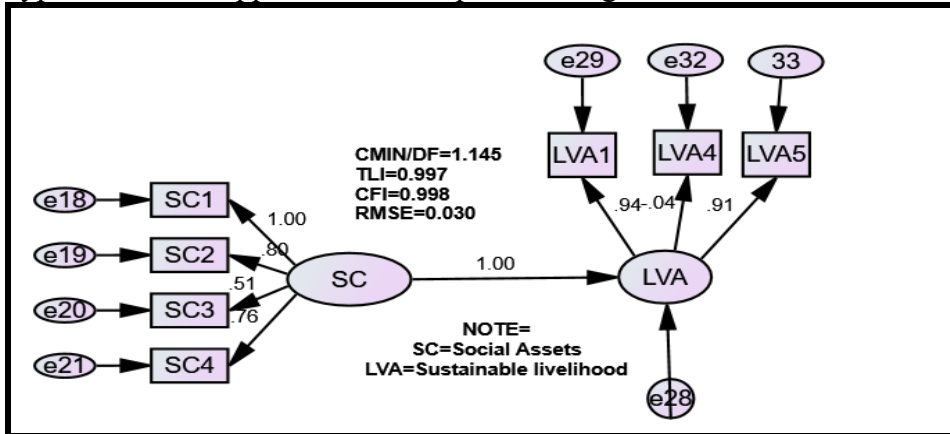


Figure 4: Model Path Coefficients between Access to Social Assets and Sustainable Livelihood
Source: Researcher, 2025

Additionally, H3, which pertains to Access to Human Assets and Sustainable Livelihood, showed a significant relationship between these constructs (human assets and sustainable livelihood) ($\beta = 0.144$; $P = 0.000$; H5a). Therefore, the hypothesis was supported, as illustrated in Figure 5.

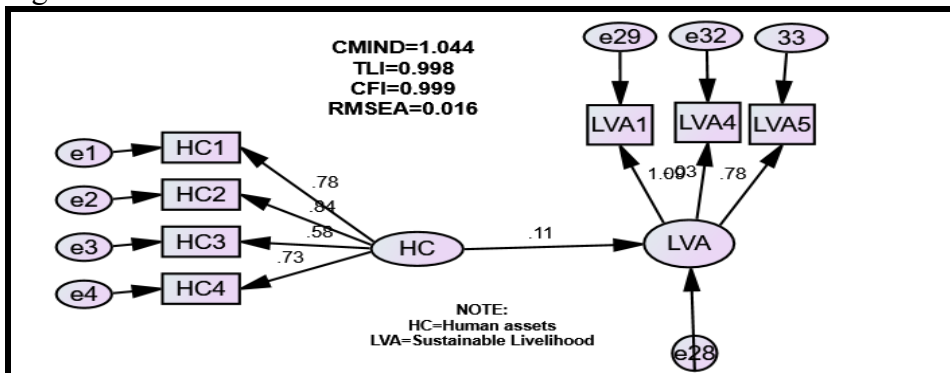


Figure 5: Model Path Coefficients between Access to Human Assets and Sustainable Livelihood
Source: Researcher, 2025

Finally, H4 (Access to Physical Assets --- Sustainable Livelihood) showed that physical assets had a significant and strong impact on

sustainable livelihood ($\beta = 0.326$; $P = 0.000$; H5d), as depicted in Figure 6.

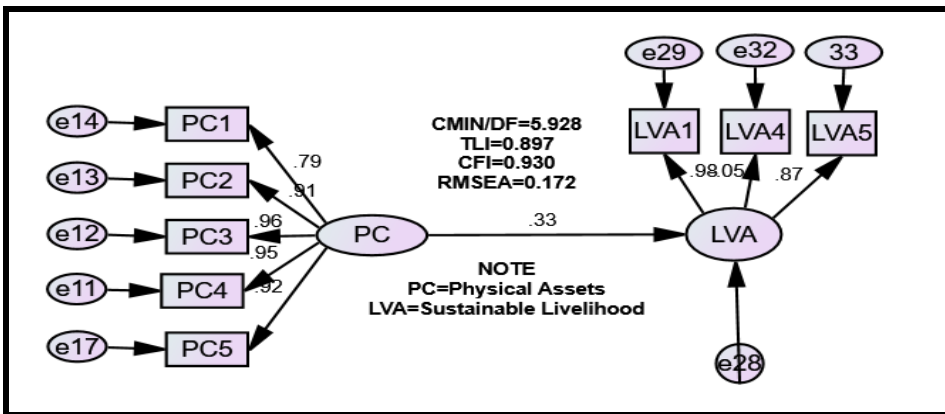


Figure 6: Model Path Coefficients between Access to Physical Assets and Sustainable Livelihood

Source: Researcher, 2025

DISCUSSION

Findings showed that when access was considered a mediating variable between livelihood assets and sustainable livelihood, the results were insignificant, aligning with the previous study that confirmed access to livelihood assets impacts achieving sustainable livelihood (H1-H4). However, removing the mediation construct from the model rendered the results significant, consistent with prior research demonstrating that livelihood assets have a positive and meaningful relationship with sustainable livelihood (H5a-H5d) (Gai et al., 2020; Li et al., 2020; Massoud et al., 2016; Walelign, 2015). Specifically, H5a confirmed that financial assets have a positive and significant relationship with sustainable livelihood. This aligns with Liu et al. (2018), who found that financial assets have a notable influence on various livelihood strategies aimed at sustainability. Similarly, Liu et al. (2018) observed that financial assets have a significant impact on farm households' choice of livelihood strategy.

Physical assets (PC) showed a significant positive correlation with Sustainable livelihood (5b). The results indicated that physical assets are established to support the community's livelihood. These findings align with those of Ding et al. (2018) and Walelign (2015), who noted that physical assets are crucial to household participation in pastoral activities and living standards. Conversely, Geiser et al. (2011) observed that

physical assets located near markets in Vietnam did not significantly or positively influence citizens' welfare. Additionally, Su et al. (2019) discovered that physical assets related to agricultural involvement had a worse, negative effect on material well-being.

The results indicated that social assets have a positive and significant impact on the sustainable livelihoods of coastal communities. This aligns with previous research, which shows that social assets contribute to better living standards and lower resource access costs while protecting the environment (Gunasekara et al., 2017). Mulema (2008) found that social assets are crucial for joint decision-making, enabling men to make choices about land, manage money, visit markets, decide what to sell, and utilize financial resources. Conversely, these findings contrast with Su et al. (2019), who reported that social assets do not influence sustainable livelihoods for agricultural workers, as many in this group have weak social networks. Similarly, Ding et al. (2018) found no link between social assets and improved living strategies.

The study revealed that human assets are positively and significantly associated with sustainable livelihoods. These results align with Amevenku (2019), who states that human assets are a key driver of livelihood strategies. Pour et al. (2018) discovered that human assets support both commercial and mixed livelihood approaches. Cogan & Pascoe (2007) found that human assets have a notable impact on the stocks within fisheries communities. Additionally, Morara et al. (2018) observed that human assets contribute to the sustainability of fisheries communities and their local livelihoods in Kenya.

Managerial Implications

Given the strong positive link between livelihood assets—such as financial, social, physical, and human assets—and the sustainable livelihood of coastal communities, the government and private agencies need to prioritize financial aid and entrepreneurial training. Strengthening financial assets can help these communities access necessary financial support. Additionally, support measures like capacity-building workshops, moral encouragement, and professional training on effectively utilizing marine cultural heritage resources can contribute to poverty reduction, thereby advancing sustainable development goals.

Currently, financial institutions are working to relax certain loan requirements for communities committed to sustainable livelihoods. There is a clear positive relationship between human assets and sustainable living. Proper investment in human assets is crucial for addressing challenges faced by coastal communities. The main difficulty is investing in social assets to develop effective institutions capable of sustainably managing both physical and human resources. Additionally, when physical assets benefit entire coastal communities rather than individuals, social assets become vital for maintaining networks and regulating their use. The study's findings will assist policymakers in directing their resources and efforts to ensure Tanzania's coastal communities have access to livelihood assets. For example, access to financial assets should be prioritized for communities in Bagamoyo and Kilwa, whose livelihoods rely on marine resources. These communities should receive low-interest loans, training to expand small businesses, and opportunities to join social groups. This approach would enable them to form different groups and secure support from banks through group loans rather than individual ones.

Study Limitations and Areas for Future Research

The current study suggests several avenues for future research. It examined the relationship between the accessibility of marine tourism resources and community livelihood, specifically in Kilwa and Bagamoyo, Tanzania. However, other researchers could explore how these factors relate in different tourism contexts, such as national parks, travel agencies, tour operators, and other stakeholders who directly benefit from tourism resources.

CONCLUSION

Given the rapid global depletion of marine resources and the prevalence of hunger, malnutrition, and poverty in coastal communities, conservation and sustainable use of marine resources are essential for efforts to eradicate extreme poverty and hunger. This study examined two coastal communities whose livelihoods depend on the sea, providing insights into the relationship between access to livelihood assets and achieving sustainable livelihoods. Employing the sustainable livelihood theory, the research explored how financial, human, social, and physical access to marine cultural heritage resources supports the sustainability of communities in Kilwa and Bagamoyo. The main finding indicated that access to livelihood assets significantly and positively impacts sustainable

livelihood, offering useful guidance for effective governance of marine resources. The key challenge remains in how to further invest appropriately in these assets to help society adapt to the changing and uncertain nature of maritime cultural heritage resources.

REFERENCES

- Absori, A., Amin Hanafi, M., Dimyati, K., Surbakti, N., Barora, S., & Permatasari, D. (2021). Quality, Health, and Safety Assurance of Fish Produce based on the Republic of Indonesia's Governmental Decree No. 57 of 2015 on the Quality, Health, and Safety Assurance of Fish Produce and the Increase of Fish Produce Value: A Sociophere Analysis in North Maluku. *Indian Journal of Forensic Medicine & Toxicology*, 15(1). (USAID)
- Amevenku, F. K. Y., Asravor, R. K., & Kuwornu, J. K. M. (2019). Determinants of livelihood strategies of fishing households in the Volta Basin, Ghana. *Cogent Economics & Finance*.
- Asia, S.F.I. FAO Fisheries and Aquaculture Report No. 1280 FIAO/R1280 (En). Online available. https://www.apraca.org/wp-content/uploads/2019/07/Guidelines-for-Credit-microfinance_SSF_FAO-APRACA.pdf. Access 29/07/2021
- Atmodjo, E. (2020). *Marine conservation tourism and local communities: The case of Raja Ampat, Indonesia* (Doctoral dissertation, Wageningen University).
- Attri, V. N. (2018, May). The role of marine tourism in IORA: The pathways ahead. In *3rd Tourism Experts Meeting for the Establishment of the IORA Core Group on Tourism, Durban* (pp. 6-8).
- Bennett, N. J., Kaplan-Hallam, M., Augustine, G., Ban, N., Belhabib, D., Brueckner-Irwin, I., ... & Bailey, M. (2018). Coastal and Indigenous community access to marine resources and the ocean: A policy imperative for Canada. *Marine Policy*, 87, 186-193.
- Chen, J.-L., Hsu, K., and Chuang, C.-T. (2020). How fishery resources enhance coastal fishing communities' development: lessons learned from a community-based sea farming project in Taiwan. *Ocean Coast. Manage.* 184:9.
- Coglan, L., & Pascoe, S. (2007). Implications of human capital enhancement in fisheries. *Aquatic Living Resources*, 20(3), 231-239.
- Dai, X., Wu, Z., Fan, Y., Li, B., Yang, Z., Nan, B., & Bi, X. (2019). Characteristics and determinants of livelihood diversification of

- different household types in far Northwestern China. *Sustainability*, 12(1), 1-1.
- Desiree, E. (2017). Guidance notes on Application of the Sustainable Livelihoods Framework in development projects. (UNDP)
- Ding, W., Jimoh, S. O., Hou, Y., Hou, X., & Zhang, W. (2018). Influence of livelihood capitals on livelihood strategies of herders in inner Mongolia, China. *Sustainability*, 10(9), 3325.
- Dube, K., Nhamo, G., & Chikodzi, D. (2021). Flooding trends and their impacts on coastal communities of Western Cape Province, South Africa. *GeoJournal*, 1-16.
- Dumashie, D., Salas, A. G., Lemmen, C. H. J., Mahoney, R., Miranda, M., & Sutherland, M. (2008). *Costa Rica declaration: pro-poor coastal zone management*. International Federation of Surveyors (FIG).
- Erapartiwi, K. O. (2019). Poverty Reduction in Coastal Community Area through Marine Tourism Development: A Case Study of Pemuteran Village. *Journal of Business on Hospitality and Tourism*, 5(1), 76-85.
- Erapartiwi, K. O. (2019). Poverty Reduction in Coastal Community Area through Marine Tourism Development: A Case Study of Pemuteran Village. *Journal of Business on Hospitality and Tourism*, 5(1), 76-85.
- Gai, A. M., Soewarni, I., & Sir, M. M. (2018, April). The concept of community poverty reduction in the coastal area of Surabaya is based on a sustainable livelihood approach. In *IOP Conference Series: Earth and Environmental Science* (Vol. 137, No. 1, p. 012099). IOP Publishing.
- Geiser, U., Bottazzi, P., Epprecht, M., Fokou, G., Fritschi, A., Ramakumar, R., ... & Strasser, B. (2011). Access to livelihood assets: inclusion, exclusion, and the reality of development interventions. *Research for sustainable development: Foundations, experiences, and perspectives*, 313-330.
- Gunasekara, R. W. M. N., Premaratne, S. P., & Priyanath, H. M. S. (2017). Impact of Social Capital on Livelihood Success of the Members of Community Based Organizations in Sri Lanka. *International Journal of Academic Research in Business and Social Sciences*, 7(12), 1156-1167.
- Hafidh, H. A., & Mkuya, S. (2021). Zanzibar and the Establishment of Blue Economy Strategies.

- Henderson, J. (2019). Oceans without history? Marine cultural heritage and the sustainable development agenda. *Sustainability*, 11(18), 5080.
- Holly, G., Rey da Silva, A., Henderson, J., Bitu, C., Forsythe, W., Ombe, Z. A., ... & Roberts, H. (2022). Utilizing Marine Cultural Heritage for the Preservation of Coastal Systems in East Africa. *Journal of Marine Science and Engineering*, 10(5), 693.
- Jayaweera, I. (2010). Livelihood and diversification in Rural Coastal Communities: Dependence on Ecosystems Services and possibilities for Sustainable Enterprising in Zanzibar, Tanzania.
- Karmakar, K. G., Ghosh, G. M. D. S., & Selvaraj, P. Microfinance services for coastal small-scale fisheries and aquaculture for South Asia countries with particular attention to women.
- Kimasa, B., & Benediktsdottir, B. The Impact of Coastal Community Action Fund on The Livelihoods of Artisanal Fishers in Coastal Areas Of Tanzania.
- Klein, U., Linton, J., Marr, A., Mactaggart, M., Naziri, D., & Orchard, J. E. (2013). Financial services for small and medium-scale aquaculture and fisheries producers. *Marine Policy*, 37, 106-114.
- Li, W., Shuai, C., Shuai, Y., Cheng, X., Liu, Y., & Huang, F. (2020). How livelihood assets contribute to the sustainable development of smallholder farmers. *Journal of International Development*, 32(3), 408-429.
- Lockerbie, E., Loureiro, T. G., Schramm, A. J., Gacutan, J., Yulianto, I., Rosdiana, A., & Kurniawan, F. A. K. (2024). Role of Ocean Accounts in Transitioning Toward a Sustainable Blue Economy. In *Handbook of Sustainable Blue Economy* (pp. 1-33). Cham: Springer Nature Switzerland.
- Loureiro, T. G., Du Plessis, N., & Findlay, K. (2022). Into the blue—the blue economy model in operation, Phakisa 'Unlocking the Ocean Economy' program. *South African Journal of Science*, 118(11-12).
- Makame, M. O., Salum, L. A., & Kangalawe, R. Y. (2018). Livelihood assets and activities in two east coast communities of Zanzibar and implications for vulnerability to climate change and non-climate risks. *Journal of Sustainable Development*, 11(6), 205-221.
- Marr, A., Chiwara, C., & Munyuki, E. (2011). Financial services for SME fisheries: the case study of South Africa.
- Massoud, M. A., Issa, S., El-Fadel, M., & Jamali, I. (2016). Sustainable livelihood approach towards enhanced management of rural resources. *International Journal of Sustainable Society*, 8(1), 54-72.

- Mathenge, M., Sonneveld, B. G. J. S., & Broerse, J. E. W. Can Livelihood Capitals Promote Diversification of Resource-Poor Smallholder Farmers Into Agribusiness? Evidence from Nyando and Vihiga Counties, Western Kenya. *African Journal of Agricultural Economics and Rural Development* ISSN, 9(7), 001-017.
- Metcalfe, S. J., van Putten, E. I., Frusher, S., Marshall, N. A., Tull, M., Caputi, N., ... & Shaw, J. (2015). Measuring the vulnerability of marine social-ecological systems: a prerequisite for identifying climate change adaptations. *Ecology and Society*, 20(2).
- Miller, M. L. (1993). The rise of coastal and marine tourism. *Ocean & Coastal Management*, 20(3), 181-199.
- Morara, G. N., Hassan, F., & Osore, M. K. (2015). 6. Sustaining Local Livelihoods Through Coastal Fisheries In Kenya. In *Sustainability Indicators in Practice* (pp. 99-125). De Gruyter Open Poland.
- Nur Nobi, M., & Majumder, M. (2019). Coastal and marine tourism in the future. *Journal of Ocean and Coastal Economics*, 6(2), 12.
- Nyang'aya, R. O. A., & Onyango, O. J. (2013). Accessing Credit Finance by Artisanal Fishermen: The Case of Lake Victoria in Kisumu, Kenya. *International Journal of Science and Research (IJSR) ISSN (Online Index Copernicus Value Impact Factor, 14(5), 2319-7064.*
- Poerwati, T., Maghfirah, F., & Sir, M. M. (2020). Analysis of Sustainable Livelihood level and its Influence on Community Vulnerability of Surumana Village, Central Sulawesi. *Journal of Regional and Rural Development Planning (Jurnal Perencanaan Pembangunan Wilayah dan Perdesaan)*, 4(3), 209-220.
- Pour, M. D., Barati, A. A., Azadi, H., & Scheffran, J. (2018). Revealing the role of livelihood assets in livelihood strategies: Towards enhancing conservation and livelihood development in the Hara Biosphere Reserve, Iran. *Ecological Indicators*, 94, 336-347.
- Redford, K. H., Roe, D., & Sunderland, T. C. (2013). Linking conservation and poverty alleviation: A discussion paper on good and best practice in the case of Great Ape Conservation. *Poverty and Conservation Learning Group Discussion Paper*, (11).
- Robles-Zavala, E. (2014). Coastal livelihoods, poverty, and well-being in Mexico. A case study of institutional and social constraints. *Journal of Coastal Conservation*, 18(4), 431-448.
- Roy, A., & Basu, S. (2020). Determinants of livelihood diversification under an environmental change in the coastal community of

- Bangladesh. *Asia-Pacific Journal of Rural Development*, 30(1-2), 7-26.
- Shahbaz, B., Vinod, C. P., Geiser, U., Sadaf, T., Schärer, L., Müller-Böcker, U., ... & Wiesmann, U. (2010). Access to livelihood assets: Insights from South Asia on how institutions work. *Perspectives/NCCR North-South*, (5), 283-297.
- Smith, T. F., Thomsen, D. C., Gould, S., Schmitt, K., & Schlegel, B. (2013). Cumulative pressures on sustainable livelihoods: coastal adaptation in the Mekong Delta. *Sustainability*, 5(1), 228-241.
- Sohn, J. I., Alakshendra, A., Kim, H. J., Kim, K. H., & Kim, H. D. (2021). Understanding the New Characteristics and Development Strategies of Coastal Tourism for Post-COVID-19: A Case Study in Korea. *Sustainability*, 13(13), 7408.
- Su, Z., Aaron, J. R., Guan, Y., & Wang, H. (2019). Sustainable livelihood capital and strategy in rural tourism households: A seasonality perspective. *Sustainability*, 11(18), 4833.
- Torell, E., McNally, C., Crawford, B., & Majubwa, G. (2017). Coastal livelihood diversification as a pathway out of poverty and vulnerability: experiences from Tanzania. *Coastal Management*, 45(3), 199-218.
- Walelign, S. Z. (2016). Livelihood strategies, environmental dependency, and rural poverty: The case of two villages in rural Mozambique. *Environment, development and sustainability*, 18(2), 593-613.
- You, H., Hu, X., Bie, C., & Zhou, D. (2019). Impact of livelihood assets on farmland-Transferred Households' Willingness to Urbanism and Policies Implications for farmland transfer: Evidence from Zhejiang, China. *Discrete Dynamics in Nature and Society*, 2019.