Section on African Public Administration
(SAPA)

African Journal of Public Administration and Management

AJPAM/SAPA Special Edited Issue Vol. XXVIII No. 2 July- December 2021

AFRICA'S DEVELOPMENT GOVERNANCE POST COVID-19 DISRUPTIONS, SETBACKS, OPPORTUNITIES FOR AN EQUITABLE SOCIO-ECONOMIC RECOVERY

African Association for Public Administration and Management (AAPAM)

Section on African Public Administration
(SAPA)

African Journal of Public Administration and Management (AJPAM)

AJPAM/SAPA Special Edited Issue Vol. XXVIII No. 2 July- December 2021

AFRICA'S DEVELOPMENT GOVERNANCE POST COVID-19 DISRUPTIONS, SETBACKS, OPPORTUNITIES FOR AN EQUITABLE SOCIO-ECONOMIC RECOVERY

Guest-edited by the Section on African Public Administration (SAPA)
Rym Kaki, Ph.D., SAPA Chair
Gedeon M. Mudacumura, Ph.D., SAPA Vice-chair

African Association for Public Administration and Management (AAPAM)

AJPAM Special Issue Vol. XXVIII No. 2 July- December 2021,
Africa's Development Governance Post COVID-19 Disruptions, Setbacks, Opportunities for an Equitable Socio-Economic Recovery

Includes Bibliographical References
ISSN: 2222 -646X

Published by African Association for Public Administration and Management (AAPAM)
132 Fuchsia Close, Gigiri
Nairobi, Kenya.
P O Box 48677, 00100
E-mail: aapam@aapam.org/info@aapam.org
Telephone: 254 20 2629650/+25471236787

Cover design, Layout and Print by: Print Serve

AJPAM GUIDE TO CONTRIBUTORS

AJPAM is the official Journal of the African Association for Public Administration and Management (AAPAM), Africa's continental professional association for public administrators and managers. AAPAM brings together policy makers, management practitioners and scholars associated with the state and non-state sectors. AAPAM is also affiliated with other International and professional bodies across the globe.

AJPAM is a bi-annual publication published in January and July each year. Manuscripts discussing a range of issues of public administration, leadership, management, development and related matters across the continent and from other parts of the world are welcome.

AJPAM's editorial policy is to publish original works that are practical and scientifically based and /or suggest new insights and innovative ideas in African and Global Administration and Management.

Authors are charged $100 USD (One Hundred United States Dollars) for each paper published in AJPAM as from 1st January 2018. The money shall be paid when submitting the final copy after peer review (see account details below)

Relevant bibliographical notes, literature and book reviews are invited as well.
Interested contributors are advised to submit their manuscripts in electronic format in MS word by email, two hard copies of the manuscript may be sent in addition. The articles should comply with the following:

1. Title page, with full names of author, an abstract of 150-200 words and relevant key words
2. Be formatted in MS word, be typed double – spaced with a size 12 font.
3. Not exceed 6,000 words.
4. Bibliographic references should be in the Harvard style
5. Ensure that in the event that endnotes are used, they should be very brief, limited to observations and comments that do not form part of the bibliographical reference. Endnotes should be numbered in the text and placed in a consecutive order at the end of the text, immediately before the list of references.
6. The Tables and Figures should be appropriately named, numbered and placed in the text.

Authors are advised to ensure that their articles;

a. Present new knowledge in the field of Public Administration and Management.
b. Employ scholarly and professional language in English or French.
c. Generate discussions that can lead to mapping out solutions to challenges of Public Administration and Management.
d. Express perspectives from different African Regions.
e. Contain, as far as possible, implications for public sector managers and administrators.

CONTENTS

Introduction

Rym A. Kaki[1] & Gedeon M. Mudacumura[2]

The dynamic challenges confronting African governments in terms of promoting good governance and democracy, have been the subject of intense debates among development scholars and practitioners. Haque, et al, (2017) explored both the externally prescribed and home-grown public sector governance initiatives geared toward democracy and development, while suggesting alternative strategies to improve the public sector's processes and institutions of governance. They argue that after three decades of neoliberal reforms or re-inventions in public governance often imposed or advocated by international development agencies, there has emerged a certain worldwide realization that these changes in governance have failed to produce expected results in developing countries, particularly in Africa. Discussing the narrative foundations of development, Kaki (2004) underscored the relevance of the interplay of endogenous as well as exogenous structures. "On the endogenous level, state agencies alone are not capable of bringing about economic growth and political change. On the exogenous level, historically and currently established relations of interdependence bind national systems with supranational systems. Interdependence... significantly shapes the course of a nation's development experience" (Kaki, 2004:29). Considering the emerging global perspectives on development governance, it is worth highlighting that "one rising concern is the need to practice a more inclusive governance….to build inclusive institutions where the majority of the population can actively participate in the process of governing to create a level playing field, ensure equitable access, and encourage new technologies for sustainable development (Haque, et al, 2017:7).

Similarly, in their effort to understand Africa's governance structures and its economic growth performance, Owoye and Onafowara (2017) noted that the leadership governance structures and the policy choices of the first two generations of African political leaders (APLs) were ill-advised, counter-productive, and thus contributed to the

[1]Dr. Rym A. Kaki is Associate Professor of Governance and Management at the University of Southern California Sol Price School of Public Policy (HYPERLINK "mailto:rym@usc.edu" rym@usc.edu) and the current Chair of ASPA-Section on African Public Administration (SAPA, http://thesapa.org);
[2]Dr. Mudacumura is Professor Emeritus of Public Administration at Cheyney University and currently the Vice Chair of SAPA and member of the National Academy of Public Administration/Africa Working Group

economic and development predicaments in African countries. The authors' empirical analysis concluded that the third generation of APLs may show great promise in putting the continent on a sustainable economic growth and democratic governance paths.

Unfortunately, the current COVID-19 pandemic exacerbated democratic governance's existing challenges and reversed positive gains achieved. Delapalme (2021) went on to state that postponed elections and excessive lockdown measures have further deteriorated the democratic and rights landscape as well as civil society space. She further noted that the most concerning impact of COVID-19 for Africa is economic and social, with recession predicted in Africa for the first time over the last 25 years. Such an event could threaten to reverse the gains obtained over the last decade in economic and human development. Could it be that COVID-19 present African governments with the opportunity to re-think a more sustainable, more resilient, more job-creating, and more inclusive governance model?

The authors of the papers published in this AJPAM special issue tackled the above question, and explored the role of public sector leadership, management, and governance in addressing obstacles to public health improvement, poverty reduction, social stability, and environmental sustainability. Specifically, John-Mary Kauzya, looked at "Ten Priority Transformational Leadership Focus Action Areas in the context of Implementing the 2030 Agenda and the Africa 2063 Strategy: Africa's Renewed Change Leadership Challenge." The author discussed and recommended ten transformational leadership focus action areas, generic transformational competencies, mentalities, and soft skills which if well adhered to and mastered by Africa's leaders will go a long way not only to effectively handle the COVID-19 pandemic but also to achieve to a greater extent, the sustainable development goals (SDGs), and Africa's transformational aspirations.

In the same vein, Sylla Keba's research focused on "The Innovative Role and Responsibility of the African Public Sector Leaders Facing New Challenges in Africa." He examined Africa's long history of public administration traditions with specific reference to ancient Egypt and Nubia. His research further looked at two African theoretical frameworks based on a shifting of paradigms known as African solidarity, and the inclusion of African cultural identity and ideological setting.

Shifting the focus from transformational leadership and the role and responsibility of public administrators, Oluwole Owoye and Olugbenga Onafowora highlighted "The

Economic Impacts of Infectious Diseases and the Health Care Systems in Africa." labeling this global COVID-19 pandemic, which resulted in unprecedented global shutdowns and lockdowns at different levels and to varying degrees in countries worldwide, as a clarion call to all African leaders. Their research aimed at developing the barometers for gauging the macroeconomic impacts of deadly infectious diseases and the health care systems in Africa. First, they looked at the 2001 Abuja Declaration in which governments from the African Union pledged to set at least 15 percent of their annual budgets to improve their health care sectors as a manifestation of their commitment to provide adequate infrastructures in the health care sectors. Second, they ascertained the physicians to people ratio in each African country relative to the current world average of 1.56 doctors per 1,000 people and the projected 4.5 doctors per 1,000 people necessary to achieve SDGs by 2030. Third, the focus turned to human development index (HDI), which economic growth theorists regard as one of the most effective measures of health sector outcomes in all countries worldwide because it encompasses life expectancy at birth, education index, and income index.

Along the lines of health care systems, Reuel Mebuin and Macsu Hill's explored the "Africa's Infrastructural Deficits and Implications on the Public Health System" describing case studies of adequate versus inadequate public health systems, while recommending strategies that could be either adopted, enhanced, or tailored to strengthen the infrastructure of other developing countries as applicable. While Reuel and Macsu talked about health care systems in general, Erika Mamley Osae, Andrew Kweku Conduah, Mary Naana Essiaw dived into "Concrete Strategies to Close the Infrastructure Deficit in Public Health in Post COVID-19 Ghana." The authors sought to achieve a substantial improvement in the knowledge base of infrastructure in Ghana's public health sector, with the intent to helping public administrators better evaluate past and recent interventions during the height of the epidemic and providing a baseline to monitor future progress.

Shin Kue Ryu and Phil S. Nyaku explored "Zimbabwe's COVID-19 Pandemic Response: Contextual Conditions and Means Nexus," using process-tracing research design on government briefings data, to identify the country's pandemic response model. They analyzed whether the response mechanism is a convincing explanation to the longitudinal case figures and found the decoupling between the two where explanations lie in contextual conditions. Relying on such findings, the country modified

its COVID-19 response to play upon its strengths while recognizing its weaknesses.

Moving from the micro level of public health challenges and opportunities, Jean Claude Ndongo focused his contribution at the macro level by examining the link between the African Continental Free Trade Area agreement (AfCFTA) and public procurement in Africa. Based on his research, the AfCFTA is projected to increase opportunities for economic growth and social equity in many African countries by reducing poverty and increasing the involvement of the population in public-private partnerships. He further posited that, despite some challenges to its implementation, the AfCFTA will enhance government contracting practices and policies.

The above-mentioned papers featured in this AJPAM/SAPA special edition were long debated during the Section on African Public Administration (SAPA) 2021 annual symposium. SAPA offered a distinctive intellectual space for multi-disciplinary research exchange to take place amongst African, US and global scholars and practitioners rooted in public administration, management, and development disciplines. The exchange led to novel theoretical and practical propositions and strategies to strengthen African public and nonprofit sectors' systems and capabilities in their response to the social, economic, political, and environmental disruptions and setbacks brought by an unprecedented pandemic storm. Deep crises of the sort have long tails. Even if the pandemic itself will eventually subside, most governments, communities and individuals on the continent are not expected to fully recover back to normal, at least not any time soon. If we can continue to promote resiliency approaches, tap into values of social solidarity, support safety-nets, embrace multi-stakeholder and multi-sectoral collaboration, we may be able to design response strategies to set individuals, communities, cities, and rural regions on a resilient and equitable path toward recovery. The research dissemination landing in this special edition can be seen as the fruit of African Diaspora and global scholars and practitioners coming together to ponder over resilient, accountable, and inclusive pathways to strengthen the development governance in 54 countries. The latter are responsible for the world's fastest growing population; currently standing at a 1.2 billion population per the United Nations Population Division (2019), expected to double by 2050 (UN Population Division 2021), as well as for the world's youngest population; 60% of Africans are under 24 years old leading to a youth bulge in the labor force nearing 40% (Brookings Institution, Foresight Africa 2019 & 2021 Reports). These reports highlight a formidable human force awaiting

effective service delivery, heightened investment in human capital, inclusive representation, meaningful civic engagement and full support of home-grown solutions and innovation.

References

Brookings Institution. (2019). Harnessing Africa's Youth Dividend. Foresight Africa 2019 Report.

_____. (2021). Top Priorities for the Continent in 2021. Foresight Africa 2021 Report.

Haque, S., Shyaka, A., Mudacumura, G.M. (eds.). (2017). Democratizing Public Governance in Developing Nations: With Special Reference to Africa. New York: Routledge.

Kaki, R. (2004). The Narrative Foundations of International Development. In Mudacumura, G.M, and Haque, S. (eds.). Sustainable Development Policy and Administration. New York: CRC Press. pp. 25-43.
https://www.brookings.edu/blog/africa-in-focus/2021/02/25/governance-in-africa-citizen-dissatisfaction-is-growing-and-covid-19-is-likely-to-reverse-recent-gains/

Owoye, O. and Onafowara, A.O. (2017). Understanding Africa's Governance Structures and Its Economic Growth Performance: Past, Present, and Future. In Haque, S., Shyaka, A., Mudacumura, G.M. (eds.). Democratizing Public Governance in Developing Nations: With Special Reference to Africa. New York: Routledge, pp. 38-54.

The United Nations. World Population Division. (2019). 2019 Projections.

Ten Priority Transformational Leadership Focus Action Areas in the context of Implementing the 2030 Agenda and the Africa 2063 Strategy: Africa's Renewed Change Leadership Challenge

John Mary Kauzya[1]

Abstract

The adoption of the Africa 2063 Development strategy (Africa 2063) with its seven aspirations, the 2030 Agenda for Sustainable Development (2030 Agenda) with its 17 Sustainable Development Goals (SDGs) and the numerous national development strategies focusing on transformation, makes many African governments seem to have fully embraced the ambition of transforming the trajectory and finality of Africa's Development. However, the implementation and achievement of these ambitious transformational strategies and goals require sustained transformational leadership with the requisite transformational competencies, mindsets and soft skills in each and every country of the Africa Union. The challenge for developing change leadership in Africa has never been bigger nor more pressing. The onset of the covid-19 pandemic amplified the challenges and the need for transformational leadership. In this paper the author discusses and recommends ten transformational leadership focus action areas, generic transformational competencies, mentalities and soft skills which if well adhered to and mastered by Africa's leaders will go a long way not only to effectively handle the COVID-19 pandemic but also to achieve to a greater extent the SDGs and Africa's transformational Aspirations.

Keywords: Transformation, Leadership, SDGs, Good Governance, Effectiveness, Accountability, Inclusiveness

[1]This paper was presented during the SAPA 2021 (Virtual) Symposium on the theme of "Africa's Development Governance Post COVID-19 Disruptions & Setbacks" Opportunities for An Equitable Socio-Economic Recovery (Friday, April 9th, 2021), by Dr. John-Mary Kauzya (PhD), Chief of Public Service Innovation Branch (PSIB), Division for Public Institutions and Digital Government (DPIDG), Department of Economic and Social Affairs (DESA), United Nations, Headquarters, New York, USA. However, the opinions expressed in the paper do not in any way represent the United Nations. They are Dr. Kauzya's opinions as an individual.

Context and Introduction

Long-term strategic development planning is not something new in many African countries. However, 2015 was a landmark of some sort in Africa's long-term planning. First, it is in 2015 that Heads of State and government of the Member States of the Africa Union (AU) agreed the 2063 Africa strategy with its 7 Aspirations. Secondly, it is in September the same year that all Member States of the AU joined their fellow Member States of the United Nations in New York and adopted the 2030 Agenda with its 17 SDGs. It is important to bear in mind that the 2030 Agenda and the SDGs include the Millennium Development Goals (MDGs) which had been under implementation since the year 2000. Paragraph 42 of the Resolution adopting the 2030 Agenda makes the 2063 Africa Strategy part and parcel of the 2030 Agenda and commits the global body (UN) to supporting the implementation of the AU strategy. "We support the implementation of relevant strategies ….and reaffirm the importance of supporting the African Union's Agenda 2063 and the programme of the New Partnership for Africa's Development, all of which are integral to the new Agenda" (UN General Assembly Resolution A/RES/70/1 of 25 September 2015).

The content of both the 2030 Agenda and the Africa 2063 strategy are transformational in intent. Given the values, principles, goals and targets it set, the 2030 Agenda is "a supremely ambitious and transformational vision" as the title of the UN General Assembly Resolution, "Transforming our World: the 2030 Agenda for Sustainable Development" shows. Likewise, the 2063 strategy which sets out seven aspirations containing values and principles more or less similar to those contained in the 2030 Agenda is focused on transformation. In adopting it the leaders of Africa were "deeply conscious that Africa in 2015 (stood) at a crossroads and (were) determined to transform the continent and ensure irreversible and universal change of the African condition". (Africa 2063 strategy 2015).

The resolve for transforming the world and Africa contained in the above-mentioned development strategies, one regional and the other global, is echoed in many development strategies at regional and national levels in Africa. At national level, the statements of the national vision of many countries including Uganda, Rwanda, Kenya, Ethiopia, Botswana, Nigeria, Liberia, Libya, Somalia, and others refer to transformation. To illustrate this; the 2030 Agenda is "a supremely ambitious and

transformational vision", the 2063 Africa strategy is "a strategic framework for the socio-economic transformation of the continent". The East African strategy seeks to make The East African Community (Kenya, Uganda, Tanzania, Rwanda, Burundi, and South Sudan) transformed into an upper-middle income region within a secure and politically united East Africa". The Uganda vision 2040 seeks to have "a transformed Ugandan society from peasant to a modern and prosperous country within 30 years".

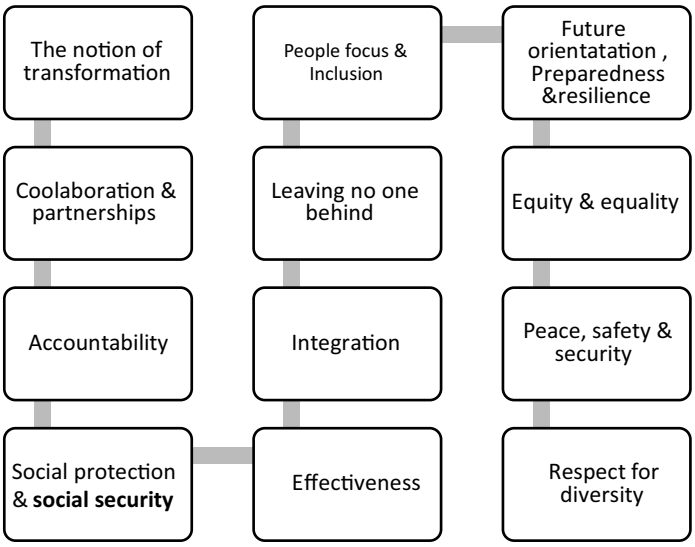
While the strategic ambition for transformation as expressed in the development plan documents is incontestable, the position of this paper is on three critical aspects of this aspired for transformation. The first one is transformation in terms of inculcating the values and principles of the 2030 Agenda in the governance and public administration as well as in society in African countries. The second one is transformation in terms of trans-formational leadership in African countries. The third one is transformation in terms of changing mind-sets, mentalities as well as soft skills of leaders to activate transformation in all sectors at all levels of governance including at community level. The basic question being that of whether the trans-formational ambitions expressed in the 2030 Agenda, 2063 Africa Strategy and national development strategies can be achieved without transformational leadership at all the levels of Africa's governance.

The first section of the paper is focused on transformation to instill values and principles based on the 2030 Agenda and the Africa 2063 strategy. The second one discusses value-based transformation vs efficiency-based Public Administration reforms which many African countries have been undertaking mainly following recommendations of international institutions such as the world Bank and others. The third one presents and discusses transformational leadership focus action areas as a transformational leadership model that stands chances of success in implementing the 2030 Agenda and Africa 2063 Strategy together with instilling the values and principles of these transformational strategies. The last section before the conclusion presents and discusses the need for a critical mass of transformational leadership competences, mentality and soft skills for activating and animating transformational leadership in Africa's governance for sustainable development.

Transformation in terms of values and Principles of the 2030 Agenda and Africa 2063 Strategy

As a transformational undertaking, the implementation of the 2030 Agenda, contains two basic components: one is the achievement of the SDGs which countries are pursuing to beat the deadline of the year 2030, and the second one is the inculcation of the values and principles enshrined in the 2030 Agenda in society; something that is not discussed sufficiently during the implementation of the Agenda. These two, when achieved, will create a good society. Without defining it the framers of the 2030 Agenda referred to good governance which ought to be part of a good society. However, there are enough clues in the General Assembly Resolution that adopted the Agenda about what entails good governance. The 2030 Agenda document points out that the World leaders gathered at the UN to adopt the Agenda envisaged a world "in which democracy, good governance and the rule of law, as well as an enabling environment at the national and international levels, are essential for sustainable development, including sustained and inclusive economic growth, social development, environmental protection and the eradication of poverty and hunger" (UN General Assembly Resolution A/RES/70/1 of 25 September 2015). Given the values and principles enshrined in the 2030 Agenda documents, the ultimate outcome, if successful, is good governance and a good society. However, one wonders whether 15 years is long enough to create a good society especially given that the world is remaining with less than ten years to the deadline of the year 2030. But the 2030 Agenda with its values, principles (see Diagram 1) and the SDGs are a starting point. As for Africa, at least 2063 is still some years away. But there is need to transform faster to catch up with the rest of the world.

Diagram 1: Values and principles contained in the 2030 Agenda

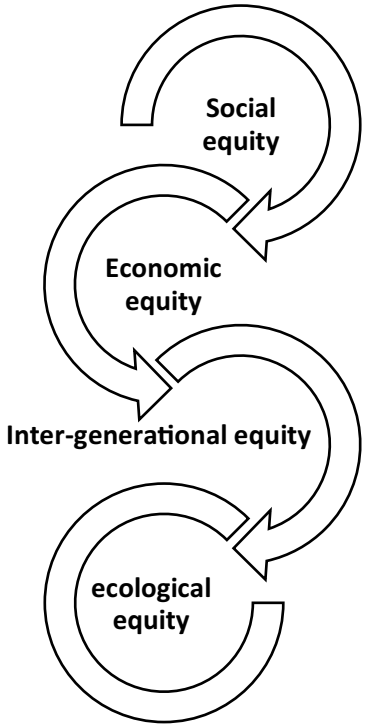


Source: Diagram drawn by the author

The above values and principles should guide transformational leadership in the process of developing people-focused, development-oriented good societies as envisaged in the 2030 Agenda. Of all these values and principles, the value of equity stands out as critical especially seen in the light of its four dimensions of social equity, economic equity, ecological equity and inter-generational equity. Without all these dimensions of equity the rest of the values and the SDGs are compromised. In Africa, inadequacy in equity is already causing instability, insecurity and violence which are jeopardizing development efforts in several countries. Instilling the value of equity in Africa's governance, especially in the delivery of and access to services, should consequently be priority for Africa's transformational leadership and factored in many (if not all) development policies, programs and activities. (Olafsdottir, A.E., Reidpath, D.D., Pokhrel, 2011)

Following the launch of the implementation of the 2030 Agenda, the Committee of Experts on Public Administration of the United Nations (UNCEPA) discussed "effective governance" (see Effective Governance for Sustainable Development: 11 Principles to Put into practice" UNCEPA 2018). In outlining the eleven principles of

Diagram 2: Four dimensions of the value of equity

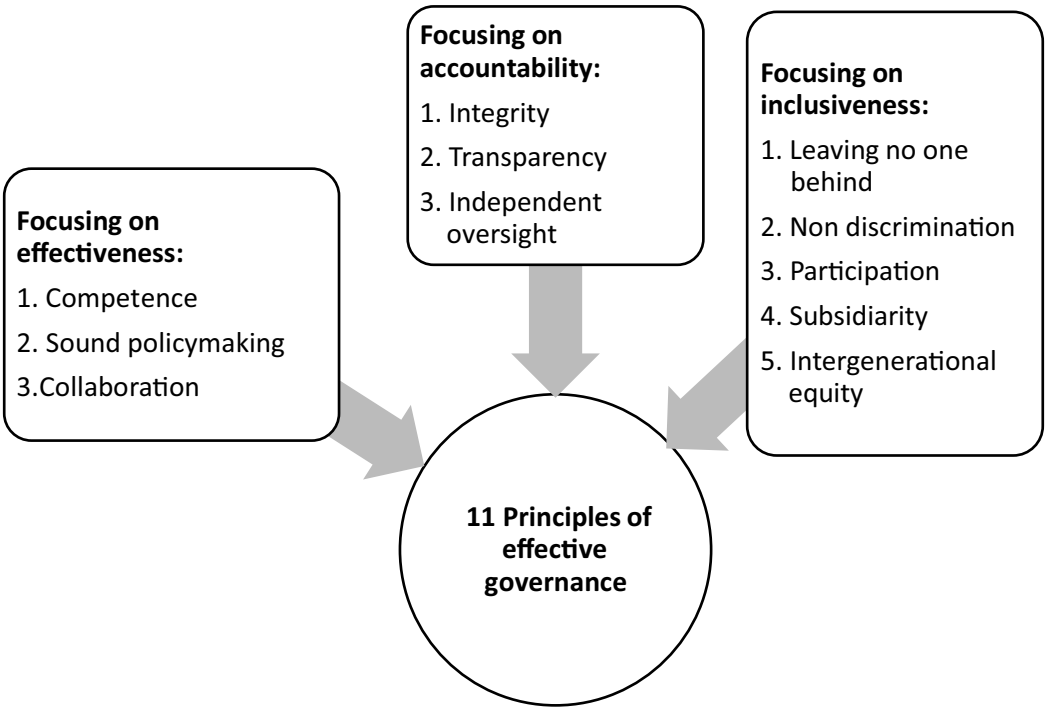


Source: Adapted from the diagram designed by the author and published in Purshottama Reddy & Henry Wissink (Eds) 2020[2]

effective governance the Committee put them into three groups: those focusing on effectiveness (competence, sound policy making, and collaboration), those addressing accountability (integrity, transparency and independent oversight) and those focusing on inclusiveness (leaving no one behind, non-discrimination, participation, subsidiarity and intergenerational equity). These principles have been, since their adoption by the CEPA, a basis for capacity development workshops on good governance and sustainable development in Africa. It should be noted that the CEPA (a body of experts in their individual capacities).

[2]Purshottama Reddy & Henry Wissink (Eds): Reflections on frican Cities in Transition: Selected Continental Experiences; (Springer Nature Switzerland AG 2020) page 124

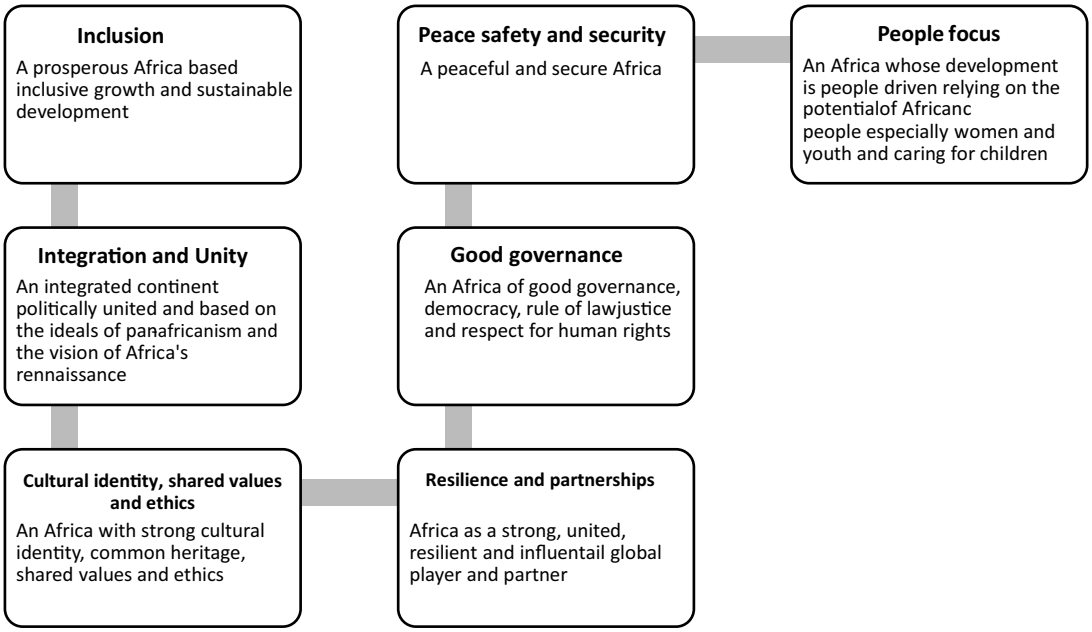
Diagram 3: Effective Governance for Sustainable Development: 11Principles to put into practice.



Source: Diagram drawn by the author

Prior to the adoption of the 2030 Agenda in September 2015 and the launching of its implementation in January 2016, some of the above values and principles had already been reflected in the Africa 2063 development strategy and its seven aspirations adopted in March 2015.

Diagram 4: Values and principles within the aspirations of Africa 2063



Source: Diagram drawn by the author

Value-based Governance Transformation vs Efficiency-based Public Administration Reform: The Need for 4 Es of Governance

The Weberian bureaucratic public administration (Sandro & Carlos Miguel Ferreira 2019) model practiced (albeit improperly) in many African countries was imposed by the colonialist for effectively controlling and exploiting the colonies. It was not intended to please or develop the citizens of Africa. The colonial administrators departed after "independence" when Africans had mastered the same coercive and exploitative public administration model. Following the departure of the colonial administrator, the ideal would have been to transform this coercive and exploitative model and make it a people-focused development and service-oriented model of public administration. Instead, when the inadequate practices of the model manifested themselves after "independence" efforts were put into reforming the same model to make it efficient. The major direction was to move from traditional public administration model to New Public management model with emphasis on private sector-based management approaches and with the value and principles of efficiency being prioritized.

However, in the interest of people-focused administration, service and development-oriented public administration, the value of efficiency often conflicts with the value of equity. Therefore, reforming the public administration that had been designed by the colonial administration for exploitation and control did not fundamentally change it.

In the context of the 2030 Agenda and the Africa 2063 strategy with its aspirations, the values and principles they stand for and the SDGs, reforming public administration on the premise of efficiency (while necessary for internal accountability and resource optimization) is still very inadequate. The three Es of management (Efficiency, Economy and Effectiveness) associated with Traditional public administration and public management, need to be coupled with a fourth E (Equity) to make four Es of governance.

What is needed in the context of the 2030 Agenda and Africa 2063 strategy is to transform public administration in Africa and make it constitute a core locus for value-based, people-focused, service oriented, and development-oriented governance. This requires transformational leadership in Africa as opposed to the autocratic leadership traditional public administration left by the colonialist or transactional leadership necessary for efficiency according to New public management.

Diagram 5: From traditional public Administration to value-based good governance

Source: adapted from diagram designed by the author and published in IIAS –IASIA e-Journal July 2016)

Searching for and adopting the appropriate equilibrium point among these three (traditional public administration, public management and value-based governance) is not about choosing one of them. Africa does not have the luxury of choosing one of them. The appropriate thing to do is to transform Africa's public administration and constitute it into one that combines the best of each of them but basing on values and principles enshrined in the 2030 Agenda and Africa Agenda 2063.

> *"Although in (Figure 5) it is presented as a shift, moving from bureaucratic leadership to transformational leadership, this is for analytical purposes. In reality, the three leadership tendencies are required. Bureaucratic leadership is needed for respect of laws, rules, regulations and due process, to avoid chaotic change and maladministration. Transactional leadership is needed to sustain efficiency in the utilization of resources to avoid waste and possible misuse of resources. And transformational leadership is emphasized here to call for change and focus on values, especially in the context where outcomes, inclusiveness, equity, transparency, accountability, justices, and so on, are needed." (Kauzya, IIAS-IASIA 2016)*[3]

This is what calls for transformational leadership in Africa which ought to focus on action areas as shown in diagram 6

Transformational Leadership Focus Action Areas in the context of the 2030 Agenda and Africa 2063 Strategy

"You have a limited time to stay on earth. You must try and use that period for the purpose of transforming your country" (Nelson Mandela in an interview with Winfred Oprah, 27 September 2000)

Leadership is a topic that has been of concern in public administration, management and governance for a very long time. And numerous scholars, researchers and authors have written about it[4]. The reflections on transformational leadership in this paper are in the context of and need for effectively

[3] Kauzya John-Mary; "Transforming Public Service for Effective Integrated Implementation of the 2030 Agenda for Sustainable Development" (IIAS – IASIA, Brussels July 2016)

[4] Read for examples; Bernard Bass: Bass &Stogdill's Handbook of Leadership: Theory, Research & Managerial Applications, Third Edition, 1990

implementing the 2030 Agenda and Africa 2063 strategy. The thesis running through is that there are trans-formational leadership focus actions areas which lead to effective imp-lementation of these transformational strategies; and that for these focus actions to be effectively undertaken, there has to be a critical mass of competences, mindsets and softs kills associated with transformational leadership.

Figure 6: Transformational Leadership, Focus action areas,

Leverage people/Community potential for transformation and sustained development.

Engage all actors and secure their support, commitment, energies, resources and action.

Align development plans with national, regional, and global development goals.

Develop competences, mentalities, softs skills at all levels of governance and in all sectors.

Ensure mobilization, frugal utilization and optimization of both internal and external financial resources.

Rely on local capabilities to ensure creativity and innovation, resilience and sustainability.

State achievements and shortfalls using the two to sustain and improve performance.

Harness an ideology that puts people at the center of all policies, plans and actions.

Instill values of professionalism, transparency, accountability, integrity and ethical conduct.

Pursue a vision for the future generations built on past, todays and future realities and needs.

Source: Diagram drawn by the author

The above diagram presents a model of 10 transformational focus action areas which transformational leadership ought to undertake to transform countries/ communities in the context of imp-lementing the 2030 Agenda and achieve the SDGS. For ease of memorization, the model is crafted around the word "leadership" itself.

One critical aspect inbuilt in the above transformational leadership model is

that it discourages the "I alone can fix it" type of leaders and seeks not to idolize or idealize individuals in transformational leadership. Yes, indeed Africa has had its idealized leaders some of them still living. And yes, Africa has a few individual leaders who have distinguishing themselves as people-focused and development-oriented. However, this transformational leadership model calls for answers to the question: Where would these idealized individual leaders be without the people. What would Nelson Mandela have done if the blacks and whites of South Africa had not accepted the creation of the rainbow nation. What would Nyerere have done if the people of Tanzania had rejected the Ujamaa and African socialism or even unity? Idolizing individual leaders without acknowledging the people (the followers) without whom the transformational leadership undertakings would be impossible is denying the truism that people and not leaders develop countries. Leaders mobilize, organize, inspire, motivate, etc. But the people develop the country.

Owing to the brevity of this paper it is not possible to elaborate on each element in the model. However, the first transformational leadership focus action areas (i) leveraging the potential of the community / people) and the last one, (ii) Pursuing a vision for the future generations being the most important elements in the model, will be briefly elaborated with examples.

(I) Leveraging people/Community potential for transformation and sustained development.

"you can't develop people — poor people have to develop themselves". (Julius Kambarage Nyerere)[5]

In the history of Africa since independence, there have been transformational leadership situations anchored on leveraging the potential of the people to develop themselves with varying degrees of successes and failures. Although these are not many, they illustrate that transforming a country is best done relying on the potential of the people to develop themselves as opposed to counting on one superman/ woman in position of leadership or an outside power. Changing the mindset of African people that it is their responsibility, and they have the potential to develop themselves is in itself a huge transformation. A transformational leader ought to be able to inspire people and make them realize this potential,

[5]Quoted in Alliance Magazine Interview June 1998

believe in themselves and give themselves to the work of developing the country. A transformational leader ought to trust the people before even inspiring them. Why would a captain of a soccer team remain its captain if he/she does not trust the team?

(I) In the immediate post-independence years in Tanzania there was Ujamaa in which Tanzanians got to learn to live and work together in Ujamaa villages which emphasized community and economic self-reliance hence transforming the country into a united society despite the fact that it is composed of more than 120 tribes.

(ii) In Kenya there was "Harambee" which is a Kenyan practice of mobilizing community resources for self-help activities and which up to today transforms communities through improvement of a variety of services.

(iii) In the 1980s Burkina Faso's trail brazing transformational work of the people under the leadership of Thomas Sankara based on self-help and self-reliance is still referred to by many commentators of Africa's development and leadership.

(iv) In South Africa, Batho Pele (people first) fundamentally transformed service delivery in the post-apartheid era and aligned the delivery of public services to the constitutional tenets of the rainbow nation.

(v) In Rwanda Umuganda, Ubudehe and Imihigo are all examples of trans-formational leadership situations based on the understanding that people have the potential to develop them-selves and the readiness to leverage that potential. These are examples that illustrate that leveraging community potential for development ought to be a prioritized leadership action as Africa pursues the 2030 Agenda and the 2063 Africa strategy.

However, there are nuances and differences in the above-mentioned transformational leadership situations which provide lessons for trans-formational leadership going forward in leveraging people/community potential for sustainable development. First, the Ujamaa experience transformed the society of Tanzania and instilled in them a spirit of unity and peaceful togetherness which has made Tanzania stand out in Africa, a continent where conflict and violence, coups and civil wars are not strange things, as a united peaceful country. However, the Ujamaa self-reliance concept in practice was forced

from above and conflicted with families and individual production practices and was eventually given up. However, the unity that it had engineered still lives on and has been an asset Tanzania has exploited for its stability in governance and development process.

Second, the harambee of Kenya, started in the 1960s, is still practiced among Kenyan communities as a practice of self-help for services they need at local community level. However, today it is criticized for often being a fundraising mechanism by the rich and powerful to get money from local communities for their own good.

Third, Rwanda's self-reliance practices including ubudehe and umuganda and imihigo have transformed communities materially and, most importantly, in mentality to believe that their development depends on them. The practices have been successful mainly because they have their foundation in the past traditional practices of Rwandan communities; and second because they have been structured to facilitate community collaboration with local and central government authorities as well as other actors and stake holders. They provide material benefit to the families and individuals involved in them hence discarding any doubt about their usefulness. They, especially the ubudehe, are now part and parcel of the country's poverty reduction strategies and local level economic development processes.

Fourth, the self-reliance practices in Burkina Faso were rapidly successful under the leadership of Sankara. However, after his assassination the government abandoned them. But in a space of about five years these practices had transformed the people of Burkina Faso to believe in themselves as solely responsible for their development. Up to do day, so many years after Sankara's brutal assassination, the fruits of this are visible in Burkinabe society. The problem with the self-help of Sankara was that it rejected contribution from the outside completely hence creating enemies; something that brought his downfall. There should be no contradiction between self-help and getting support from outside partners. It is a question of identifying the right partners whose interests are aligned with those of the communities in question. And in any case, in the context of implementing the 2030 Agenda to achieve the SDGs the 17th of which is focused on partnerships, self-reliance should not be taken to mean isolation.

Lastly, South Africa's Batho Pele policy and principles transformed the public

service of South Africa in the post-Apartheid era to be people centered and development oriented. However, in focusing on the people, the Batho Pele is more of tasking the Public Servants and government to serve the people well rather than tasking the people to develop themselves including engaging in service delivery. Therefore Batho Pele seems to call on the Public servants to serve the people rather than calling on the people of South Africa to realize their potential and expend their energies to develop themselves.

(ii) Pursuing a Vision for the Future Generations built on Past, Present and Future Realities and Needs.

In the context of implementing the 2030 Agenda and Africa 2063 strategy, transformational leadership is about making the present a little bit bearable while transforming the future for the well-being of the people. While the present (good or bad) is a consequence of past leadership, the future is a consequence of the leadership in the present. This reality is what puts the challenges and burdens of future generations on the shoulders of the leadership of today. Essentially leadership is about finding solutions to future problems today. People who aspire to take up or do take up leadership positions with transformative ambitions must bear this in mind and accept it. They are taking up leadership within the context of the two transformational agenda (2030 Agenda and 2063 Africa strategy). While their leadership styles and tactics may defer, the finality of their achievements must be aligned with or at least approximate to the 17 SDGs and the 7 Africa aspirations as these constitute the future the world and Africa want.

Transformational leadership understands that problems and challenges being faced in the present stem from unaddressed challenges and problems in the past. Therefore, transformational leadership does an exhaustive and comprehensive diagnostic analysis of the past in relation to the present conditions. and uses this as a basis not only for making changes in the present but most importantly for predicting the challenges and problems of the future as well as the solutions to them. Transformational leadership in African countries needs to pay attention to what they are doing today to transform the lives of the future generations. Conflicts, instability and violence are not just affecting people today. They are a serious threat to the future generations. Lack of respect for diversity which often causes conflict is not just a threat today. It is a big threat for future generations who will inherit. Debt accumulation and burden is not a threat to today's

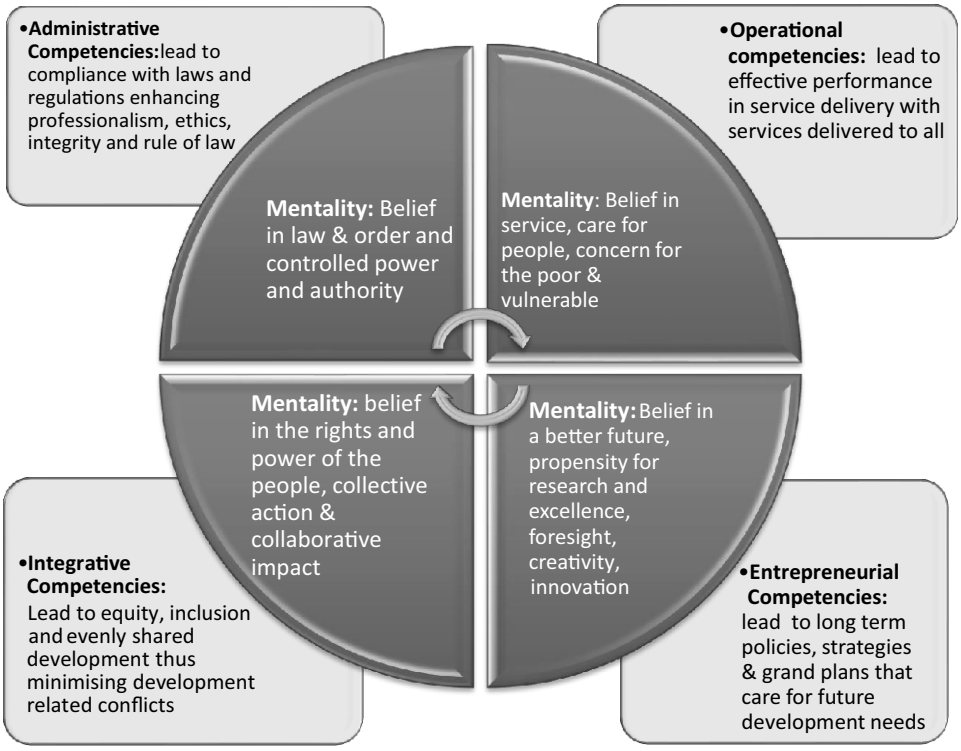
economies. It is a danger to future economies and will cause poverty and misery tomorrow. Lack of education, knowledge, and skills in the population is not just a problem in the present. It will sustain underdevelopment for future generations. Lack of infrastructure is not a challenge for today alone. It is a handicap for future generations. The unrealized dream of Africa's unity is not a challenge and a problem for today only. It will cause more misery for African populations of tomorrow. When people in western countries refer to Africa they talk as if Africa is one country. Well, the author has always wondered, if that is the case, why can Africa's leadership not give to the world a united Africa as one country. Transformational leadership is not leading the current generation only. It is most importantly leading future generations. For this transformational leadership works with the people (leverages the potential of the people) to articulate a vision for the future and embarks on implementing it.

More than twenty-five African countries have their development strategies focused on transformation of their economies and societies. However, what is yet to be known is whether the same countries have these transformational strategies replicated at community level. Real development in terms of implementing the 2030 Agenda and achieving the SDGs and realizing Africa's aspiration can only be seen at community level where people live.

The Need for a Critical Mass of Transformational Leadership Competencies, Mentalities and Soft Skills

In order for the transformational leadership action focus areas to be undertaken effectively at all levels of governance, in all sectors and corners of every country, there is need for a critical mass of transformational leadership competences and mentalities as well as transformational leadership soft skills. Transformational leadership must be pervasive in the entire society. The generic transformational leadership competences and mentalities are presented in diagram 7.

Diagram 7: Generic Transformational Leadership Competencies and Mentalities



Source: Diagram drawn by the author

While there are views that leadership is born rather than nurtured, the position of this presentation is that transformational leadership needs to be intentionally developed in African countries in all sectors and at all governance levels. Critical generic transformational competency areas include administrative, operational, entrepreneurial, and integrative competencies. These competencies, however, need to be operationalized by appropriate mentalities as shown in diagram 7.

Most of the leadership challenges public sector governance is facing in Africa are related to inadequacies or lack of these competencies and inappropriate mentalities. For examples, rampant corruption, lack of transparency and accountability and inadequate rule of law can be linked to inadequate administrative competencies coupled with people holding leadership positions while

they do not believe in law and order nor in controlled power and authority. This often results in impunity in public administration resulting in rampant corruption. With this in mind, one can see that the deregulation which was part of administrative reforms of the 1980s were ill informed. The problem was not that there were too many regulations in public sector governance or too much control in public sector management and in the public service. The problem was that what ever laws, rules and regulations existed at the time were not adequately enforced due to inadequate or poor deployment of administrative competencies. Therefore, deregulations became just another gallon of gasoline powered on the already burning fires of corruption in the public sector.

Poor or inadequate performance in public sector institutions including schools, hospitals and others could be linked to inadequate operational competencies on the part of, for examples, teachers and health workers coupled with inadequate care for service to people or concern for the poor and vulnerable who need empathy and service.

Lack of or inadequate integrative competencies could be the explanation of inequitable distribution of de-velopment in many countries and many conflicts over development resources and opportunities. This is coupled with people occupying leadership positions while they have little belief in rights and power of people, collaborative and collective action, equity, equality nor collective impact.

Finally, owing to lack of or inadequate entrepreneurial competencies on the part of people occupying leadership positions in public sector governance coupled with mentalities that do not prioritize vision for a better future for the people, that do not have propensity for excellence and creativity. Many public sector entities including governments do not have long term nor medium term transformational strategies that can guide innovative development for a better life for people today and in the future. Even in some cases where these written long-term strategies do exist, they remain to gather dust on the bookshelves unimplemented. Lack of big infrastructure projects such as highways, railways, electricity dams or nuclear energy projects, broadband internet and others could be due to inadequate future-oriented minded leaders. Paying attention to our daily bread is not a transformational mentality.

Transforming Africa must therefore include and prioritize changing leadership and people mind-sets. Transforming the minds is a stepping-stone to transforming anything else.

Directly associated with the transformational competencies and mentalities are the soft skills of transformational leadership, including anticipation (ability to influence the future), communication, persuasion, listening, negotiation, humanness and empathy, empowering and motivation, collaboration, resilience and persistence all aimed at a good collective impact on socio-politico-economic transformation.

Conclusion

The gist of this paper is that the hope contained in the 2030 Agenda, the Africa 2063 strategy and in the regional and national transformational development plans where they exist, has renewed Africa's perennial search for change leadership: this time with focus for socio-political economic transformation. The ten-priority transformational leadership focus action areas recommended in the paper are people-centered and future oriented aimed at instilling in the society values and principles enshrined in the 2030 Agenda and the 2063 Africa strategy and creating a good society where self-reliance is intertwined with collaboration and partnership to ensure people- lead resilience. The African people who have for long been neglected or even refused participation and engagement in their own development should, under transformational leadership, always be henceforth the cornerstone in the edifice of Africa's transformation and development for a better future for all. “The Stone that the builder refused will always be the head cornerstone”. (Bob Marley 1970).

Among the capacities African countries need to develop in the context of implementing the 2030 Agenda and the Africa 2063 strategy under the COVID-19 pandemic include capacities for transparent, credible and trusted transformational leadership: A leadership that commits to developing strong, effective, inclusive and accountable public institutions around the values and principles of the 2030 Agenda to support the development of a resilient society and achieve sustainable development. Instilling in society and institutions the values and principles enshrined in the 2030 Agenda and the 2063 Africa strategy is critical because these values and principles are the “social vaccine” against the devastating impact of pandemics. socio-economic inequities, intergenerational inequities, and leaving no one behind.

References

African Union Commission, Africa 2063 strategy 2015 (AU, Addis Ababa, 2015.

Bernard Bass: Bass &Stogdill's Handbook of Leadership: Theory, Research & Managerial Applications, Third Edition, 1990

Gabbar Ha et al: "Transformational Leadership and its Impact on Governance and Development in African Nations: An Analytical Approach" in Journal of Entrepreneurship & Organization Management, 2014)

Julius Kirui Shole et al: "Transformative Leadership for the 21st Century: Africa at Glance"(in International Journal of Scientific and Research Publications, Volume 9, Issue 11, November 2019)

Kauzya John Mary: " The Role of Political Leadership in Reconstructing Capacities for Public Administration after Conflict: Implications for International Aid", (Presentation during the International Specialized Conference on "International Aid and Public Administration": Good Enough Governance for Poorer Countries: reforming aid to governance, Ankara, Turkey, 23-27 June 2008: http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN032156.pdf

Kauzya John-Mary; "Transforming Public Service for Effective Integrated Implementation of the 2030 Agenda for Sustainable Development" (IIAS – IASIA, Brussels July 2016)

Manfred F. R. et al; "Destructive and Transformational Leadership in Africa" (in Africa Journal of Management, 2016)

Nic Cheeseman and Jonathan Fisher Authoritarian Africa: Repression, Resistance, and the Power of Ideas (African World Histories, Oxford University Press, New York, 2019)

Olafsdottir, A.E., Reidpath, D.D., Pokhrel, S. et al. Health systems performance in sub-Saharan Africa: governance, outcome and equity. BMC Public Health 11, 237 (2011). https://doi.org/10.1186/1471-2458-11-237)

Purshottama Sivanarain Reddy & Henry Winssink (Eds); Reflections on African Cities in Transition: Selected continental Experiences, (Springer Nature Switzerland AG, 2020)

Sandro & Carlos Miguel Ferreira; "The Concept of Bureaucracy by Max Weber" in International Journal of Social Science Studies, Vol. 7 # 2 (Red Fame Publishing, 2019)

UN General Assembly Resolution A/RES/70/1 of 25 September 2015.

UNCEPA, Effective Governance for Sustainable Development: 11 Principles to Put into practice" UNCEPA 2018, (https://publicadministration.un.org/en/CEPA).

The Innovative Role And Responsibility Of The African Public Sector Leaders Facing New Challenges In Africa

Keba Sylla[1]

Abstract

This article examines what African public sector leaders can do as they confront challenges across the continent to increase efficiency and effectiveness in service delivery for the citizens. This paper argues that innovation and a greater responsibility of public sector leaders in Africa must be at the center of African governance and accountability. To understand the urgency of the issue, this article focuses on a shifting paradigm which is based on a new innovative policy and the responsibility of public sector leaders in their daily duties. This paradigm shift is centered on an African theoretical framework based on Africa's long history of public administration. This theoretical framework is called African solidarity. The second theoretical framework looks at the inclusion of the African cultural identity into the Public Administration theory on the Continent. This idea is based on the integration of African linguistic aspect into the work of African public sector leaders. The language is a tool of communication but also constitutes a fundamental tool of innovation. It helps to foster cultural identity and an ideological setting for the basis of country or a continent.

Keywords: African Solidarity, Maat, Papyri, Innovation, Productivity, Culture, African federation

The Innovative Role and Responsibility of the African Public Sector Leaders Facing New Challenges in Africa.

Since the continent's political independence over sixty years ago, the economic and social conditions in Africa have not improved. In many African countries, public sector leaders struggle to improve and to adopt different policies that impel growth and economic development. Today, difficult social conditions and low economic indexes inherited from colonialism are still in place. Poverty and mismanagement of public funds have impeded the economic and social development in this part of the world despite the existence of immense natural resources in the continent. It is imperative in the 21st century that

Social Sciences Department Queens Borough/CUNY Bayside, NY

innovation and the responsibility of public sector leaders become more important than ever to solve this African fatalism. Facing multiple crises, including health, poverty, corruption, environmental degradation, and lack of sufficient food production, public sector leaders must adopt a new attitude to improve the continent's economic outlook.

First, this paper examines or refers to Africa's long history of public administration traditions. This reference impels African public sector leaders to connect themselves to ancient Egypt and Nubia. The kingdom of ancient Egypt wrote immense public administration documents on papyrus. Second, this article focuses on two African theoretical frameworks based on a shifting of paradigms known as African solidarity (based on Maat), and the inclusion of African cultural identity and ideological setting. Third, this paper concludes with the analysis of the institution of a political structure such as an African federal state which would accelerate the transformation of the continent's resources to facilitate the economic development of Africa. Before going further into the analysis, this article presents the geographical location of the Kingdom of Ancient Egypt, or Kemet.

The Geography of Kemet: Ancient Egypt and NUBIA

For the Ancient Egyptians and Nubians, their territory was a single land that stretched from the deep south of the African continent to the Mediterranean Sea (Nile Valley region). Ancient Egypt and NUBIA formed one political ensemble that is known by them as two lands: the Southern region of that ensemble was called Taj Seti (NUBIA). The Northern part of the land was called Tameru known as Egypt by the Greeks and later by the Romans. The Kemetic Kingdom was created by Africans. Its first King, Narmer (Dynasty I, 3100 BC), reunified the two lands. This term (Kemit) means the land of the Black people (or Dark skin people. The term Pharaoh originated from Greece and meant the "Big House" or probably the owner or proprietor of the big house. The Kemetic kingdom lasted for over 4,000 years and gave the world the most advanced civilization ever known by mankind. This kingdom was built on the principles of Maat and its teachings. The survival and the governing of the kingdom depended on the strict following of these principles. The following sections explain the idea or philosophy of Maat and how the Pharaonic state functioned based on these principles.

Who is Maat?

Maat is both a person and an idea. She is the concept of truth and justice. She is the guardian of the laws and values as well as universal harmony in the Ancient Egyptian kingdom. Maat was created by RA, the sun god in Ancient Egypt. RA was the creator of all. Sometimes, Maat was described as the wife of RA, and she had no mother. Sometimes Maat was presented as the wife of Toth, the Ancient

Egyptian (Kemet) god of wisdom. One thing clear in the minds of Ancient Egyptians was that RA created Maat, when He, Ra, rose from the water of chaos or "NUN". Maat was presented and mentioned in Ancient Egyptian papyri records around 2300 BC. Finally, Maat was represented as Isis, goddess and mother of all who became the most worshiped by ancient people throughout the Mediterranean world. Isis also was a person, a concept of justice, balance, harmony, and a matriarchal figure, who was always beside her husband Osiris and their son Horus. In fact, the Pharaohs later imitated this image and associated their wives with the throne in Ancient Egypt. Her protection was needed, and she always guarded the temples and was associated with all state affair decisions.

MAAT or maat was a philosophical concept and a goddess in Ancient Egyptian-Nubian kingdom. Maat (upper case M) referred to the goddess, whose image represented a beautiful dark skinned African woman with an Ostrich feather in her head. The word maat (lower case) referred to a philosophical concept, a system whose goal was to defend against chaos in nature and in society. It was the foundation and order in the world and was expressed in four basic areas:

1. The universal domain in which Maat was "le tout Ordonné", the totality of ordered existence and represents things in harmony and in place.
2. The political domain in which Maat was justice and in opposing injustice.
3. The social domain in which the focus was on right relations and duty in the context of community.
4. The personal domain of following the rules and principles of Maat meant to realize concretely the universal order in oneself and to live in harmony with the ordered whole (Obenga, 1990, 158, COFFIN TEXT, CT I, 35).

Therefore, Maat and the philosophical teachings were not only for the Pharaohs but also for all public officials in the government and citizens of the kingdom. Some papyri mentioned the presence of Maat everywhere in Ancient Egyptian Pantheon

Pyramid Texts: These papyri appeared at the end of the Old Kingdom. They consist of inscriptions covering the walls of the inner chamber and corridors of Ancient Egypt pyramids. They are inscriptions with a series of rituals and spells. They are considered religious writings, usually in a literature format and language. They also cover tombs, sarcophagi, and coffins. Traditionally, the pyramid texts concern the Pharaohs' tombs. These inscriptions remind the deceased and the living people of the Maatic philosophy and teachings to be observed if one wants to have a better afterlife.

The Coffin texts: These were similar to the pyramid texts but mainly concerned the wealthy individual and their family members, who covered their coffins with these inscriptions. They were religious texts or ritual texts to accompany the deceased ones during their journey to afterlife. Many papyri show coffin texts

with 1,000 spells. They are found on mummies in tombs.

The Book of the Dead: One of the best known is the papyrus of ANI, second half of the XVIII Dynasty (1500- 1400 BC). This New Kingdom funeral book represented a collection of funerary texts, describing resurrection of spirituality and the immortality of the soul.

The 42 Negative Confessions: These are 42 laws of Maat, found in the Book of the Dead, known as the Declaration of Innocence. They were part of the Book of the Coming Forth Day. The Declaration of Innocence was a list of 42 sins that the soul of the deceased can honestly declare it had never committed when it stands for judgment in the afterlife. These texts described how a person must behave during his/her lifetime in this world in order to gain the paradise after death. The most famous list comes from the Papyrus of Ani of Thebes around 1250 BC. These papyri constitute sources of inspiration for anti-corruption behavior for modern public sector leaders in Africa. Several other papyri on practical matters are relevant to today's African public administrative sector.

Ancient Egyptian Papyri and Their Content

Thousands of papyri were written by Ancient Egyptians during their 4,000 plus years of history. These documents contained various types of knowledge covering all sectors regarding Ancient Egyptian society and its government. Several are cited in this paper.

A. Papyri on Maat Philosophy

1. The Cairo-Calendar: Variability of Algol star dated from 1244 to 1163 BC under the reign of Ramses II. This calendar is the first precise calendar ever created in the world. It has 365 days, which is a year, and this calculation has never changed since then. The objective of this calendar was to establish stability, consistency, and harmony. In Ancient Egypt, a calendar not only helped to be sure of the connection between people and their God but also to ensure the relationship between people and their environment. It helped people connect themselves to the mineral, vegetal, animal, and astral worlds which are the four elements of the cosmos. The role of a calendar in Ancient Egypt was to help people forecast inundations, rain, and predict the future. This calendar contained lucky and unlucky days. It also emphasized the role of Maat over Ancient Egyptian lives. According to the researchers of the University of Helsinki in Finland, this calendar is the oldest preserved historical document that allows the naked eye to observe a variable star, the eclipsing binary star Algol. The Cairo-Calendar was divided into three sections (Book I, II, III). Book II consisted of 365 passages, one for each day of the 360 days of Egyptian year plus five favorable and adverse epagomenal days, concerning religious feasts, mythological incidents, forecasts, and warnings.

B. The Administrative Papyri

2. The Wadi Al Jarf and the Diary of Merer dated from the 4th Dynasty during the Old Kingdom under the reign of the Great Pharaoh KHUFU, 4,500 years. This papyrus gave details on how the Central Administration works and how the Administration distributes food supplies to its workers and to the travelers who work far from the cities. It contained the Diary of Merer, probably one of the scribes and officials of construction sites. The papyrus gave details on the progress of the construction of the Great Pyramid; the sources of the stone and how they are transported from the extraction site to the construction site; and information on the quantity of food and meat distributed to the workers as well as the pay scale and pay scale of the workers.

3. The Abusir Papyri was an administrative papyrus consisting of several documents (papyri). It dated from the Middle Kingdom during the 24th BC and focuses on the Central Administration during the 5th Dynasty period. It presented detailed elements that are inherent of the functioning of central administration. It also presented how a royal mortuary temple is run and contains records on priests and their duties. There were descriptions of the equipment and accounts of daily offerings, grain, meat supplies, names of officials and recipients etc.

C. The Mathematical and Medical Papyri

1. The Berlin Papyrus 6619. These ancient papyri dated from the Middle Kingdom, under the 12th (C. 1990-1800 BC) or 13th Dynasty (1800-1649 BC). One was a medical papyrus; the other was a mathematical papyrus. The medical section of the papyri focused on pregnancy and test procedures. The Berlin Papyri also presented contraception measures and how to prevent pregnancy. For example, the papyrus detailed the procedure of using crocodile dung by Egyptian women to prevent pregnancy. This method was based on the use of natural medicine. This was the first use of contraception method in the world. This was a remarkable quality of achievement by the Pharaohs' medicine. The Mathematical section indicated that before Pythagoras, the Ancient Egyptians already knew the so-called Pythagorean Theorem.

2. Edwin Smith Medical Papyrus. This is an old papyrus of 3,000 years from the Old Kingdom era of Ancient Egypt. It was the first medical papyrus on surgical techniques in Ancient Egypt. It contained, for the first time, the term Brain and talked about brain injury. It was the first medical practice of Ancient Egypt. The papyrus is divided into 48 cases, most of them describing traumatic injuries. The text or the papyrus instructs physicians to examine the patient and look for revealing physical signs that may

indicate the outcome of the injury. Many concepts that physicians and patients today take as common knowledge come from this papyrus of Ancient Egyptian scribes during the Old Kingdom, more than 3,000 years ago.

The Brooklyn Papyrus, also known as the Brooklyn Medical papyrus, dated back to Ancient Egypt and is the oldest preserved writings about medicine and ophiology. It focused on the topic on snakebites and their cure. This papyrus was translated by the French Egyptologist Serge Sauneron in the 1960s. Sauneron indicated that the Brooklyn papyrus dated back to the Pyramid texts under the 4th Dynasty.

Besides the papyri on Maat and its philosophy, Ancient Egyptians developed many documents compiled in Annals. These documents covered various fields including the calendar system, public administration, medicine, mathematics, philosophy, and technology. These documents constitute proof that Ancient Egypt was the source of public administration and other social sciences and mathematics in the world.

The Historical Origin of Public Administration

At the present time in Africa, it is hard to believe that the idea and the field of public administration and public sector leaders are of African origins. There are no references to the great achievements made by our ancestors during ancient Egyptian and Nubian times. Many African scholars, teachers, and other public sector leaders focus their works on European's history and models about public administration. Although the history of Ancient Egypt and its achievements in that field were unprecedented, there is no curiosity or enthusiasm across the continent to search or research this lost past. Cheikh Anta Diop (1974), in his monumental book, African Origin of Civilization: Myth or Reality, demonstrated the fact that every human progress started in NUBIA (Modern Sudan) and Ancient Egypt and was created by African people.

Throughout its long history, Ancient Egypt under the rules of the Pharaohs created and modernized the field of public administration (see papyri cited above). In a conference in Niamey, Niger, Professor Cheikh Anta Diop (1974) indicated that the first public work in human history was initiated and made by the Egyptians. To dominate and control the inundations of the Nile, the public sector leaders, engineers, geometers, cadastres, and other scientists developed techniques to delimit each parcel of land. This work helped the peasants after the flooding to easily find their lands and quickly resume their tasks without disputing with the neighbors. These ingenuities in public administration impelled the increase of food production for the ancient people in the Nile Valley. It also allowed the creation of the first urbanization in the world. The public sector leaders initiated a vast public works program. This included cities with monumental public building (pyramids), temples, and warehouses throughout the

kingdom (Sauneron, 1957). The African public administration effectiveness and its efficiency created envy and also jealousy from many other ancient peripheral small states around Egypt (Gomez, 2021). The Ancient Egyptians' technical progress and achievements brought many immigrants who were looking for opportunity, work, safety, and education. For thousands of years, African people dominated the ideas of creation about public administration, public work, economy, politics, religion, and law and justice (Menu, 2004). Through the papyri and other annals from Ancient Egypt, African public sectors of today must look at the African past to face and overcome the new challenges that are still hindering economic progress on that continent. The above cited papyri represent a testament for returning to our history and learning from it. This historical continuity will help modern African public sector to build a new paradigm based on Africa's own cultural identity and ideological setting to confront the continent's challenges. The understanding and use of these papyri will help African public sector leaders create their own theoretical and conceptual regarding public administration. This new paradigm compels innovation and increase productivity.

The Need for Innovation in African Public Sector

Since African independence, the focal point has been on the effectiveness and the efficiency of service delivery with respect to African economic and administrative sectors. Scholars and administration specialists argued that Africa needed to innovate and create a more modern public sector in order to develop. However, for the last sixty years, public sector leaders used the same arguments and tools and kept repeating the same errors with respect to Africa's economic and political endeavors. All the recommendations have come from the West. In order to innovate the African public sector, leaders need to embrace a new paradigm. This paradigm shift is based on Africa's own cultural and ideological identities. This stems from abandoning the old way of doing research and using other ideas to solve Africa's specific problems.

The Old Tradition of Doing Business in the African Public Sector

Since the 1990s, Africa has been taught that in order to develop, it must create an environment favorable to the ideas of liberal market standards to achieve its economic development, political viability, and social progress. These suggestions came from the Western countries that believe Africa's economic issues reside in her non-adaptation to modern Western ideas with respect to development. The prescriptions for Africa's development reside in the following ideas: political and bureaucratic democratization, creation of a multi-party election system, eradication of corruption, and privatization of critical sectors of African economy. Yanguas and Badru (2016) argued that the old dictates that African

countries adapted for the public sector reform during the past two decades did not produce the expected results. Despite these reforms, Africa is still in a dire economic situation with increased poverty and less social progress. In a similar vein, the multi-party system and political reforms across the continent did not produce good governance. Old management habits are still in use. Corruption and endemic clientelism in the public sector continue to plague African public administrations.

Wondwosen B. Teshome (2008) argued the non-viability of African democracy through elections. He referred to the fact that elections do not necessarily lead to democracy. He also indicated that despite many elections across Africa, transparency and other key elements of good governance are not consolidated. These cyclic elections become budgetivorous for the African public sector. Therefore, public sector leaders are still searching for ways to increase productivity and effective service delivery, by using tools dictated by Western ideas and practices. Finally, Bimo A. Nkhata and Charles Breen (2010) also lamented the lack of innovation in economic development and the protection of the environment. The authors showed how many projects failed in Africa due to the fact that there is little or no input from local populations. Many decisions are dictated by international donors, who control the plan and the execution of the tasks. Public sector leaders find themselves useless and many projects simply are flawed and cannot be implemented efficiently. Consequently, citizens do not benefit from the natural resources of their countries.

The New African Public Sector Outlook: Innovation and Responsibility

To address Africa's economic development and increase productivity and administrative reform, African public sector leaders need to innovate and take more responsibility in order to face new challenges that affect the continent. To achieve this monumental task, public sector leaders, policy makers, and professionals of public administration in Africa need to adapt a new paradigm. This paradigm shift stems from Africa's long history of public administration and it is called African Solidarity. This concept comes from Ancient Egyptians' view of the world. This was the Pharaonic cosmogology. It is based on the four elements of the cosmos. These elements include animal, mineral, vegetal, and astral worlds. Without their solidarity and cooperation, life and the existence of life will be doomed. It is essential that solidarity must be a part of any relationship in society; therefore, this concept is key to understanding any decision making in Ancient Egypt. This concept is based on Maatic philosophy and teachings. It emphasizes the cultural identity and ideological setting for creation, innovation, and protection of society. The philosophy of Maat is also based on justice, solidarity, work, and creation. It is Maat that was the guiding light of the Pharaohs' vision in Ancient Egypt. Once African public sector leaders embrace the Maatic philosophy and its

teachings, they will find solution to many modern African problems. First, this article defines the term innovation before looking at the theoretical framework, which is at the basis of the paradigm shift.

Merriam Webster's dictionary defines innovation as "something new or a change made to an existing product, idea, or field." The term innovation can also refer to the creation, development, and implementation of a new product, process, or service with the aim of improving efficiency or competitive advantage (Hudson, 2014). Further, the term innovation is an important management leadership activity because it is based on the culture and values of the leaders and their historical heritage, but it also depends on the business or organizational model in which it has been implemented. In the African context, innovation should be based on the long history of Africa regarding public administration since the Pharaohs. Under the Pharaohs' long rule, millions of papyrus documents were written and contained a high level of empirical data. These papyrus documents contained a high quality of research with excellent results and practical applications. They benefited the people of Ancient Egypt. Today, these papyri or documents and their commentaries are in many public and private libraries across the world. These sacred texts of papyri, written in hieroglyphs, others in Hieratic, Demotic, and Coptic languages contained millions of compiled knowledge of the kingdom. The body of this knowledge included various fields such as cosmology, astronomy, agronomic treaties, public administration annals, philosophy, sciences, mathematics, geometry, medicine, theology, literature, law and justice, and sport (Diop, 1974; Gomez, 2021; Obenga, 1992). These fundamental texts of unprecedented knowledge constitute primary sources of knowledge for African public sector leaders to explore and utilize for innovation and creation in Africa. Knowing these papyri and being able to apply them to the current African challenges can create opportunities for innovation for Africa's modern public administrations and administrative challenges.

Theoretical Framework: The Concept of African Solidarity

The theoretical framework proposed in this article is based on the concept of "African solidarity." This concept is based on Maatic philosophy and teachings. It is essential that solidarity must be a part of any relationship in society; therefore, this concept is the key to understanding any decision making in Ancient Egypt. Using this concept in modern Africa, can help to understand some cultural aspects of the challenges that the continent faces. Nicholass J. Van Blerk (2019) indicated that the concept of Maat implies justice and equilibrium of people in society. He further explained the importance of Maat in everyday life in Ancient Egypt. Africans are still using this notion of solidarity throughout all the steps of life across the continent. Obenga (1992, 2004) demonstrated the importance of Maat to Ancient Egyptians. Further, he

showed that Maat was at the basis of African philosophy. Maat determined all human behaviors and decisions in everyday life. Following Maat philosophy, Ancient Egyptians were able to create justice, harmony, and cohesion in all sectors of the society. Modern public sector leaders can use this historical precedent to solve some of Africa's most pressing issues, including corruption, innovation, leadership skills, and responsibility in administrations. The second level of the paradigm shift stems from cultural and linguistic aspects for Africa's modern administration. The introduction of this new paradigm shift can impel more innovation for public sector leaders, with respect to theories and concepts in relations to their respective administrations.

Culture Has Unifying Attributes in Africa

Culture has unifying attributes, in the sense that it creates national sentiment for solidarity. This solidarity resides in similar aspirations and builds a national cohesion. One of the elements of culture is the language. The linguistic affiliation is one strength in many nations. Language is not only a tool to communicate with others, but it also is a representation of who you are and what image of oneself you present to others and to the world. Arts, music, theater sports, food, and clothing are all represented in culture. Through language, one can convey the image and the representation of you, your country, or continent to others. In Africa, Colonialism created animosity among people who speak different languages; therefore, they created artificial differences. To solve this issue, the continent needs a federation of States with a single national language for government and its administration. Ki-Swali is the perfect language for that purpose. C. A. Diop (1967) urged Africans to choose this language because it is spoken by 60% of Africans. In addition, Ki-Swali has some Arabic language elements in it. Therefore, its use would reinforce the unity between the Northern and the Southern African people.

How Linguistic Aspects Hinder Performance in African Public Sector

In modern African geographical representation, the linguistic aspect hinders performance in the African public sector. Colonialism imported foreign languages and their representation as image and culture to Africa. Education was developed without referring to any African language. This linguistic imperialism leads to the complete destruction of Africa's own ideals, concepts, or theories about their own land. In that respect, the linguistic issue hinders performance in the public sector in Africa. Due to foreign language objectives, African public sectors leaders are analyzing local issues through the lenses of foreign cultural ideology. This not only reinforces the domination but impedes the objective of performance with respect to local issues or challenges. Applying foreign concepts or theories to a strange body, increases the ineffect-

iveness of the remedy used to solve the ill. For example, African countries inherited traditions from colonial administrations (English, French, Portuguese, and Spanish, and in some cases Arabic language). These former colonies are still using these languages as their administrative work languages. Their current public sector leaders are trained in these languages and work in these languages. They continue to perpetuate the ideas and habits from these colonial powers. Moreover, the concepts and theories from these languages are sometimes inadequate to manage the reality of the country. They do not correspond to the mindset or cultural identity of civil servants in these African countries. Therefore, many of the concepts they apply may not lead to the intended outcome. In contrast, among the general population in many African countries, people can understand each other better, due to their cultural affinities, even though they do not speak a similar language. One national language is key to overcoming this handicap for African economic development.

African countries with homogenous linguistic systems, i.e., Tanzania, are not necessarily well off due to the fact that they are former European colonies; and they are still using the concepts and theories from their colonial administrations. Even though, Tanzania seems like an ideal case, the reality indicates that this country is still underdeveloped, due to the historical colonial dependency that the country experienced for a long time. The issue involves national and cultural identities and not only the homogenous aspect of the linguistic system.

The view of this article on Africa is based on the Pan-African view. This means that the continent is not how it was represented during the Berlin Conference in 1885. For the imperialist powers, Africa was a vast land with many resources but with no organized states or entities with institutions. Africans were seen as lacking history. The role of Europeans was to civilize and Christianize the Africans. During the colonization, Europeans imposed their institutions. These included schools, churches, dispensaries, and central administration. The main goal of the European powers was to exploit the immense resources of their respective possessions and make Africa the basket of Europe where the labor is cheap.

The objectives of Colonialism were based on the creation of many small countries, and some of them had little or no resources. In other cases, the country was just a small and landlocked territory, which was dependent on others for transportation. Today, Africa has 54 small and big countries. This hinders economic development for any of these countries or for the continent as whole. This situation also undermines intra-neighboring country commercial relations. This configuration shows the non-viability of some of these countries. Due to their small size, many of these countries are not entities that are capable of creating conditions for economic

development. These countries cannot generate enough economic gross capacity, raise effective human resources, and have an adequate administration and viable service delivery system for their citizens. Despite the immense landmass of the continent, trade intra- African is quasi null, due to the balkanization of the continent. This situation pinpoints the question or the issue of the linguistic aspect in African economic development. For some, colonial languages were necessary because Africa has too many languages and there is no one single national language in many of these countries to make it possible for any economic or educational policy. Historically, Kemetic kingdom or Ancient Egypt had a written language, and these writings were of African origin. This question was resolved or closed in Egypt during the Cairo conference in 1974. The Cairo conference of 1974 demonstrated the historical fact regarding the issue of the location and origin of Ancient Egypt. The Conference concluded with an agreement by the participants that Ancient Egypt is of African origin and its civilization, culture, and language are of authentic Black African origin. Therefore, the knowledge of Kemetic writings can be uniformly applied to all African public sector systems due to the valuable documents or papyri that were based on Africa and its people. In addition, many African languages of today have connections to this Kemetic language. With the creation of an African Federation, the continent would become a unified Federal State based on a Pan-African ideology. This would help to create and adopt a single African language for administration. This requires an improvement regarding the work of African public sector leaders.

Ancient Egyptian texts may not provide food directly, but they can provide knowledge obtained from the immense papyri written by their ancestors. Many of these documents can provide techniques and procedures regarding agriculture, medicine, architecture, and the Arts. For instance, African public sector leaders can thus apply and improve food production. It would also help African public sector leaders gain knowledge from the way administration was built and conducted across the kingdom. This is a continuation of the historical consciousness, which is the basis of cultural identity of any group of people or country.

How to Operationalize Knowledge

Before operationlizing the concept of knowledge, it must first be defined. To be familiar with the Ancient Egyptians' papyri and understand them, African public sector leaders must have a certain level of knowledge and be familiar with the papyri. This education or training will take some years. Once they get their education and training, then the level of knowledge can be measured. First, knowledge is defined as facts, information, and skills acquired by a person through experience or practical understanding of a subject. Second, it is also awareness or familiarity gained by experience of a situation. Once the

operation is done, we will try to apply the measures to the level of knowledge of the African public sector leaders. This operation is based on two main criteria. This operation follows as:

Operationalization: First, we look at the level of education of the civil servant about the papyri. The level of education is based on the number of years of education or training. The beginner level (0-3 years), the intermediate level (4-7 years), the higher level (8 + years).
Second, the level of experience based on the reading, writing, and comprehension. Each of these is measured according to the trainee's level in experience: Reading (beginner level: 0-3 years; intermediate level: 3-5 years; fluency level: 8+); Writing (beginner level: 0-3years); intermediate level (3-5 years); fluency level: 5+); total comprehension level (complete fluency at all levels: 8+ years).

In other words, the concept of knowledge is our outcome variables. The operationalization of this is our predictor variables. These predictor variables fall into one of the broad response types: Categorical or continuous "numerical" outcome. This operation measure falls into clearly defined categories or along a numerical scale. This operation is based on the quantitative research design.

In other circumstance, we may have responses to our variables which can allow for open responses. For this operation, our study will conduct a qualitative method design. This will take a format of survey, or identifying artifacts, etc.

Third, the knowledge of Ancient Egyptians documents is based on a specialization of astrology, arts, architecture, administration, engineering, medicine, etc. This specialization is facilitated due to the fact that the African public sector leaders are already trained in the modern field that corresponded to these ancient texts.

Relevancy of the Image or Concept of RA and Maat in African Public Administration Today

RA, the god creator, and Maat, his creation, are relevant to modern day public administration in Africa. RA, as reference of all guidance in all domains, constitutes a foundation of laws, justice, morals, and ethics. This concept or philosophical reference is much needed in today's African public administration. In the Ancient Egypt-Nubian Kingdom, RA and Maat laid the foundation of cultural identity and also gave great thinkers to the Old Kingdom. For example, the greatest IMHOTE, who was a scribe, a scientist, a technocrat, an architect, civil servant, and adviser of the Pharaoh, was instrumental in teaching and educating civil servants across the administrations of the state. His teachings were based on Maatic principles. Therefore, the concept of RA and Maat helped to build an ideological setting to the Pharaonic state, both at the level of justification of its existence and in that of the rules which define good governance (Assman, 1989). The result of this prescription was realized during the Old Kingdom, which allowed Pharaohs and their respective

governments to build infrastructures, to provide food to citizens, to create jobs and other opportunities for many people. This good governance through the precepts of Maat and RA made the kingdom prosperous through commerce. It also impelled great leadership in and across the Pharaonic administrations. These public sector leaders built, innovated, and improved life of the citizens over many years. They also created and maintained schools of thought that developed immense knowledge about almost everything that facilitated life of the citizens in Kemet. Therefore, prosperity, health, and justice prevailed under the Pharaohs. This situation led the kingdom to sign treaties with surrounding countries, which increased the kingdom's profile as a stable and ordered country, where life is good. Ancient Egypt was the country where, people of all surrounding countries, came to look for education, jobs, or simply to immigrate for safety and stability and to live peacefully.

From this historical relevancy, African public administration and its leaders can explore the many papyri and learn the history of the reforms and the establishment of good governance as a platform that can impel ideas and learn from this experience. The paradigm shift that this paper presents is the basis for today's public sector leaders in Africa. They must follow this scheme. Referencing to one's history and cultural identity is a key for success. The historical consciousness continuity allows African public sector leaders to connect to Ancient Egypt as a reference model. The historical continuity from then to now makes the administrative thought and practices in Africa more comprehensible than referencing to those colonial paradigms. Maatic teachings and the philosophy of Ancient Egypt can be still found throughout Africa and its cultures. Many African languages were connected to the Ancient Egyptian Language. Aboubacry. M. Lam (1993) presented documentation on the Egyptian origin of the Peuls of Senegal and elsewhere in West Africa and showed that their language was originated from Ancient Egypt. J. C. Coovi Gomes (1992) also presented similar findings concerning the Fon people of Benin and the Yoruba in Nigeria. With this cultural similarity and perhaps ideological connection to Ancient Egypt, African public sector leaders can explore new ideas and techniques through the analysis of these papyri. Africa must focus on training in this ancient language and these four types of writings. Once they learn to read these documents, they can begin to understand some of the teachings of Maat and its philosophy with respect to administrative organization, purpose, and its implications for modern day African challenges. The study of humanities (social sciences) besides sciences and mathematics are essential for today's public sector leaders in Africa. The humanities, above all, our languages, are tools to discover and maintain the historical continuity with our ancestors, who excelled in many fields, 4,000 years ago.

Many African languages of today originated from Ancient Egypt or are similar to it; thus, reviving this connection will constitute an enormous tool for public sector leaders in their search for improvement to overcome many challenges. These languages include Bantu, Bambara, Coptic, Kongo, Peul, Sarakollé, Swali, and Yoruba; these languages have many hidden meanings that are probably similar in many papyri from Ancient Egypt. These African languages have never been incorporated in administrative language. If the African states would include these languages into their administration, they would really be valuable or useful for modern African administration. Colonial education and training did not consider these languages as valuable or useful. Therefore, their use declined or disappeared from any administrative work, since Africa lost its independence. Language is the key to convey and to understand the hidden meanings of a culture. Connecting these African languages to Ancient Egypt will help today's African public sector leaders to rediscover Maat and apply its teaching to enhance our understanding of the ancient philosophy that created the first great civilization in the world.

At the End of the Old Kingdom

At the end of the Old Kingdom, the Kingdom was shaken up by a breakdown of the institutions of the centralized government. This period of intense instability challenged the stability and the functioning of the Kingdom. Gomez (2020) imputed the cause of this crisis to the abandonment of the prescriptions of Maat and Ra. The state officials including high priests, higher civil servants, military officers, judges, and other technocrats deviated from the teaching, the cultural identity, and the ideological tenets of the Maatic philosophy. Consequently, dishonesty, confusion, injustice, and corruption polluted the state and its government. This corrupt behavior led to the chaos that came alive when Maat was not respected. Invasion, war, and destruction followed and undermined the state and the government of the Pharaonic state. African Egyptologists refer to this period of Ancient Egyptian history as the Osirian revolution or the agrarian revolution. The Europeans or Africanists refer to it as the First Intermediate Period in Ancient Egyptian history.

As of the result of this crisis, historians learned through the papyri that the causes of this event of great importance came from the abandonment of Maatic teachings. These papyri showed that those higher administration officials, including high priests, civil servants, Army, and members of other institutions in government and in the State were not following the precepts of Maat. They abandoned the ethical foundations of the state and government. Therefore, as Maatic precepts were no longer a reference, chaos dominated the state affairs, which led to injustice, and unethical behaviors in all the spheres of state administration. This also favored the ills inherent of any administration including, corruption, nepotism,

incompetence, and ultimately chaos and confusion across the kingdom. Gomez (2020, Video lecture) indicated that the clergy and high priests refused to accept the citizens into temples without charging them fees. This action is in contradiction to Maat teachings. In addition, civil servants, including the office of taxation bureau, court officials, judges, and other officials did not follow the Maat philosophy. This situation led to the peasants' revolt. This movement of farmers was the first social movement against a government in history. This agrarian revolt demonstrated the need for reform based on justice and ethics in administration and in society. This revolt also showed that Ancient Egypt was not immune to social ills that are prevalent in modern Africa and around the world (Gomez, 2020, Obenga, 1990). The lack of Maatic concept or the teaching of Isis led to the collapse of the Old Kingdom. This crisis made the kingdom vulnerable to attack. The threat of attack, finally, materialized with the invasion of the Hyksos. This foreign invasion caused death, misery, and confusion across the Kingdom. This crisis demonstrated the need for reforms and the restoration of the Maatic philosophy in order to save the Kemetic nation. The Middle Kingdom (Nouvel Empire) will restore the glorious days known under the Old Kingdom. The XVIII Dynasty defeated the invaders and restored the glorious days of Ancient Egypt for many centuries to come.

This historical lesson is relevant to the current Africa state of public administration in Africa. It is also a roadmap for public sector leaders in Africa to consider the moral example of this historical event. The question for African public sector leaders is: What lessons can they learn from these historical facts or events of our ancestors? Several answers clarify this relevant example for today's leaders in public administration. First, they need to redefine and embrace their cultural identity or ideology that can connect them to their history. Second, modern African public sector leaders need to refer to the historical consciousness of Africa. The continuity of history can make it easier for them to find relevancy in different fields of ancient Egypt that correspond to their specialization of modern African public administration. The knowledge and the content analysis of these papyri can increase understanding of their historical meanings for modern Africa. This analysis can also increase the effectiveness and efficiency of the African state administration and its service delivery. One of the best known the papyri, which outlined the techniques and rules of administration was the Papyrus of The Wadi al Jarf and the Diary of Merer (see above). This papyrus described how the central administration worked. It also explained the basis of the functioning of the central administration of the Great Pharaoh. In addition, the papyrus showed the techniques by which Ancient Egyptians controlled the administration. The description of the Wadi al Jarf and the Diary of Merer of the administration gave detailed indications about leadership, the management and the role of the chief civil servant or scribe. Every step of the work was detailed and

was under the direction or leadership of a senior civil servant. This scribe or the leader controlled and supervised the daily work under the Maatic rules. Around him or her, they were other technocrats at the lower scale level of civil servants. Women were also among high level of civil servants in Ancient Egypt. They worked as high civil servants in arts, medicine, science, and agriculture. The ad-ministration was organized based on highly developed human resource concepts. These included leadership, ethics, and justice, but also management theories and promotion.

Educating African public sector leaders in hieroglyphs, Hieratic demotic and Coptic languages and writings must be an imperative to access and extract valuable information from diverse fields that were developed under the Pharaohs. Once the African public sector leaders start reading in the Pharaonic language and become familiar with its writings, they will have access to valuable knowledge. This knowledge is useful for modern African public administration. It enhances the ability to learn and understand concepts and theories. Many of these Ancient Egyptians' theories or concepts were based on African tradition and cultural identity. Modern African public administration can thus inherit valuable knowledge from the Ancient Egypt-Nubian history. The African federation of states is the political structure that can launch the basis of innovation and increase economic growth across the continent. Creating this structure is the sole viable perspective that will enhance the continent's profile and increase her position around the world.

The Federation of African States

The innovative role and responsibility of public sector leaders is crucial for Africa's political and economic independence. Its realization resides in the creation of a structure that impels dynamism for the main actors. African leaders need to set up a framework that leads to the creation of the Federation of African States.

The Federation of African States' idea is not a new one. Many scholars, among them, economists, philosophers, historians, jurists, and specialists of public administration argue that the bal-kanization of Africa from colonial powers has created barriers that prevent the emergence of development in the continent. Cheikh Anta Diop (1962) argued that the elements for that enterprise already exist, due to the fact that Africa's cultural unity, which is linked to Ancient Egypt, is a solid foundation for a federation. He also demonstrates the economic aspect that is imperative to set up such a structure. Given its immense reserves in natural resources and its geography, Africa can quickly create a federated State that impels the economic, technical, social, and human development in that region of the world. Theophile Obenga, during a conference aired on YouTube (2012), urged African leaders to set up a federation in order to foster its development. He also acknowledges the immense natural resources and large population that

Africa has and can offer to the world. Further, he criticizes the use of concepts and theories from Western powers. The Idea of African federation came from the Pan-Africanists in the Diaspora and on the continent. These pioneers argued the importance of a such organization to empower Africa and its people around the world. According to the Pan-African view, the sole federation can build an economic power that will lead Africa and its people to prosperity, military, and political powers in the world. It also can impel cultural power through African immense intellectual and creativities in diverse fields. Therefore, creating a federation in Africa is the sole way to save the continent and its people from destruction, misery, and economic degradation.

Pan-African Idea: Federation of African States

The term federation indicates a political theory based on a group of several states or entities to form a single state. In action, federalism means that several states come together and form one single central government with a single federal constitution. The objective of federalism is to solve various challenges that cannot be resolved by each of the small states that form the federal state; for example, environmental disaster, famine, and diseases. Facing these challenges, only a federal state with all the capacities and tools that can be organized quickly can take care of these challenges. In addition, an African federation will put into place the following elements: one central bank under the control of the federal government with the power to coin money, one military institution, and an African federal army with its structures to defend Africa. One single Foreign Affairs Office, where African diplomacy will have a single voice to represent the continent with representation across the world and our cultural centers which will increase our cultural images shown to others (cinema, theaters, dance, music, etc). For all these reasons, the African federation is the sole solution to solve the continent's ills and its challenges. This project will help the African public sector leaders to confront the challenges that they face in their daily task. The federation will give African public sector leaders tools of management and financial ability to work and to solve the challenges. The power of a federation leads to more means to be available to the public sector leaders to easily execute their duties.

The scheme of the Continent today, with some unproductive organizations such COMESA, ECOWAS, or IGA and even AU are in fact, the continuation of the balkanization of the continent. These so-called regional economic and political organizations do not serve the best interest of continental economic growth. In fact, these organizations actually impede the federation ideal of the continent. They also hinder the internal commercial relations between African regions. These organizations are all bad choices because they do not make Africa progress in the world. The African federation can help public sector leaders of today, with one central government

managing the powers to face many challenges. Finally, the Federation of African States can adopt one single language for the federation. All these reasons are the basis of any progress with respect to Africa. This federation can help the African public sector leaders become more productive and solve the current and future challenges.

Conclusion

The paradigm shift regarding the public administration field requires innovation and leadership in modern African public administration. Innovation comes from tradition, and the African continent inherits one of the richest cultures and traditions in the world. Ancient Egypt and NUBIA kingdom offer Africa all the tools it needs to foster its economic growth. This innovation resides in the immense knowledge compiled in papyri for thousands of years by the Pharaohs and its scribes. Using these historical documents, which are based on African cultural and ideological traditions constitute powerful tools available to public sector leaders to increase productivity and service delivery. The historical continuity must be developed by the public sector leaders to explore our traditions and apply the concepts and theories that were at the basis of the Pharaohs' success. The training in Ancient Egyptian language ascertains the understanding the content of these papyri. Therefore, it increases African public sector leaders' ability to discover more knowledge from these ancient documents. Finally, the creation of the African federation of states constitutes the best solution to many of Africa's current and future ills and challenges. It can also strengthen the profile of Africa in the world.

References

Davis, P. J., & Frolowa, Y. (2010). Retaining Leadership talent in the African public sector: An assessment of the HR challenges. Journal of Leadership, Accountability and Ethics, 13(3), 67-78.

Diop, C. A. (1962). The cultural unity of Black Africa. Presence Africaine, Paris, France.

Diop, C. A. (1974). The African origin of civilization: Myth or reality. Presence Africaine. Paris. France

Gomez, J. C. C. (1992). Etude comparee de l'ecriture sacree du Danxome et des hieroglyphes de L'Ancienne Egypte (Ankh, 1).

Gomez, J. C. C. (2021). De L'origine de la Philosophie et de L'art de philosopher d'apres les Textes Pharaoniques. Conference on Youtube posted on May 1, 2020.

Hhlamulo, M., Chanke Keusani, R., & Mamokhere, J. (2020). Public transport service as a means for socio economic development in the South African rural areas. Gender and Behavior, 18(3), 16428-16434.

Hudson, K. (2014). Innovative and motivational speaker: Brain speeding zone. www.Drkenhudson.com

Lam, A. M. (1993). L'Origine Egyptienne des Peuls Paris, Kepera/ Presence Africaine. p. 388-411.

Menu, B. (2004). Egypte Pharaonique, nouvelles recherches sur l'histoire juridique, economique et sociale de l'ancienne Egypte, Paris, L'Harmattan.

Nkhata, B. A., & Breen, C. (2010). Performance of community-based natural resources governance for the Kafue Flats (Zambia). Environmental Conservation, 37(3), 296-302.

Obenga, T. (1992). Ancient Egypt and Black Africa. A study of philosophy, linguistics and gender relations. Karma House (multiple editions).

Obenga, T. (2004). African philosophy, the Pharaonic period 2780-350 BC. Per Ankh.

Obenga, T. (2012). L'Etat Federal de L'Afrique Noire, La seule Issue (Conference a Kinshassa, Democratic Republic of Congo on You tube) and at http://uhem-mesut.com/

Obenga, T. (2016). African philosophy. Brawtley Press.

Sauneron, S. (1957). Les Pretres de L'Ancienne Egypte. Paris, edition du Seuil, p.4 paru dans le temps qui court, N# 6.

Teshome, W. B. (2008). Democracy and elections in Africa: Critical analysis. International Journal of Human Sciences, 5(2).

Van Blerk, N. J. (2019). Evaluation of justice in law, an Ancient Egyptian perspective. African Journal of Democracy and Governance, 6(2&3).

Yanguas, P., & Badru, B. (2016). New approach confronts old challenges in African public sector reform. Third World Quarterly, 37(1), 136-152.

Online Sources: La Revue ANKH, Egyptology, Africa &Sciences or Egyptologie, Histoire de L'Afrique et Science exactes (French): www.ankhonline.com/revue.htm

The Economic Impacts of Infectious Diseases and the Health Care Systems in Africa

Oluwole Owoye, Ph.D.[1] and Olugbenga A. Onafowora, Ph.D.[2]

Abstract

This paper examines the economic impacts of infectious diseases and health care systems on sustainable economic growth and development in Africa. Over the past six or more decades, African countries continued to suffer from various debilitating infectious diseases because African governments are not fully committed to funding their health care sectors to the extent necessary to curtail infectious diseases. Even the few hospitals and dispensaries that African countries inherited from their colonial masters have deteriorated beyond repairs due to lack of appropriate public funding. The deteriorations of the health care sectors may explain why some African leaders prefer to travel to foreign hospitals for better medical treatments while their citizens continued to suffer unnecessarily from preventable and/or curable infectious diseases. We assert that African countries lack adequate health care systems needed to combat debilitating infectious diseases when compared to other developing countries in the world, and that this will have negative impacts on sustainable economic growth and development. To validate this assertion, we use the traditional Cobb-Douglas production function to show the importance of workers' health as one of the major determinants of sustainable economic development. Our empirical results reveal that the health care systems in African countries are grossly inadequate and that the economies need more medical doctors, nurses, and medical infrastructures to provide the health care required to achieve sustainable economic growth and development in the 21st century.

To attract the much-needed health care professionals and provide adequate medical infrastructures, African governments need to invest in their health care

[1] Professor of Economics Department of Social Sciences/Economics Western Connecticut State University Danbury, CT 06810 Owoyeo@wcsu.edu** 203-837-8456

[2] Professor of Economics Department of Economics Susquehanna University Selinsgrove, PA 17870 Onafowor@susqu.edu 570-372-4187 JEL Classification: I11, I14, I15, I18, I38

systems by honoring the 2001 Abuja Declaration where they pledged to spend 15 percent of their annual budgets on the health care sectors. Further, African leaders and the African Union should pursue a new policy of "reversal of doctors-nurses brain-drain" or "bring back African home-trained doctors and nurses" between now and 2030 in order to put African countries on the path to curtailing future infectious diseases outbreaks and achieve sustainable economic growth and development.

Keywords: Africa, African leaders, Infectious diseases, Health Care Systems, Doctors, Nurses

The Economic Impacts of Infectious Diseases and the Health Care Systems in Africa

Introduction

It is important to understand the economic impacts of infectious diseases and the health care systems on sustainable economic growth and development for all African countries because of the feedback loop between a healthy labor force and gross domestic product. The global COVID-19 pandemic, which resulted in unprecedented global shutdowns and lockdowns at different levels and to varying degrees in countries worldwide, should be a clarion call to all African countries and their leaders to wake up to the reality of the 21st century if Africans hope to find the pathways to sustainable economic growth and development. Over the past six decades during which many African countries gained independence, the citizens of the African continent continue to suffer unnecessarily from debilitating infectious diseases such as malaria fever, yellow fever, dengue, diarrhea, cholera, hookworm, typhoid, tuberculosis, elephantiasis, and HIV/AIDS. These infectious diseases are preventable with strategically planned and implemented environmental improvements at their sources, and curable through inoculation with vaccines. Given the failure to honor the 2001 Abuja Declaration, which addressed the exceptional challenges of HIV/AIDS, tuberculosis and other related infectious diseases, one can infer that African leaders are not strongly committed to practical medical plans on how to curtail these infectious diseases.

In contrast, the leaders in Singapore effectively handled malaria fever in the 1970s, which led the World Health Organization to declare Singapore a malaria-free zone in 1982. In the current era of global infectious diseases shock, Singapore has one of the lowest fatalities with respect to the COVID-19 pandemic. Singapore's handling of malaria fever and other infectious diseases in the 1970s and the current COVID-19 pandemic are distinctive examples of how forward-looking medically planned and implemented environmental improvements could curtail the spread of infectious diseases. According to Rogers (2020), after SARS and H1N1, Singapore built a robust health care system and public health/medical infrastructures for tracking and curtailing epidemics. We use Singapore and 13 independent countries in the Caribbean region as the benchmark against which to compare African countries because they share the same tropical climate and disease burdens from various infectious diseases. In addition, many African countries and Singapore gained independence in the 1960s and inherited very poor health care systems and public health infrastructures from their colonial administrations.

We can easily infer that Singapore recognized the importance of a robust health care sector, with adequate medical doctors or physicians including generalists and specialist medical practitioners, as the backbone of any country in achieving sustainable economic growth and development in the 21st century. When confronted with shortage of doctors, the government of Singapore launched "The Healthcare 2020 Master Plan" in 2012 with the aim of appealing to medically trained Singaporeans overseas to return back home to Singapore. Another important part of this plan was the brave and strategic decision to import more than 500 doctors on average annually; and according to the latest available data, "Singapore had 5,873 foreign-trained doctors, 60 percent of whom were foreigners and permanent residents," which contributed to raising its ratio of doctors per 1,000 residents from 1.4 to 2.5 by 2019.

Given Africa's experience with various infectious diseases since the 1950s and 1960s, especially HIV/AIDS, malaria, and tuberculosis, African leaders came to the realization in April 2001 in the Abuja Declaration in Nigeria that they needed to devote more resources to address the pressing health challenges of the 21st century. The member states of the African Union met in Abuja, Nigeria and pledged to allocate at least 15 percent of

their annual government budgets to the health care sectors since reducing infant mortality rates, improving maternal health, and combating HIV/AIDS, malaria, and other infectious diseases were three important components of the eight Millennium Development Goals (MDGs) adopted by 189 countries worldwide in September 2000. According to World Health Organization, the Millennium Declaration was designed to improve the social and economic conditions of the world's poorest countries by 2015. In addition, the Africa Health Strategy (AHS) 2016-2030 was prepared to address future epidemics and/or pandemics such as the COVID-19, which occurred in 2020. According to World Health Organization and World Bank statistics, the health care systems in Africa face some dire challenges, especially the unparalleled shortage of medical doctors throughout the African continent. The unhealthiest part about the health care systems and public health care infrastructures in Africa is that the few hospitals and dispensaries that many African countries inherited from their colonial masters have deteriorated beyond repairs, in many cases, due to the lack of appropriate government funding, despite the 2001 Abuja Declaration in which African governments pledged at least 15 percent of their annual government budgets to improve their health care sectors.

According to World Health Organization and World Bank data, only five countries out of 54 African countries have one or two doctors/physicians per 1,000 people. Most of the remaining 49 African countries have less than one doctor/physician per 1,000 people. In general, African countries are far below the 4.5 physicians or doctors per 1,000 people required to achieve goal number three of the Sustainable Development Goals (SDGs).[1] Notably, this goal addresses the issue of good health and well-being across countries and communities. Medical experts at the World Health Organization and other international agencies consider the African continent to have one of the worst health care systems and public health infrastructures in the world. This is further manifested by the fact that for decades, African leaders sought and prefer to obtain medical treatments in the United States, European countries, India, and Singapore while neglecting the dilapidated and inadequate health care systems and medical infrastructures in their own countries. For example, presidents from African countries such as Ethiopia, Gabon, Guinea-Bissau, Malawi, Nigeria, Zambia, and Zimbabwe have sought

medical treatments overseas and some have ultimately died in foreign hospitals. These raise some pertinent questions: Why do African presidents and state/regional governors prefer medical treatments in foreign countries? Why not fix their dilapidated health care infrastructures? Why do home-trained medical doctors and nurses emigrate to the United States, Europe, Australia, New Zealand, and Saudi Arabia? What plans do African leaders have to bring back their doctors, nurses, and other professionals in order to remedy the health care workers gaps in the 21st century? Do African leaders know that the World Health Organization ranked the African continent as one of the worst regions in the world with respect to the shortages of health care workers?

This paper contributes to the literature by answering these research questions. Towards that end, we focus on issues that can be considered the barometers for gauging the macroeconomic impacts of deadly infectious diseases and the health care systems in Africa. First, these issues include the 2001 Abuja Declaration in which governments from the African Union pledged to set at least 15 percent of their annual budgets to improve their health care sectors as a manifestation of their commitment to provide adequate infrastructures in the health care sectors. Second, the physicians to people ratio in each African country relative to the current world average of 1.56 doctors per 1,000 people and the projected 4.5 doctors per 1,000 people necessary to achieve SDGs by 2030. Third, the human development index (HDI), which economic growth theorists regard as one of the most effective measures of health sector outcomes in all countries worldwide because it encompasses life expectancy at birth, education index, and income index.

With respect to the health expenditures as percentage of gross domestic product (GDP), we found that among the 54 African countries, only Sierra Leone's health expenditures as percentage of GDP complied with and exceeded the 2001 Abuja Declaration pledge of 15 percent for five consecutive years since 2014 while 53 African countries remained far below the 15 percent target. The results of our analysis also show that no African country is close to achieving the 4.5 doctors per 1,000 required for SDGs by 2030. Given the inadequate funding of the health care sectors, reaching the proposed 4.5 doctors per 1,000 people target appears unachievable and this may worsen over the next decade or two due to what Clemens and Pettersson (2008) termed "African health workers emigration." Our

finding is consistent with Clemens and Pettersson's (2008) study, which found that "Approximately 65,000 African-born physicians and 70,000 African-born professional nurses were working overseas in a developed country in the year 2000." In addition, we found the doctor to people ratio to be negatively correlated with the adult mortality rates and infant mortality rates in African countries; and this also holds true for COVID-19 deaths.

Regarding the human development index (HDI), we observed that African countries are in the four groups of the HDI in varying numbers. The first group consists of countries with "very high HDI," and Mauritius (also the only African country with the highest doctors-to-people ratio: 2.6 doctors per 1,000 people) is the only African country in this group. The second group consists of countries with "high HDI," and only eight African countries fall into this group. The third group is made up of "medium HDI," and 14 African countries qualify in this group. The fourth group consists of countries with "low HDI." This group has 30 African countries, which is more than all the other three groups combined. Finally, the results of our multiple regression showed that the human development index and the doctors-to-population ratio have positive and statistically significant impact on sustainable economic growth and development, while the current health expenditures as percentage of GDP has negative and statistically significant impact on sustainable economic growth and development in African countries.

The rest of this paper is organized as follows. In section 2, we provide a review of studies that examine the infectious disease threats that confront African countries. Section 3 provides the theoretical framework to show the feedback loop between healthy workers in the labor force and sustainable economic growth and development in African countries. Section 4 highlights the recent trends in infectious diseases and the public health care infrastructures in African countries. The paper concludes in section 5 with some policy implications.

Background Studies

Studies have detailed the threats that debilitating infectious diseases pose to African countries, the enormous challenges these countries face in the wake of the chronic and persistent shortages of health care workers due to emigration, and the performance of the health care sectors in Africa countries relative to other countries worldwide. According to Tandon et al. (2000), measuring the performance of health

care systems depends on how the goals of a health care system is defined against which outcomes can be judged and performance quantified.

Savedoff (2003) highlighted the importance of per capita health spending across countries and suggested that spending could be anywhere between 1 percent to well over 10 percent of national income. Savedoff's (2003) study dispelled the frequent references by many research scholars and health pundits that the World Health Organization recommended that countries should spend 5 percent of their GDP on health. In addition, the study showed that the issue of how much a country should spend could be viewed from at least four different approaches. First, the peer pressure approach hinges on considering spending more or less on health care relative to other countries with similar characteristics. Second, the political economy approach tackles the issue of spending from a social science perspective given the political mechanisms involved in determining health spending and the behavior of the social actors who could influence the health spending decisions. Third, the production function approach can be used to explicitly estimate a health production function through cross-country or panel data analyses by using aggregate data on spending. Fourth, the budget approach hinges on the desired health status changes necessary to determine what should be purchased to achieve the preferred health care outcomes.

Clemens and Pettersson (2008), addressed the issue of doctors, nurses, and related health care workers trained in African countries who continued with outward migration to highly industrialized countries. They used destination-country based census data to estimate the number of African-born doctors and professional nurses working in advanced countries in comparison to the stocks of these medical professionals in each country of origin. Furthermore, Clemens and Pettersson (2008) found that approximately 65,000 African-born physicians represented about one fifth while 70,000 African-born professional nurses represented about one tenth of the professionals in the world in 2000. In a related study, Krah (2020) pointed out that Nigeria has more than 4,000 doctors in the United States and 5,000 in the United Kingdom alone because both countries are open to highly qualified physicians and nurses from less developed countries. Similar study by Kinfu et al. (2008) also examined the issue of health worker shortage in 12 African countries. They attributed the health

worker shortage to past investment shortfalls in pre-service training, international migration, career changes among health care workers, premature retirement, morbidity, and premature mortality.

Tumusiime (2017) addressed the issue that the African continent has the most severe health workforce shortages estimated to reach 6.1 million by 2030 and suggested what African countries can do to solve health workers shortage in the region given that the region's average of 1.30 health worker per 1,000 population falls far below the 4.5 per 1,000 people required to achieve the Sustainable Development Goals (SDGs) by 2030.2 According to Tumusiime (2017), the proposed actions to mitigate the health workers shortage included the urge to train more health workers, attract back workers from diaspora, build the human capital required to manage the system, and ensure the effective use of available resources such as the compliance with Abuja Declaration target that required the allocation of 15 percent of annual budget for health sector, which only Liberia, Rwanda, Eswatini (formerly Swaziland), and Zambia complied with in 2014.

In a related study, Racoma (2019) identified 25 countries worldwide that lack health care the most, and 23 of these countries are from Africa. Racoma (2019) attributed the gaps in health care availability in developing countries to the deficiency in resources, inequality of service, and results of lack of access to proper health care. These shortcomings in the health care sectors, especially the quality3 of health care in Africa, provide the rationale why many African leaders and government officials prefer to travel to foreign hospitals in Europe, China, and Singapore and many of them died in the process of seeking the best medical treatments [Kazeem (2017), Molosankwe (2019)]. Similarly, a study by Texila American University at Iselin in New Jersey analyzed the issue as to how many doctors per person there are in Africa. In the general overview of the health care sectors in Africa, the study emphasized the growing demand for medical professions, government initiatives in the health care sectors to meet the demand, and the salary range and social status of doctors in Africa. The study pointed out that "a robust medical sector is the backbone of any country, and now, only students who have passion for medical studies can help resolve the issue plaguing the continent."

Muggeridge (2015) identified HIV/AID, diarrhea diseases, malaria, ischemic heart disease, meningitis, tuberculosis,

diabetes mellitus, neonatal sepsis and infections, cirrhosis of the lever and epilepsy as the 10 infectious diseases that caused the most deaths in Africa in 2012. Elflein (2021) also identified some of these diseases to be among the top 10 causes of death in Africa in 2019. According to Fenollar and Mediannikov (2018), many infectious diseases have emerged and reemerged in Africa in the 21st due to poverty and poor health care that exacerbate the health problems, lowest in per capita spending on health, and the availability of physicians. Furthermore, they pointed out that infectious diseases continued to account for half (50 percent) of all deaths in Africa compared to only 2 percent in Europe.

Swerdlow et al. (1997) showed that mortality was higher among children less than four years old in the 1,931 cases due to the epidemic of cholera that affected Mozambican refugees in Malawi, and that improved access to treatment, pediatric care, and increased use of oral rehydration therapy could decrease mortality. They argued that preventing future outbreaks in Africa will depend on interrupting both waterborne and foodborne transmissions of the pathogen. Mboussou et al. (2019) conducted a retrospective descriptive analysis based on records of all infectious disease outbreaks formally reported to the World Health Organization in 2018. They found cholera, measles, and yellow fever to be the commonly reported disease outbreaks, and they concluded that the Africa is characterized by the largest infectious disease burden in the world.

The Human Rights Watch conducted a study in April and May 2020 in which several African health experts including epidemiologists, pathologists, nurses, and public health officials were interviewed to shed light on the extent to which COVID-19 exposes the health care shortfalls in Africa. The health experts and representatives of human right organizations came up with some highlights and conclusions. First, they highlighted the fact that the chronic lack of investment in health care infrastructures and equipment made it harder for African countries to retain skilled health care workers, provide essential medicines, and reduce the mortality rates of perennial diseases like malaria. Second, they acknowledged that the right to health is a fundamental right under international human rights law, which is considered as a critical component of the United Nations Sustainable Development Goals (SDGs) and is also recognized in many

constitutions across the world, including the 54 African countries. Third, they reiterated the fact that African leaders' responses to previous outbreaks of diseases such as measles, HIV, and malaria suggest that African governments will not recognize the need to prioritize investment in the health sectors after the COVID-19 pandemic. This observation or conclusion is premised on the fact that African countries have experienced these perennial infectious diseases for more than half a century without any concrete infectious diseases eradication plan or the provision of easy access to health care facilities or adequate hospital care in Sub-Saharan Africa (Geldstzer et al. 2020).

Ebatamehi (2020) used the Health Care Index (HCI), derived from a collation of data provided by the World Health Organization, health ministries, and independent watchdogs in the health sectors to identify and orderly rank South Africa, Tunisia, Kenya, Algeria, Nigeria, Egypt, Morocco, Rwanda, Tanzania, and Zambia as the top 10 African countries with improved health care systems in the African continent in 2020. Galal (2021) provided a country-by-country update of the Coronavirus cases in Africa as of March 8, 2021. According to Galal (2021), South Africa's reported cases and fatalities account for more than 25 percent of the 4,003,008 total cases and 109,000 deaths due to COVID-19 in Africa.

Lee et al. (2010) analyzed Singapore's program to eliminate malaria in the military training facility of Tekong Island located to the North-East of Singapore, which remained malaria-receptive even though Singapore was declared malaria-free since 1982. According to Lee et al. (2010), Singapore's four rings of malaria prevention at Tekong Island included: (1) preventing the importation of malaria by properly screening visitors, (2) preventing human to mosquito transmission through early case detections and surveillance plan, (3) preventing mosquito to human transmission through personal protection, and (4) arresting the cycle of transmission. These four rings of prevention at Tekong Island aligned with the five categories with which Singapore was assessed in 1982 by the World Health Organization. These included (i) a comprehensive and efficacious case detection mechanism, (ii) reliable microscopic diagnosis of blood smears, (iii) thorough epidemiological investigations and a satisfactory epidemiological situation, (iv) adequate preventive and remedial health actions upon detection of cases, and (v) adequate general health services, effective system of case notification, and

epidemiological follow-up for prevention of re-establishment of malaria [GoK (1983)].

In a recent study in the wake of the current COVID-19 pandemic, Kuguyo et al. (2020) analyzed how Singapore responded in handling the coronavirus disease. These authors listed some of the salient factors, which they viewed as contributing to Singapore's success in handling COVID-19, and they compared the lessons learned in Singapore with those in African countries. Kuguyo et al. (2020) pointed out different ways in which Singapore handled the pandemic when compared to African countries: (1) Singapore has public health preparedness clinics based on their experience of handling malaria in the early 1980s, (2) Singapore's early response and disease surveillance entailed unparalleled extensive testing at the regional and international levels coupled with vigorous contact tracing, (3) Singapore's knowledge and awareness enabled proper dissemination of pertinent information to the public and recommendations for prevention and seeking medical attention for COVID-19, (4) national lockdown was not immediately enforced at the national level but social distancing was recommended, (5) penalties for defiance to ensure compliance and accurate dissemination of medical information, and (6) political and sociological aspects. Kuguyo et al. (2020) concluded that African countries need a paradigm shift in policies and priorities around their health care systems in order to achieve sustainable development goals associated with health care. In a related study, Roger (2020) pointed out that Singapore, Hong Kong, Taiwan, and South Korea all shared the characteristics of using their experiences with prior infectious disease outbreaks to build a firewall system and sustaining it in order to curtail future outbreaks in contrast to African countries where there are no plans despite their experiences with Ebola, HIV-AIDS, malaria, measles, yellow fever, and now the ongoing COVID-19 pandemic.

Theoretical Framework of Health and Economic Growth/ Development in Africa

The health challenges in African countries are multidimensional. The unprecedented global shutdowns or lockdowns at different levels and to varying degrees are glaring reminders of the importance of health as one of the major determinants of economic growth and development in all countries worldwide.4 According to research scholars at Texila American University, the right to health is

a fundamental human right under international human rights law and that a robust medical sector is the backbone of any country. Therefore, we formalize the relationship between a robust medical sector (measured by workers' health) and economic growth/development in Africa countries within a conventional Cobb-Douglas production function framework of the form:

$$Y = AF[K, WH, NR, E, GLD(C19)] \quad (1)$$

and

$$WH = g[DID(DEPs), DPR, HEP, HCSI] \quad (2)$$

where Y is total output or income, A is a measure of technology or total factor productivity, K is the capital stock, WH stands for workers' health, which is a measure of a healthy labor force required for optimum production in all economies worldwide, NR represents natural resources, E captures entrepreneurial transformational leadership, and GLD(C19) captures the global lockdowns due to the unique external global shock from COVID-19 pandemic (C19). For equation (2), DID captures the impact of debilitating infectious diseases (such as malaria fever, tuberculosis, and C19), DEPs represents governments' diseases eradication plans in responses to these outbreaks, DPR is a measure of doctors (as well as nurses and other health care professionals) to people ratio, HEP is the target health expenditures as percentage of gross domestic product (GDP), and HCSI is a vector or catch-all term for health care sectors infrastructures in African countries.[5]

To comprehend the importance of the explanatory variables in both equations above, we take the partial differentiation of equation (1) to obtain:

$$(3), \quad \frac{\partial Y}{\partial K} > 0 \text{ or } \frac{\partial Y}{\partial K} < 0$$

$$(4), \quad \frac{\partial Y}{\partial WH} > 0 \text{ or } \frac{\partial Y}{\partial WH} < 0$$

$$(5), \quad \frac{\partial Y}{\partial NR} > 0 \text{ or } \frac{\partial Y}{\partial NR} < 0$$

$$(6), \quad \frac{\partial Y}{\partial E} > 0 \text{ or } \frac{\partial Y}{\partial E} < 0$$

$$(7), \quad \frac{\partial Y}{\partial GLD} = \frac{\partial Y}{\partial GLD} \cdot \frac{\partial GLD}{\partial C19} = 0$$

$$\text{or } \frac{\partial Y}{\partial GLD} = \frac{\partial Y}{\partial GLD} \cdot \frac{\partial GLD}{\partial C19} < 0$$

Equations (3) – (7) show that the exogenous variables of the production function are not guaranteed to contribute positively to sustainable

economic growth and development in African countries as growth economists will suggest. For instance, equation (3) shows the positive ($\frac{\partial Y}{\partial K} > 0$) contribution of capital accumulation to economic growth and development when there are no market distortions, however, in many African countries, it is $\frac{\partial Y}{\partial K} < 0$ because investments in capital accumulation involve vertical and/or horizontal levels of briberies. Similarly, equation (5) shows the magnitude of mismanagement of natural resources – termed the "natural resources curse" that many African countries inflict on themselves when their leaders enter into dubious international agreements that could lead to a new phase of "colonization of natural resources," thus we expect $\frac{\partial Y}{\partial NR} < 0$ Equation (7) shows the impact of a unique global shock on economic growth.

Similarly, the partial differentiation of equation (2) yields:

(8), $\frac{\partial WH}{\partial DID} \cdot \frac{\partial DID}{\partial DEPs} = 0$ or $\frac{\partial WH}{\partial DID} \cdot \frac{\partial DID}{\partial DEPs} < 0$

(9), $\frac{\partial WH}{\partial DPR} > 0$ or $\frac{\partial WH}{\partial DPR} < 0$

(10), $\frac{\partial WH}{\partial HEP} > 0$ or $\frac{\partial WH}{\partial HEP} < 0$

(11), $\frac{\partial WH}{\partial \boldsymbol{HCSI}} > 0$ or $\frac{\partial WH}{\partial \boldsymbol{HSCI}} < 0$

Equations (8) – (11) suggest that workers' health will contribute positively to sustainable economic growth and development if African countries can prevent the spread of debilitating infectious diseases ($\frac{\partial WH}{\partial DID} \cdot \frac{\partial DID}{\partial DEPs} = 0$), improve the doctors/nurses to people ratio ($\frac{\partial WH}{\partial DPR} > 0$) devote more annual government budget to achieve better health care outcomes ($\frac{\partial WH}{\partial HEP} > 0$)and have adequate and sound health care sector infra-structures ($\frac{\partial WH}{\partial \boldsymbol{HCSI}} > 0$) Studies show that African workers are susceptible to easily transmissible infectious diseases such as malaria, cholera, and tuberculosis that have been eliminated in industrialized countries, thus ($\frac{\partial WH}{\partial DID} \cdot \frac{\partial DID}{\partial DEPs} < 0$). This is also true when workers lack easy access to doctors and nurses, ($\frac{\partial WH}{\partial DPR} < 0$) due to the chronic and persistent shortages of medical professionals resulting from "doctor and/or nurses brain drain." In addition, if African governments do not provide adequate funding to achieve better health care outcomes and they continue to neglect the required improvements in their public health infrastructures, $\frac{\partial WH}{\partial HEP} < 0$ and $\frac{\partial WH}{\partial \boldsymbol{HSCI}} < 0$

Since the focus of this study is on infectious diseases and health care systems in relation to sustainable economic growth and development in African countries, we substitute equation (2) into equation (1). In doing so, we assume, ceteris paribus, the absence of total factor productivity (A), capital accumulation (K), natural resources (NR), and transformational entrepreneurial leadership (E). According to economic growth theorists, workers' health, or healthy labor force (WH) depends on income (Y) and income depends on workers' health; therefore, workers' health and income are endogenous variables. Focusing on the workers' health or healthy labor force as one of the determinants of sustainable economic growth, we rewrite equation (1) in composite or interactive functional form as:

$$Y = Y\,[HW\,(DID(DEPs), DPR, HEP, HCSI), GLD(C19)] \quad (12).$$

To see the relationship between the two endogenous variables: income (Y) and workers' healthy or healthy labor force (WH), we initially assume an environment absent of DID(DEPs), DPR, HEP, HCSI, and GLD(C19). Based on this assumption, we rewrite equation (12) in logarithm form and differentiate with respect to time. That is:

$$y = y(wh) \quad (13)$$

and

$$wh = wh(y) \quad (14)$$

Equation (13) shows the impact of improvements in workers' health on output growth. This means we should expect very healthy workers to be more productive in all African countries although to varying degrees. In other words, we expect y = y (hw) curve to be upward sloping with no sign of diminishing returns. Equation (14) shows the impact of income growth on workers' health. The implication is that higher incomes improve the workers' health to the highest level possible before hitting the point of diminishing returns. Simply put, one should expect wh = wh(y) curve to be upward sloping before it flattens out, but more importantly, both equations show the feedback loop between wh and y: better health leads to higher incomes and higher incomes lead to better health.[6]

In Figure 1, the intersection of the y(wh) and wh(y) curves given by equations (13) and (14), respectively, shows the equilibrium levels of income and workers' health at point Z. Any country is considered to have improved health care sector if the future equilibrium levels of income and workers' health move

northeast of point Z along the health-income growth (HIG) path. The exogenous factors, that is, DID(DEPs), DPR, HEP, HCSI, and GLD (C19) specified in equation (12) would shift the y (wh) and wh (y) curves. In this era of the global coronavirus, COVID-19 pandemic is an illustration of DID(DEPs) as an exogenous factor that can shift the curves. This also holds true for other contagious infectious diseases such as malaria fever, yellow fever, tuberculosis, HIV, and Ebola that continued to infect and ravage the African continent. Simply put, we expect infectious diseases, inadequate physicians per people ratio (shortage of doctors and health care professionals), insufficient government funding of the health care sectors, and the dilapidated and/or decayed public health sectors infrastructures to impact y(wh) and hw(y) curves.

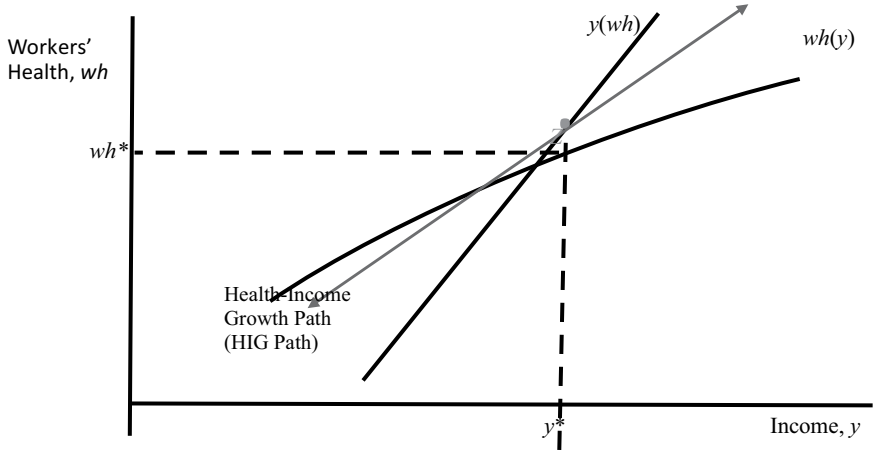


Figure 1: The Link between Workers' Health and Income in African Countrieswh(y) .Workers'

To put the impacts of the DID(DEPs), DPR, HEP, HCSI, and GLD(C19) on workers' health and GDP growth in perspective in African countries, we relax the simplifying assumption made earlier about equation (12) in order to show the negative effects of [DID(DEPs)] and other factors on workers' health and income in all African countries. That is:

$$\frac{\partial Y}{\partial WH} = \frac{\partial Y}{\partial WH}.\frac{\partial WH}{\partial DID}.\frac{\partial DID}{\partial DEPs} = \frac{\partial Y}{\partial WH}.\frac{\partial WH}{\partial C19}.\frac{\partial C19}{\partial DEPs} < 0 \quad (15),$$

$$\frac{\partial Y}{\partial WH} = \frac{\partial Y}{\partial WH}.\frac{\partial WH}{\partial DPR} < 0 \quad (16),$$

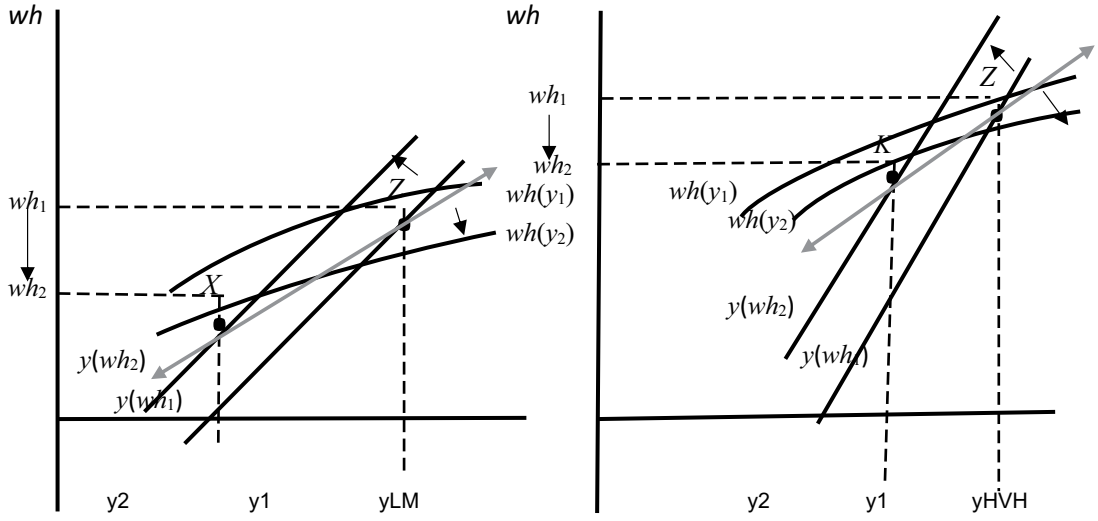
$$\frac{\partial Y}{\partial WH} = \frac{\partial Y}{\partial WH}.\frac{\partial WH}{\partial HEP} < 0 \quad (17),$$

$$\frac{\partial Y}{\partial WH} = \frac{\partial Y}{\partial WH}.\frac{\partial WH}{\partial \boldsymbol{HSCI}} < 0 \quad (18),$$

$$\frac{\partial Y}{\partial GLD} = \frac{\partial Y}{\partial GLD}.\frac{\partial GLD}{\partial C19} < 0 \quad (19),$$

Equations (15) – (18) show that DID(DEPs), DPR, HEP, and HSCI have negative effects on workers' health and income while equation (19) shows the negative impact of GLD(C19) on GDP growth in African countries. Figure 2 provides two panels (I and II) of graphical illustrations to show that the effects of DID(DEPS), DPR, HEP, and HCSI on workers' health and income vary across African countries. Based on the human development index (HDI), which growth economists

Figure 2: Infectious Diseases and Incomes in Two Groups of African Countries



Panel I: Low and Medium HDI African Countries Panel II: High HDI African Countries

consider as a good measure of health care outcomes, we combine the four groups (Low HDI, Medium HDI, High HDI, and Very High HDI7 into two groups of countries (46 countries in Low HDI and Medium HDI form one group in Panel I, while 9 countries in the High HDI form the second group in Panel II). In both panels, DID(DEPs) shifted the y(wh) curve and GLD(C19) shifted the wh(y) curve with negative impacts on both incomes (y1 falls to y2) and workers' health (wh1 falls to wh2) in all African countries. When income falls from y1 to y2 for both group of African countries (panels I and II in Figure 2), it is expected that the standards of living in these countries will fall thus magnifying the level of poverty.

The Recent Trends in Infectious Diseases and the Health Care Systems in Africa

The World Health Organization, African Union, African Centers for Disease Control and Prevention (CDC), and professional medical experts worldwide recognize that debilitating infectious diseases pose a major threat to the African continent. The threat is further magnified by the shortage of highly skilled health care workers in the African continent. To see the impact of debilitating infectious diseases on workers' health in African countries, we examined the data on the total cases and deaths linked to recent diseases outbreaks as reported by Africa CDC and the World Health Organization in Table 1. It is noticeable from Table 1 that malaria accounted for more deaths in Africa, followed by HIV/AIDS, tuberculosis, COVID-19 pandemic, Hepatitis B, Ebola, cholera, meningococcal meningitis, and yellow fever.

The consensus among medical experts and health professionals around the world is that the African continent is characterized by the largest infectious diseases burden. Therefore, given its policy implications, it is imperative to analyze the medical infrastructures that African countries have with which they can mitigate the threats posed by these infectious diseases. It is conceivable that African leaders finally recognized, at the start of the 21st century, the challenges posed by these infectious diseases, and that this prompted the emergence of the Abuja Declaration in 2001 in which they pledged to devote 15 percent of their government budgets to funding the public health care sectors. Similarly, the Heads of State and Government of the African Union met at a “Special Summit of African Union in Abuja, Nigeria on 15 and

17 of July 2013" in another infectious diseases related Abuja Declaration. The Abuja Declaration of 2013 specifically focused on the "Theme: Ownership, Accountability and Sustainability of HIV/AIDS, Tuberculosis (TB)

Table 1: Latest Diseases Information

Diseases	Years	Cases	Total Deaths
1. Anthrax*	2014-2017	15	2
2. Avian Influenza**	2003-2021	361	121
3. Chikungunya	2015-2019	8,404	-----
4. Cholera	2008-2019	235,451	7,601
5. COVID-19	2020-2021	4,003,008	105,214
6. Crimean-Congo Hemorrhagic Fever (CCHF)	2003-2008	62	17
7. Dengue Fever	2009-2017	27,690	35
8. Ebola Virus Disease (EVD)	2008-2019	31,143	12,983
9. Hepatitis B Virus (HBV)***	2016-2020	60,000,000	68,870
10. Hepatitis C Virus (HCV)	2016-2020	10,000,000	-----
11. Hepatitis E Virus (HEV)	2017-2018	1,006	41
12. Human Immunodeficiency Virus (HIV/AIDS)	2019	990,000	448,000
13. Lassa Fever	2012-2018	1,182	482
14. Malaria	2018-2019	457,000,000	820,000
15. Marburg Virus Disease (MVD)	2005-2014	24	17
16. Measles	2011-2019	25,830	83
17. Meningococcal Meningitis	2008-2017	37,015	3,599
18. Middle East Respiratory Syndrome	2013-2014	6	-----
19. Monkeypox	2016-2018	275	1
20. Plague	2014-2017	2,543	278
21. Poliomyelitis (Polio)	2008-2018	791	85
22. Rift Valley Fever (RVF)	2008-2018	1,431	116
23. Tuberculosis	2017	2,500,000	417,000
24. Yellow Fever	2008-2017	3,035	743
25. Zika Virus	2015	4,744	-----

Source: Data compiled by the authors from various sources: Africa CDC at https://africacdc.org. For COVID-19, we obtained the data from the World Health Organization as of March 19, 2021. Obtained data on HIV/AIDS from https://www.unaids.org/sites/default/files/media_asset/UNAIDS_FactSheet_en.pdf, * from Muturi et al. (2018) at
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6159598/,
** from global _statistics_avian_influenza_e.pdf as of March 24, 2021, and
*** from https://www.who.int/news-room/fact-sheets/detail/hepatitis-b.

and Malaria Response in Africa: Past, Present, and the Future." The main objective of the 2013 Abuja Declaration was the elimination of these infectious diseases by 2030, which incidentally aligned with the third (3) goal laid out in the 17 Sustainable Development Goals (SDGs) of 2030 that was adopted in September 2015 by the United Nations.

According to Ebatamehi (2020), there were 10 African countries with improved health care systems in Africa in 2020. To determine the degree of improvement, in Tables 2 and 3, we compare data on health care outcomes in these 10 African countries against data from Singapore (a country that suffered from perennial malaria outbreaks before it became a malaria-free city state in 1982) and 13 independent Caribbean countries. Singapore and the 13 Caribbean countries share the same tropical climate with Africa, and more importantly, African countries and the Caribbean countries share common infectious diseases such as dengue, malaria, chikungunya, zika, yellow fever, and lymphatic filaria elephantiasis. As seen in Table 2, the 10 identified African countries deemed to have improved health care systems performed far below Singapore with respect to life expectancy at birth (LEB) and doctors per 1,000 people ratios (DPR).

In addition, as seen in column 9, the 10 African countries have enormous shortage of doctors (in terms of the 4.5 doctors per 1,000 people ratio) required to achieve the SDGs in 2030 when compared to Singapore and the 13 independent Caribbean countries. Eight of the listed 10 African countries have DPR less than 1, which is far below the world standard, whereas only three of the 13 Caribbean countries have DPR less than 1. In Table 3, Cuba stands out because it exceeds the current world average of 9.84 percent health

expenditures as percentage of GDP and its DPR is far above the DPR ratio required for SDGs 2030. Can the other countries achieve goal number three (3) of the SDGs, which required 4.5 doctors per 1,000 people ratios by 2030? On the one hand, based on studies that have examined the shortage of doctors, nurses, and health care experts

Table 2: 10 African Countries with Improved Health Care Systems and Singapore

	Countries	Yr. Ind.	Population	HEP	**HEPG**	DPR	**DPRG**	**SNDRs**	LEB
1.	South Africa	1910	59,308,690	8.25	-6.75	0.91	-3.59	212,918	64.88
2.	Tunisia	1956	11,818,619	7.29	-7.71	1.30	-3.20	37,819	76.36
3.	Kenya	1963	53,771,296	5.17	-9.83	0.20	-4.30	231,217	67.47
4.	Algeria	1962	43,851,044	6.22	-8.78	1.79	-2.71	118,836	77.50
5.	Nigeria	1960	206,139,589	3.89	-11.11	0.45	-4.05	834,865	55.75
6.	Egypt	1922	102,334,404	4.95	-10.05	0.80	-3.70	378,637	72.54
7.	Morocco	1956	36,910,560	5.31	-9.69	0.73	-3.77	139,153	77.43
8.	Rwanda	1962	12,952,218	7.54	-7.46	0.14	-4.36	56,472	70.00
9.	Tanzania	1961	89,561,403	3.63	-11.37	0.01	-4.49	402,131	66.39
10	Zambia	1965	18,383,955	4.93	-10.07	0.16	-4.34	79,786	64.70
	Singapore	1965	5,882,175	4.40	-5.45‡	2.50	-2.00	11,764	84.07

Source: Data obtained from the World Bank database

https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS

https://data.worldbank.org/indicator/SH.MED.PHYS.ZS?locations=ZG

Note: Yr. Ind. = Year of independence, LEB = Life Expectancy at Birth, HEP = Health Expenditures as percentage of GDP, HEPG = Health expenditure gap based on the minimum 15 percent Abuja Declaration target, DPR = Doctors per 1,000 people ratio, DPRG = Gap in the 4.5 doctors per 1,000 people ratio while SNDRs = Shortages in the number of doctors actually required to achieve the sustainable development goals (SDGs) by 2030. For Singapore, *ranked among the top five based on the LEB data obtained from the latest United Nations Population Division estimates, and ‡ is relative to the world average health expenditures as percentage of GDP.

In African countries, it is practically impossible for these African countries to achieve this goal. Similarly, this may pose a big challenge for the Dominican Republic, Haiti, and Jamaica. On the other hand, this may not be difficult to achieve for 9 out of the 13 Caribbean countries, and this is also true for Singapore given its "The Healthcare 2020 Master Plan" in 2012, which was aimed at appealing and attracting Singaporean doctors and foreign-born doctors to Singapore.

The Universal Health Coverage and the SDGs recognized that African countries face severe health workforce shortages estimated to reach 6.1 million by 2030, and failure to mitigate the shortages would have negative impact on workers' health, that is, $\frac{\partial WH}{\partial DPR} < 0$ The third goal of the SDGs of 2030 is premised on the vision that all countries and communities around the world should have universal access to health care by 2030. Achieving the third goal of the 2030 SDGs, which addressed the issue of good health and well-being across countries and communities, requires 4.5 doctors per 1,000 people in order to attain sustainable development goals.

Table 3: 13 Caribbean Countries and Health Care Systems

	Countries	Yr. Ind.	Population	HEP	HEPG	DPR	DPRG	SNDRs	LEB
1.	Antigua and Barbuda	1981	96,286	5.23	-4.61	2.96	-1.54	148	77.0
2.	Bahamas	1973	385,637	6.25	-3.59	2.01	-2.49	960	73.9
3.	Barbados	1966	286,641	6.56	-3.28	2.48	-2.01	576	79.2
4.	Cuba	1902	11,338,134	11.19	**1.35**	8.42	**3.92**	----	78.8
5.	Dominica	1978	71,625	6.59	-3.25	1.12	-3.38	242	78.2
6.	Dominican Rep.	1844	10,627,141	5.73	-4.11	1.56	-2.94	31,243	74.1
7.	Grenada	1974	111,454	4.60	-5.24	1.41	-3.09	344	72.4

8.	Haiti	1804	11,123,178	7.69	-2.15	0.23	-4.27	47,496	64.0
9.	Jamaica	1962	2,934,847	6.06	-3.78	1.31	-3.19	9,362	74.5
10.	Saint Kitts and Nevis	1983	52,441	5.31	-4.53	2.68	-1.82	95	74.8
11.	Saint Lucia	1979	181,889	4.40	-5.44	0.60	-3.90	709	76.2
12.	Saint Vincent and Grenadines	1979	110,211	4.47	-5.37	0.70	-3.80	419	72.5
13.	Trinidad and Tobago	1962	1,389,843	6.93	-2.91	4.17	-0.33	459	73.5

Source: Same as Table 2 except HEPG is the health expenditure gap based on the world average of 9.84 percent as of 2018 reported by the World Bank. Cuba exceeded the world average HEP by 1.35 percent and the 4.5 doctors per people ratio required to achieve SDGs by 2030 by 3.92 doctors per 1,000 people.

Table 4 provides some pertinent data information with which one can gauge whether the health care sectors in African countries are adequately funded as pledged in the 2001 Abuja Declaration, which would lead to remarkable improvements in workers' health, that is, $\frac{\partial WH}{\partial HEP} > 0$ or significant deterioration in workers' health, thus the expectation that $\frac{\partial WH}{\partial HEP} < 0$ The data presented in Table 4 also provide information with which one can gauge whether African countries are on the path to meeting the 4.5 doctors per 1,000 people ratios thus the workers' health outcomes by 2030, that is, $\frac{\partial WH}{\partial DPR} > 0$ As data in Table 4 show, Sierra Leone is the only African country that complied with the pledged 15 percent of government budgets to fund the health care sectors since 2014. Many of these countries fall far below the pledged 15 percent target. In addition, there are only five African countries (Mauritius, Seychelles, Libya, Algeria, and Tunisia) where the doctors/physicians per people ratio is greater than one (DPR >1). Based on the currently

Table 4: Populations and Health Care Outcomes in African Countries

	Countries	Population	HEP	**HEPG**	DPR	**DPRG**	**SNDRs**	LEB
1.	Angola	32,866,272	2.55	-12.45	0.21	-4.29	140,996	62.22
2.	Benin	12,123,200	2.49	-12.51	0.05	-4.45	53,948	62.84
3.	Botswana	2,351,627	5.85	-9.15	0.53	-3.97	9,336	69.86
4.	Burkina Faso	20,903,273	5.63	-9.37	0.08	-4.42	92,392	62.98
5.	Burundi	11,890,784	7.74	-7.26	0.10	-4.40	52,319	62.71
6.	Cabo Verde	555,987	5.36	-9.64	0.78	-3.72	2,068	73.58
7.	Cameroon	26,545,863	3.53	-11.47	0.09	-4.41	117,067	60.32
8.	Central African Rep.	4,829,767	10.99	-4.01	0.07	-4.43	21,396	54.36
9.	Chad	16,425,864	4.09	-10.91	0.04	-4.46	73,259	55.17
10.	Comoros	869,601	4.59	-10.41	0.27	-4.23	3,678	65.03
11.	Congo, Dem. Republic	89,561,403	3.30	-11.70	0.07	-4.43	396,757	61.60
12.	Congo, Republic of the	5,518,087	2.13	-12.87	0.16	-4.36	24,059	65.21
13.	Cote d'Ivoire	26,378,274	4.19	-10.81	0.23	-4.27	112,635	58.75
14.	Djibouti	988,000	2.32	-12.68	0.22	-4.28	4,229	67.87
15.	Equatorial Guinea	1,402,985	2.99	-12.01	0.40	-4.10	5,752	59.82
16.	Eritrea	3,546,421	4.09	-10.91	0.06	-4.44	15,746	67.48
17.	Eswatini (Swaziland)	1,160,164	6.54	-8.46	0.33	-4.17	4,838	61.05
18.	Ethiopia	114,963,588	3.29	-11.71	0.10	-4.40	505,839	67.54
19.	Gabon	2,225,734	2.74	-12.26	0.68	-3.82	8,502	67.03
20.	Gambia, The	2,416,668	3.09	-11.91	0.10	-4.40	10,633	63.26
21.	Ghana	31,072,940	3.54	-11.46	0.14	-4.36	135,478	64.94
22.	Guinea	13,132,795	3.93	-11.07	0.08	-4.42	58,047	62.84
23.	Guinea-Bissau	1,968,001	6.99	-8.01	0.04	-4.46	8,777	59.38
24.	Lesotho	2,142,249	9.28	-5.72	0.07	-4.43	9,490	55.65
25.	Liberia	5,057,681	6.74	-8.26	0.04	-4.46	22,557	65.00
26.	Libya	6,871,292	6.05	-8.95	2.09	-2.41	16,560	73.44

27.	Madagascar	27,691,018	4.79	-10.21	0.18	-4.32	119,625	68.21
28.	Malawi	19,129,952	9.33	-5.67	0.02	-4.48	85,702	63.21
29.	Mali	20,250,833	3.88	-11.12	0.14	-4.36	88,294	60.54
30.	Mauritania	4,649,658	4.58	-10.42	0.18	-4.32	20,087	64.50
31.	Mauritius	1,271,768	5.83	-9.17	2.60	-1.90	2,416	76.45
32.	Mozambique	31,255,435	8.17	-6.83	0.08	-4.42	138,149	62.13
33.	Namibia	2,540,905	7.95	-7.05	0.59	-3.91	9,935	65.21
34.	Niger	24,206,644	7.33	-7.67	0.04	-4.46	107,962	63.62
35.	Sao Tome and Principe	219,159	6.27	-8.73	0.05	-4.45	975	71.01
36.	Senegal	16,743,927	3.98	-11.02	0.07	-4.43	74,176	68.87
37.	Seychelles	98,347	5.11	-9.89	2.12	-2.38	234	73.74
38.	Sierra Leone	7,976,983	16.06	1.06	0.03	-4.47	35,657	55.92
39.	Somalia	15,893,222	0.10	-14.90	0.02	-4.48	71,202	58.34
40.	South Sudan	11,193,725	6.40	-8.60	0.02	-4.48	50,148	58.74
41.	Sudan	43,849,260	4.51	-10.49	0.26	-4.24	185,921	66.50
42.	Togo	8,278,724	6.17	-8.83	0.03	-4.47	37,006	62.13
43.	Uganda	45,741,007	6.53	-8.47	0.17	-4.33	198,059	64.38
44.	Zimbabwe	14,862,924	4.73	-10.27	0.19	-4.31	64,059	62.16

Source: Same as Table 1.

available information, the estimated data reported in column 8 of Table 4 show that African countries would experience a shortage of 5,787,799 doctors by 2030 if the governments do not address the high rate of "medical brain drain." Krah (2020) highlighted a report released from the Mo Ibrahim Foundation, which "revealed that African countries footed a bill of $4.6 billion in training doctors who were later recruited by the UK, USA, Canada, and Australia" This is consistent with the issue of "African health worker emigration," which Clemens and Pettersson (2008) alluded to in their study.

To summarize the economic impacts of infectious diseases and the failed/failing health care sectors on sustainable economic growth and development in African countries, Table 5 provides the correlation matrix of relevant measures of health care outcomes and gross domestic product based on available data for all 54 African countries examined in this study. From Table 5, we see that LEB, HDI, DPR, and HAQ (Healthcare Access and Quality Index) are positively correlated to GDP (in PPP) per capita, which is the conventional measure of economic growth and development. In contrast, health expenditures as percentage of GDP, adult mortality rates, and infant mortality rates are negatively correlated to GDP growth, especially the –0.51 correlation coefficient between GDP and IMR. As shown, AMR and IMR are negatively (–0.23 and –0.60) correlated to DPR. Similarly, AMR and IMR are negatively (–0.55 and –0.76) correlated to HAQ.

These correlation coefficients suggest that the shortage of doctors per people ratio and the lack of access to quality health care magnified mortality rates in Africa. Importantly, HAQ is positive and highly correlated with GDP, LEB, HDI, and DPR; just as GDP and DPR are positively correlated. The correlations shown by HAQ and DPR confirm that a robust medical sector is the backbone of any country, especially for African countries, in the drive to achieve the sustainable development goals by 2030. The implication is that African countries would be well served when there are enough doctors to treat their people, and people have easy access to quality health care thus guaranteeing healthy workers in the labor force needed for production of goods and services.

Table 5: Correlation Matrix of Health Care Outcomes and GDP Per Capita

	GDP	LEB	HDI	HEP	C19	AMR	IMR	DPR	HAQ
GDP	1								
LEB	0.59	1							
HDI	0.78	0.71	1						
HEP	-0.07	-0.08	0.05	1					
C19	-0.21	-0.14	-0.28	-0.15	1				
AMR	-0.18	-0.59	-0.47	0.19	-0.05	1			
IMR	-0.51	-0.79	-0.72	0.06	-0.22	0.72	1		
DPR	0.84	0.72	0.74	0.04	0.21	-0.23	-0.59	1	
HAQ	0.71	0.85	0.80	-0.03	-0.23	-0.55	-0.76	0.82	1

Note: GDP = Gross Domestic Product per capita, LEB = Life Expectancy at Birth, HDI = Human Development Index, HEP = Health Expenditures as percentage of GDP, C19 = COVID-19 pandemic, AMR = Adult Mortality Rates, IMR = Infant Mortality Rates, DPR = Doctors per 1,000 People Ratio, and HAQ = Healthcare Access and Quality Index.

Table 6 provides the data assessment of African countries with respect to their pledge to devote 15 percent of their annual government budgets to improve their health care sectors in order to achieve robust and strong medical environment with which they can achieve sustainable economic growth and development in the 21st century. As Table 6 shows, so far, only Sierra Leone complied with the pledge five times between 2014 and 2018 over the past two decades.8 Even Sierra Leone did not comply until 2014, which leaves one to conclude that, perhaps, it was Ebola of 2014 that made the clarion call for Sierra Leone. Essentially, 98 percent of the 54 African countries failed to honor the pledge they made in Article 26 (page 5) of the 2001 Abuja Declaration; therefore, one can easily infer that African countries have failed health care systems because their governments failed to provide adequate funding for their health care sectors.

It is difficult to imagine what the health care outcomes in African countries would

Table 6: Assessment of Compliance to 2001 Abuja Declaration

	Countries	HEP ≥ 5%	HEP ≥ 10%	HEP ≥ 15% Target
1.	Algeria	10	0	0
2.	Angola	0	0	0
3.	Benin	0	0	0
4.	Botswana	19	0	0
5.	Burkina Faso	13	0	0
6.	Burundi	14	**4**	0
7.	Cabo Verde	5	0	0
8.	Cameroon	0	0	0
9.	Central African Republic	3	**1**	0
10.	Chad	5	0	0
11.	Comoros	12	0	0
12.	Congo, Democratic Republic	0	0	0
13.	Congo, Republic of the	0	0	0
14.	Cote d'Ivoire	12	0	0
15.	Djibouti	0	0	0
16.	Egypt	7	0	0
17.	Equatorial Guinea	0	0	0
18.	Eritrea	11	0	0
19.	Eswatini (formerly Swaziland)	18	0	0
20.	Ethiopia	1	0	0
21.	Gabon	0	0	0
22.	Gambia, The	7	0	0
23.	Ghana	0	0	0
24.	Guinea	3	0	0
25.	Guinea-Bissau	19	0	0
26.	Kenya	15	0	0
27.	Lesotho	19	0	0
28.	Liberia	14	**1**	0

29.	Libya	1	0	0
30.	Madagascar	15	0	0
31.	Malawi	14	**1**	0
32.	Mali	9	0	0
33.	Mauritania	2	0	0
34.	Mauritius	5	0	0
35.	Morocco	12	0	0
36.	Mozambique	10	0	0
37.	Namibia	14	**5**	0
38.	Niger	19	0	0
39.	Nigeria	0	0	0
40.	Rwanda	16	0	0
41.	Sao Tome and Principe	13	**6**	0
42.	Senegal	0	0	0
43.	Seychelles	5	0	0
44.	Sierra Leone	1	**13**	**5**
45.	Somalia	0	0	0
46.	South Africa	19	0	0
47.	South Sudan	2	0	0
48.	Sudan	11	0	0
49.	Tanzania	10	0	0
50.	Togo	9	0	0
51.	Tunisia	19	0	0
52.	Uganda	13	**6**	0
53.	Zambia	8	0	0
54.	Zimbabwe	7	**1**	0

Source: Compiled by the authors based on the HEP data obtained from the World Bank

have been in 2021 or would be in 2030 if all the 54 African countries had honored the 2001 Abuja Declaration. However, we can show the implicit impact, if the governments in African countries had adhered to the Abuja Declaration, by rewriting equation (14) in linear form as:

$$wh = hcsi + 0.15y \quad (20),$$

and that

$$\Delta wh = \Delta hcsi + 0.15\Delta y \quad (21).$$

Given the feedback loop between income and health, which means that y = wh at equilibrium, and/or that $\Delta y = \Delta wh$; therefore, we rewrite equation (21) as:

$$\Delta y = \Delta hcsi + 0.15\Delta y \quad (22).$$

Solving for equilibrium income yields:

Interpretatively, equation (23) shows that honoring the 15 percent pledged to fund the health care sectors would have improved the health care sector infrastructures by roughly 17.6 percent and this would have put the equilibrium levels of income and workers' health northeast of point Z along the health-income growth (HIG) path instead of points X and K as indicated in Figure 2 where $y2 < y1$. In other words, 1.176 would have been the health care multiplier effect on income growth in African economies, and this would have yielded $y2 > y1$ instead of $y2 < y1$ as shown in Figure 2. Similarly, merely complying with two-thirds (10 percent) of the 2001 Abuja Declaration would have changed the trajectories of the health care sectors and health infrastructures in African countries, and this would have improved their economies because health is wealth.

Further, we quantify the impacts of some measures of health care outcomes on sustainable economic growth and development in African countries within a linear regression framework:

$$Yt = \beta0 + \beta1HDI + \beta2HEP + \beta3C19 + \beta4AMR + \beta5IMR + \beta6DPR + \beta7SNDRs + \xi it \quad (24)$$

where all the variables are as defined earlier, and ξit is the random error term. The relevant coefficients to be estimated are β1, β2, β3, β4, β5, β6, and β7. Given the failure of the health care systems in African countries, the signs of these coefficients are indeterminate or ambiguous. Table 7 presents the estimated coefficients of equation (24) for the African countries. The coefficients of HDI and DPR are positive and statistically significant while the coefficient of HEP is negative and

statistically significant at 5% level. The statistically significant positive relationships between

HDI and Yt as well as DPR and Yt confirmed the strong correlation reported Table 4. Importantly, the statistically significant negative relationship between HEP and Yt highlight the tragedy of African governments' failure to honor the 2001 Abuja Declaration. In other words, their failure to fund the health sectors and health care infrastructures has enduring negative impacts on sustainable economic growth and development.

Table 7: Estimated Results of the Growth Regression

	Coefficients								
	β_0	β_1	β_2	β_3	β_4	β_5	β_6	β_7	R^2
Y_t	-733.317	28526.960	-445.156	-0.013	346.031	46.111	6570.561	-0.001	0.82
	(-1.023)	(4.796)**	(-2.647)**	(-0.215)	(1.107)	(0.993)	(5.156)**	(-0.287)	

Note: t-values in parenthesis, ** indicates statistical significance at 5% level and better.

Conclusions and Policy Implications

This study concurs with research scholars and medical experts that have examined various episodes of infectious disease outbreaks in African countries and have concluded that these diseases would continue to plague Africa because there are no concrete disease eradication plans. Scholars attribute the lack of disease eradication plans to the fact that African leaders and many government officials do not take the infectious diseases seriously because they can travel, at the tax payers' expense, to obtain superior medical treatments in the United States, Europe, China, Singapore, South Korea, and India. The behavior of African leaders seeking superior medical treatments abroad exemplified the issue of health care and disease treatment inequality in African countries. For example, the Centers for Disease Control and Prevention pointed out in a report (October 2, 2020) that cholera, which has

been largely eliminated from industrialized countries through water and proper sewage treatments over a century ago, still remains a significant cause of illness and deaths in many African countries, and that improving global access to water, sanitation and hygiene is a critical step to reducing Africa's cholera burden. These debilitating infectious diseases continue to emerge and reemerge in the continent because African leaders have no disease eradication plans or strong policy commitment to provide access to water, sanitation, and hygiene. This is particularly important because the lack of water and electricity supply, adequate sanitation, and sewage treatments is manifested in Nigeria – the largest economy in Africa. In essence, the lack of access to clean water, sanitation, and hygiene is a "health curse" throughout the African continent.

As shown in Table 1, malaria is still the leading cause of death in the African continent followed by tuberculosis. To solve the problem and save millions of lives, African countries and their leaders need to borrow Singapore's template in handling malaria. Each country in the African Union can form a "Malaria Eradication Group" (MEG) to visit and study Singapore's plan, which prepared Singapore's handling of COVID-19 that studies considered to be unparalleled relative to other countries worldwide. If African countries can copy or imitate Singapore's template or knowledge of how to eliminate malaria, they can apply the same knowledge to curtail Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Hepatitis D Virus (HDV), and Hepatitis E Virus (HEV), which the World Health Organization projects would be worse than HIV/AIDS in African countries in the 21st century. Our estimate that African countries will suffer from 5,687,799 shortage of medical doctors by 2030 is consistent with the projection of medical experts, the Universal Health Coverage, and the SDGs, which recognized that African countries face severe health workforce shortages estimated to reach 6.1 million by 2030.

It is highly recommended that African countries follow Singapore's template laid out in "The Healthcare 2020 Master Plan" because it helped to boost Singapore's doctor per 1,000 people ratios from 1.4 in 2017 to 2.5 in 2019. The African Union and African governments need to coordinate and collaborate on a master plan centered on the "reversal of medical brain drain" because the medical sector is the backbone of any economy if the aim is to achieve sustainable

development goals by 2030 and beyond. This is particularly important because there is a strong positive correlation between GDP per capita and the doctor per people ratio. In addition, African governments can invest more in creating more medical schools and encourage their medical doctors, nurses, and other professionals in foreign countries to come back to Africa and manage these institutions. Finally, governments in African countries should prioritize the restoration of their decaying and outdated health care infrastructures, including the provision of clean water, adequate sanitation, and sewage systems in the health care sectors. This is imperative if the goal is to eliminate infectious diseases and the adverse impacts on the African continent.

Endnotes

1. See https://www.un.org/development/desa/disabilities/envision2030.html for discussions on the proposed goals contained in the 2016-2030 SDGs, which came after the MDGs ended in 2015.

2. See the report on doctor people ratio at https://qz.com/520230/africa-has-about-one-doctor-for-every-5000-people/.

3. Aetna International highlighted the quality of health care in Uganda, Nigeria, Tanzania, Zambia, Kenya, Zimbabwe, and South Africa. See https://www.aetnainternational.com/en/about-us/explore/living-abroad/culture-lifestyle/health-care-quality-in-africa.html.

4. See Strauss and Thomas (1998) and Weil (2013) for more detailed discussions on the relationship between health, nutrition, and economic growth/development.

5. HCSI includes the number of hospitals or medical facilities in each African country, the number of hospital beds per 1,000 people, easy access to medical diagnostic laboratories and procedures such as the magnetic resonance imaging (MRI), computed tomography scans (CT Scans), and X-rays as well as easy access to vaccinations.

6. This part is deeply rooted in Weil's (2013) modeling of the interaction between health and income because health is another form of human capital required for sustainable economic growth and development.

7. See Appendix A for the medical facilities in African countries and Appendix B in different Tables showing the breakdowns of African countries into different HDI categories and the Healthcare Access and Quality (HAQ) Index.

8. For details, see the 2011 report of the World Health Organization.

References

African Union (2013), "Declaration of the Special Summit of African Union on HIV/AIDS, Tuberculosis and Malaria," Abuja, Nigeria, 12-16 July.

Aetna International (2020), "Health Care Quality in Africa: Uganda, Nigeria, Tanzania, Zambia, Kenya, Zimbabwe and South Africa," https://www.aetnainternational.com.

Clemens, Michael A. and Gurilla Pettersson (2008), "New Data on African Health Professionals Abroad," Human Resources for Health, Vol. 6(1), 1-11.

Centers for Disease Control and Prevention (2020), "Cholera in Africa," https://www.cdc.gov/cholera/africa/index.html, October 2.

Ebatamehi, Sebastiane (2020), "Top 10 Countries with Improved Healthcare System in Africa 2020," The African Exponent, February 26th.

Fenollar, F. and O. Mediannikov (2018), "Emerging Infectious Diseases in Africa in the 21st Century," New Microbes and New Infectious, Vol. 26, No. S10-S18.

Galal, Saifaddin (2021), "Coronavirus Cases in Africa as of March 8, 2021, by Country" Statista, https://www.statista.com/statistics/1170463/coronavirus-cases-in-africa/.

Gatome-Mungua, Agnes and Nkechi Olalere (2020), "Public Financing for Health in Africa: 15% of an Elephant Is Not 15% of a Chicken," Africa Renewal, October 13.

Geldsetzer, Pascal, Marcel Reinmuth, Paul O. Ouma, Sven Launtenbach, Emelda A. Okiro, Till Barnighausen (2020), "Mapping Physical Access to Health Care for Older Adults in Sub-Saharan Africa and Implications for the COVID-19 Response: A Cross-Sectional Analysis," The Lancet, October

Gok K. T. (1983), "Eradication of Malaria from Singapore," Singapore Medical Journal, Vol. 25, 255- 268.

Human Rights Watch (2020), "Africa: COVID-19 Exposes Healthcare Shortfalls: Prioritize Investment to Improve Access to Care for All," News Release, June 8, 2020. https://www.hrw.org/news/2020/06/08/africa-covid-19-exposes-healthcare-shortfalls

Kazeem, Yomi (2017), "Africa's Presidents Keep Going Abroad for Medical Treatment Rather Than Fixing Healthcare at Home," Quartz Africa, June 30.

MKinfu, Yohannes, Mario R. Dal Poz, Hugo Mercer, and David B. Evans (2009), "The Health Worker Shortage in Africa: Are Enough Physicians and Nurses Being Trained?" Bulletin of the World Health Organization, 87, 225-230.

Krah, Richard Kwame (2020), "Nigeria Has More Than 4,000 Doctors in the US and 5,000 in the UK Alone," Eyeing Gambia, Africa and Beyond," January 25. https://eyegambia.org/nigeria-has-more-than-4000-doctors-in-the-us-5000-in-the-uk-alone

Kuguyo, Oppah, Andre Pascal Kengne, and Collet Dandara (2020), "Singapore COVID-19 Pandemic Response as a Successful Model Framework for Low-Resource Health Care Settings in Africa?" QMICS A Journal of Integrative Biology, Vol. 24, No. 8, 470-478.

Lee, Vernon J., Samuel Ow, Harold Heah, Meng Yaw Tan, Patrick Lam, Lee-Ching Ng, Sai Gek Lam-Phua, Abdul Qadir Imran, and Benjamin Seet (2010), "Elimination of Malaria Risk through Integrated Combination Strategies in a Tropical Military Training Island," The American Journal of Tropical Medicine and Hygiene," Vol. 82, No. 6, 1024-1029.

Mboussou, F., P. Ndumbi, R. Ngom, Z. Kamassali, O. Ogundiran, J. Van Beek, G. Williams, C. Okot, E.L. Hamblion, and B. Impouma (2019), "Infectious Disease Outbreaks in the African Region: Overview of Events Reported to the World Health Organization in 2018," Epidemiology and Infection, Vol. 147, 1-8.

Molosankwe, Botho (2019), "Mugabe and Other African Leaders Who Died Seeking Medical Attention Abroad," The Star, September 6.

Muggeridge, Paul (2015), "Which Diseases Are Africa's Biggest Killers?" World Economic Forum, August 27.

Muturi, Matthew, John Gachohi, Athman Mwatondo, Isaac Lekolool, Francis Gakuya, Alice Bett, Eric Osoro, Austine Bitek, S. Mwangi Thumbi, Peninah Munyua, Harry Oyas, Obadiah N. Njagi, Bernard Bett, and M. Kariuki Njenga (2018), "Recurrent Anthrax Outbreaks in Humans, Livestock, and Wildlife in the Same Locality, Kenya, 2014-2017," The American Journal of Tropical Medicine and Hygiene, Vol. 99, No. 4, 833-839. uturi, Matthew, John Gachohi, Athman Mwatondo, Isaac Lekolool, Francis Gakuya, Alice Bett, Eric Osoro, Austine Bitek, S. Mwangi Thumbi, Peninah Munyua, Harry Oyas, Obadiah N. Njagi, Bernard Bett, and M. Kariuki Njenga (2018), "Recurrent Anthrax Outbreaks in Humans, Livestock, and Wildlife in the Same Locality, Kenya, 2014-2017," The American Journal of Tropical Medicine and Hygiene, Vol. 99, No. 4, 833-839.

Organization of African Unity (2001), "African Summit on HIV/AIDS, Tuberculosis and Other Related Infectious Diseases," Abuja, Nigeria, 24-27 April.

Racoma, Bernadine (2019), "Countries Lacking Proper Healthcare," Day Translations, Inc. (US) https://www.daytranslations.com/blog/countries-no-healthcare/.

Rogers, Adam (2020), "Singapore Was Ready for COVID-19 – Other Countries, Take Note," Science, March 12.

Savedoff, William (2003), "How Much Should Countries Spend on Health," World Health Organization, Discussion Paper Number 2.

Strauss, John and Duncan Thomas (1998), "Health, Nutrition, and Economic Development," Journal of Economic Literature, Vol. XXXVl, No. 2, pp. 766-817.

Tandon, Ajay, Christopher J.L. Murray, Jeremy A. Lauer, and David B. Evans (2000), "Measuring Overall Health System Performance for 191 Countries," GPE Discussion Paper Series: No. 30, EIP/GPE/EQC World Health Organization, 2-23.

Texila American University (2020), "Africa Is In Pressing Need of Doctors with 1 Doctor for 10,000 People!" How Many Doctors Per People Are There in Africa?" https://zm.tauedu.org/demand-for-doctors-in-africa/

Tumusiime, Prosper (2017), "What Needs To Be Done To Solve the Shortage of Health Workers in the African Region," WHO AFRO Health Workforce Observatory Database, August 24.

Weil, David N. (2013), Economic Growth, 3rd Edition, Addison-Wesley Pearson Publisher, New Jersey: Upper Saddle River.

World Health Organization (2019), "Global Spending on Health: A World in Transition," Global Report, WHO/HIS/HGF/HF Working Paper/19.4.

World Health Organization (2011), "The Abuja Declaration: Ten Years On," Health Systems, August, 2011.

Appendix A

Table 1A: Medical Facilities in African Countries of 2020

	Countries	Population	Medical Facilities	Population Per Medical Facility
1	Algeria	43,851,044	586	74,831
2	Angola	32,866,272	1,575	20,867
3	Benin	12,123,200	819	14,802
4	Botswana	2,351,627	624	3,769
5	Burkina Faso	20,903,273	1,721	12,146
6	Burundi	11,890,784	665	17,881
7	Cabo Verde	555,987	663	839
8	Cameroon	26,545,863	3,061	8,672

Table 1A continued: Medical Facilities in African Countries as of 2020

	Countries	Population	Medical Facilities	Population Per Medical Facility
9	Central African Republic	4,829,767	555	8,702
10	Chad	16,425,864	1,283	12,803
11	Comoros	869,601	66	13,176
12	Congo, Democratic Republic	89,561,403	14,586	6,140
13	Congo, Republic of the	5,518,087	328	16,823
14	Cote d'Ivoire	26,378,274	1,792	14,720
15	Djibouti	988,000	66	14,970
16	Egypt	102,334,404	5,000	20,467
17	Equatorial Guinea	1,402,985	47	29,851
18	Eritrea	3,546,421	269	13,184
19	Eswatini (formerly Swaziland)	1,160,164	135	8,594
20	Ethiopia	114,963,588	5,125	22,432
21	Gabon	2,225,734	542	4,107
22	Gambia, The	2,416,668	139	17,386
23	Ghana	31,072,940	1,960	15,854
24	Guinea	13,132,795	1,746	7,522
25	Guinea-Bissau	1,968,001	8	246,000
26	Kenya	53,771,296	6,146	8,749
27	Lesotho	2,142,249	117	18,310
28	Liberia	5,057,681	740	6,835
29	Libya	6,871,292	1,355	5,071
30	Madagascar	27,691,018	2,677	10,344
31	Malawi	19,129,952	648	29,522
32	Mali	20,250,833	1,478	13,702
33	Mauritania	4,649,658	648	7,175
34	Mauritius	1,271,768	166	7,661
35	Morocco	36,910,560	2,626	14,056
36	Mozambique	31,255,435	1,579	19,794
37	Namibia	2,540,905	369	6,886

Table 1A continued: Medical Facilities in African Countries as of 2020

	Countries	Population	Medical Facilities	Population Per Medical Facility
38	Niger	24,206,644	2,886	8,388
39	Nigeria	206,139,589	20,807	9,907
40	Rwanda	12,952,218	572	22,644
41	Sao Tome and Principe	219,159	50	4,383
42	Senegal	16,743,927	1,347	12,431
43	Seychelles	98,347	18	5,464
44	Sierra Leone	7,976,983	1,120	7,122
45	Somalia	15,893,222	879	18,081
46	South Africa	59,308,690	4,303	13,783
47	South Sudan	11,193,725	1,747	6,407
48	Sudan	43,849,260	272	161,211
49	Tanzania	89,561,403	8,497	10,540
50	Togo	8,278,724	207	39,994
51	Tunisia	11,818,619	2,000	5,909
52	Uganda	45,741,007	3,792	12,063
53	Zambia	18,383,955	1,263	14,556
54	Zimbabwe	14,862,924	1,236	12,025

Source: Data from CIA World Factbook and https://www.indexmundi.com/g/r.aspx?v=30. Population obtained from https://www.worldometers.info/geography/how-many-countries-in-africa/

Appendix B

Table 1B: African Countries with High Human Development

	Country	HAQ Index	HEP % of GDP	Doctors per 1,000 people	HDI	World Rank†
1.	Mauritius	65.7	5.83	2.60*	0.804	65
2.	Seychelles	66.1	5.11	2.12*	0.796	67
3.	Algeria	63.7	6.22	1.79*	0.748	91
4.	Tunisia	70.1	7.29	1.30*	0.740	95
5.	Botswana	51.1	5.85	0.53	0.735	100
6.	Libya	69.9	6.05	2.09*	0.724	105
7.	South Africa	52.0	8.25	0.91	0.709	114
8.	Egypt	61.0	4.95	0.80	0.707	116
9.	Gabon	51.4	2.74	0.68	0.703	119

Source: Data on Healthcare Access and Quality Index (HAQ Index) was obtained and compiled from https://healthsystemsfacts.org/2019/09/13/healthcare-access-and-quality-index-rankings/. The data on current health expenditures (HEP) as percentage of GDP, the number of doctors or physicians per 1,000 people, and Human Development Index (HDI) was obtained and compiled by the authors from the World Bank database – available at
https://data.worldbank.org/indicator/SH.XPD.CHEC.GD.ZS
https://data.worldbank.org/indicator/SH.MED.PHYS.ZS?Locations=ZG
* the only five African countries with DPR > 1, and † is World rank based on Human Development Index.

Table 2B: African Countries with Medium Human Development

	Country	HAQ Index	HEP % of GDP	Doctors per 1,000 people	HDI	World Rank†
1.	Morocco	61.3	5.31	0.73	0.686	121
2.	Cabo Verde	61.7	5.36	0.78	0.665	126
3.	Namibia	53.7	7.95	0.59	0.646	130
4.	Sao Tome and Principe	49.6	6.27	0.05	0.625	135
5.	Eswatini (Swaziland)	41.9	6.54	0.33	0.611	138
6.	Ghana	49.7	3.54	0.14	0.611	138
7.	Kenya	48.7	5.17	0.20	0.601	143
8.	Equatorial Guinea	48.4	2.99	0.40	0.592	145
9.	Zambia	41.6	4.93	0.16	0.584	146
10.	Angola	40.7	2.55	0.21	0.581	148
11.	Congo, Republic of the	43.5	2.13	0.16	0.574	149
12.	Zimbabwe	48.7	4.73	0.19	0.571	150
13.	Cameroon	44.4	3.53	0.09	0.563	153
14.	Comoros	47.7	4.59	0.27	0.554	156

Source: Same as in Table 1B

Table 3B: African Countries with Low Human Development

	Country	HAQ Index	HEP % of GDP	Doctors per 1,000 people	HDI	World Rank†
1.	Mauritania	52.0	4.58	0.18	0.546	157
2.	Benin	43.0	2.49	0.05	0.545	158
3.	Uganda	42.9	6.53	0.17	0.544	159
4.	Rwanda	47.8	7.54	0.14	0.543	160
5.	Nigeria	51.3	3.89	0.45	0.539	161
6.	Cote d'Ivoire	42.4	4.19	0.23	0.538	162
7.	Tanzania	49.9	3.63	0.01	0.529	163
8.	Madagascar	43.7	4.79	0.18	0.528	164
9.	Lesotho	35.7	9.28	0.07	0.527	165
10.	Djibouti	44.7	2.32	0.22	0.524	166
11.	Togo	44.3	6.17	0.03	0.515	167
12.	Senegal	44.4	3.98	0.07	0.512	168
13.	Sudan	50.1	4.51	0.26	0.510	170
14.	Gambia	49.7	3.09	0.10	0.498	172
15.	Ethiopia	44.2	3.24	0.10	0.485	173
16.	Malawi	47.0	9.33	0.02	0.483	174
17.	Congo, Democratic Republic	40.4	3.30	0.07	0.480	175
18.	Guinea-Bissau	36.3	6.99	0.13	0.480	175
19.	Liberia	45.4	6.74	0.04	0.480	175
20.	Guinea	38.6	3.93	0.08	0.477	178
21.	Eritrea	38.1	4.09	0.06	0.459	180
22.	Mozambique	43.0	8.17	0.08	0.456	181
23.	Burkina Faso	42.9	5.63	0.08	0.452	182
24.	Sierra Leone	41.3	16.06	0.03	0.452	182
25.	Mali	45.6	3.88	0.14	0.434	184

26.	Burundi	40.4	7.74	0.10	0.433	185
27.	South Sudan	38.8	6.40	0.03	0.433	185
28.	Chad	37.7	4.09	0.04	0.433	185
29.	Central African Republic	28.6	10.99	0.07	0.397	188
30.	Niger	41.0	7.33	0.04	0.394	189

Source: Same as in Table 1B.

Africa's Infrastructural Deficits And Implications On The Public Health System

Reuel Mebuin[1] and Macsu A. Hill[2]

Abstract

Infrastructure is one factor that plays a vital role in a nation's or continent's progress, stability, security, competitiveness, and success. A healthy infrastructure is beneficial to all sectors in a country. On the contrary, a fragmented infrastructure can be detrimental and can negatively impact all sectors including, but not limited to, public health. Rebuilding any broken infrastructure is a collective effort and cannot be the sole responsibility of the government. In this symposium paper, we discus Africa's infrastructural deficits and their implications on public health. In addition, we describe case studies of adequate versus inadequate public health systems. Finally, we recommended strategies that could be either adopted, enhanced, or tailored to strengthen the infrastructure of other developing countries as applicable.

Keywords: Africa, Infrastructure, Investments, Public health

Introduction

This paper explores the gaps in Africa's multisector infrastructure and their implications on its public health system. We utilized case studies to describe differences between inadequate versus adequate public health systems. Also, to address these gaps we emphasized the adoption and enhancement of existing strategies to fill these gaps. According to the UNDESA (2019), Africa's population is projected to increase to 2.4 billion by 2050. Africa will need an adequate infrastructure to accommodate this expansive population growth. The value

[1] Ph.D., CRA Rutgers, The State University of New Jersey

Authors' Note: We have no conflict of interest to disclose. Reuel Mebuin is employed by Rutgers University, Office of Research and Sponsored Programs.

[2]Ph.D., MPH, CHES Macsu A. Hill is employed by Rutgers University, Honors Living-Learning Community in Newark, New Jersey. Correspondence concerning this article should be addressed to Rutgers University, Office of Research and Sponsored Programs, 249 University Avenue, Room 206, Newark, NJ, 07102, USA. Email: r.mebuin@rutgers.edu.

of investment in a solid infrastructure cannot be underestimated (Katseff et al., 2020). Africa's lack of infrastructure is well documented and investment in infrastructure lags behind other continents (Collier & Cust, 2015; Mafusire et al., 2010). A strong infrastructure can ease the transfer of goods, services, and people within and between countries. Infrastructure impacts society (Rogowsky & Laney-Cummings, 2009), as well as the ability to combat public health crises such as COVID-19 (An & Tang, 2020).

Kauffman (2008) listed some of these infrastructure gaps to include transportation, access to water and sanitation, untapped energy sources, poor risk reallocations and frameworks, and lack of investments. This inefficient and ineffective infrastructure of Africa has resulted in a negative impact on the continent resulting in poor utilization of its natural resources, restricted intra- and inter-African trade, inappropriate and/or unsustainable overspending, depriving Africans from participating in gainful economic activities, and denying access to life saving public services (Mbaku, 2012). These factors have contributed to Africa's inability to effectively engage and compete in the global economy (Pottas, 2013).

Mafusire et al. (2010) states that less than 40% of Africa's population has access to electricity, 33% has access to roads in rural areas, 34% has access to quality sanitation, 65% has access to clean water, and 10% has access to broadband, high-speed internet. Only 5% of African agriculture is irrigated. Africa's road freight costs and mobile telephone costs are four times and 1.5 times that of the United States (US), respectively. In comparison to other developed nations, Africa's infrastructure lags behind in paved-road density, telephone main lines, and power generation (Foster & Briceno-Garmendia, 2010). In a survey of global infrastructure investment and service across seven infrastructural areas to include power and energy, water and sanitation, road and highways, transport by air and sea, information and communications technology (ICT), railways, and core public service infrastructure such as hospitals and schools, Africa lagged behind in all but ICT (Metcalfe & Valerie, 2019). Africa's inadequate infrastructure continues to impede the future of achieving full economic potential and growth.

Background and Context

The World Health Organization provided a snapshot of some of the challenges faced by the continent. Life expectancy in Africa is 52.3 years with high risk factors influencing quality of life. Africa's essential services meets the public health needs of only 36% of the population. According to the International Health Regulations framework, Africa received the lowest score of 57% for poor staffing in healthcare facilities, 49% for financial and payment medium, 49% for level of performance, 39% for having services in place during outbreaks and disasters, and 7% of government expenditures allocated to public health infrastructure, monitoring, and effectiveness (WHO, 2018). Furthermore, Kirigia and Barry (2008) identified six main challenges to the African public health system to include leadership and governance; worker shortages; corruption in procurement systems for medical products and technologies; scarcity of information and communications technology; poor public health investment; and a lack of effective public health delivery organization and management.

Challenges in Africa's public health system are attributed to insufficient human resources and investment in public health, and lack of leadership and management (Oleribe et al., 2019). In addition, many trained medical staff pursuing careers outside of the continent has resulted in "brain drain." As predicted in 2000, approximately 65,000 or one-fifth of African born physicians, and 70,000 or one-tenth of African born nurses, work outside the continent (Clemens & Peterson, 2008). Africa's expenditure in salaries for 100,000 foreign healthcare providers exceeds US $4 billion, with a deficit of US $184,000 per trained doctor or healthcare professional who migrates to the West (Sankore, 2006). According to the World Health Organization, Africa bears more than 24% of the global burden of disease, but has access to only 3% of healthcare workers, and less than 1% of the world's financial resources (WHO, 2006).

Gaps in structural barriers to a nation's infrastructure impact public health systems, particularly during the emergence of public health crises as observed with COVID-19 (An & Tang, 2020). The reliance of African countries on public health infrastructure depends on foreign aid which exacerbated during the COVID-19 pandemic, leaving Africa ill-equipped and under-resourced without adequate isolation and intensive care systems, ventilators, and the necessary financial resources to be able to combat

the pandemic (Dzinamarira et al., 2020). There are diverse approaches to address these existing challenges. Africa will need to increase and/or diversify its investment in infrastructure; engage the private, educational, and/or research sectors; privatize and/or decentralize its infrastructure network; increase human capital; invest natural resources in infrastructure development; curtail political corruption; and create an independent and centralized oversight body to lead, manage, monitor, implement, and evaluate all infrastructural investment projects. At the core of implementing these solutions is having sound institutions and competent leadership in place (An & Tang, 2020; Foster & Briceno-Garmendia, 2010). This will also require collective efforts of the political class or leadership and the people of the continent.

Implications on Public Health Systems

As previously described, a crippling infrastructure can have devastating implications on fragile public health systems. The lack of coordination within public health systems can result in patient frustration with unpleasant experiences. In addition, the lack of effective communication among healthcare care teams can lead to medical errors, waste, and duplication of efforts. Coordination of patient care needs to be seamless and managed across healthcare settings. Accountability is also crucial in healthcare settings. Absence of accountability by healthcare teams (e.g., physicians, nurses, medical assistants), quality improvement processes, and clinical information systems are factors that can attribute toward unacceptable quality of care. When healthcare providers are not accountable for patient care, management and coordination of patient care suffers. Lack of accountability may also result in expensive treatment costs rather than measures to prevent and manage chronic diseases (Shih et al., 2008).

Theoretical Framework

Discussion about the various gaps found in the public health systems in Africa is not a new phenomenon because it is evident that most countries in Africa need human workforce development, resources, medical supplies, leadership, and public health surveillance systems, to name a few. To describe these gaps, our case studies focused on how Liberia and Sierra Leone responded to an infectious disease outbreak. The public health systems in these neighboring West African countries were negatively impacted and many succumbed to the

virus. Some of the gaps identified in the failed healthcare systems in these West African countries were challenges that were once faced in Canada. Unlike Liberia and Sierra Leone, Canada identified these gaps and used a collective approach to address their healthcare system to benefit the country. Prior to the 70s, local and regional governments were responsible for the healthcare system in Canada. However, with the increased growth in the population, the responsibility shifted to the municipalities and provinces (Todt, 2011). Throughout this early era, the Canadian healthcare was faced with challenges of financing, access, equality and equity, healthcare resources and physician billing. Notwithstanding, these are the types of challenges that are plaguing and weakening the healthcare system in many African countries.

Instead of ignoring the gaps in the healthcare system, the people of Canada and their government were proactive in addressing these issues. In 1910, a group of concerned physicians formed the Canadian Public Health Association (CPHA) to address the state of public health in the country (Rutty & Sullivan, 2007). By 1974, Marc Lalonde's book "A New Perspective on the Health of Canadians," four factors (genetic, environmental, personal lifestyle, and medical care) were identified as critical factors that affect the health of a person or population. Lalonde's report brought about a broader approach to Canada's public health while at the same time giving health promotion a greater focus (Rutty & Sullivan, 2007). This further culminated with the passing of the Canada Health Act in 1984 "to protect, promote, and restore the physical and mental well-being of residents of Canada and to facilitate reasonable access to health services without financial or other barriers" (Tiedemann, 2019).

Case Study: Ebola Virus Outbreak in Liberia and Sierra Leone

The epidemic of Ebola Virus Disease (EVD) in West Africa posed devasting risks and exposed stark infrastructure fragmentations. These gaps had serious implications on public health systems. Long-term planning and investments are critical to establishing public health systems that have the capacities to detect, prevent, and respond to serious global health threats (Crisp et al., 2000). Liberia, West Africa, was selected as our case study for examining gaps in public health system infrastructure in relation to EVD, because it was among one of the countries in West Africa heavily impacted in the early months of the epidemic. Ebola ravaged the West African countries

of Liberia, Sierra Leone, and Guinea in 2014. Within these three countries, more than 28,000 Ebola cases were reported and more than 11,000 people died (World Health Organization, 2016).

In March 2014, the inadequacies of the public health infrastructure in Liberia were exposed during the Ebola outbreak. Initially, there were five confirmed cases of this virus reported in Lofa County (Bulter, 2014). The local public health system in Liberia was incapable of effectively handling the outbreak due to lack of emergency response, laboratory capacity, surveillance, human resources, governance, information, supply of medical products, research, and contact tracing (Marston et al., 2017; Pillar et al., 2014; Shoman et al., 2017; Bulter, 2014).

This section addresses the challenges of emergency response and governance, laboratory capacity, governance, contact tracing, and the shortage of human resources and medical supplies to address the burgeoning Ebola outbreak. Control of infectious disease outbreaks requires a coordinated national response in addition to well-organized emergency management. Effective emergency responses require a defined chain of command, organizational structure, efficient resource management, and advance planning. In Liberia, the refinement of command and structure at national and local levels was essential in the initial phase of emergence response efforts (Pillar et al., 2014).

Laboratory Capacity

At the onset of the Ebola outbreak, the primary test use to confirm cases, the reverse transcription polymerase chain reaction (RT-PCR), was limited in Liberia. During this time, the majority of tests were conducted by international teams in field laboratories (Sealy et al., 2016). Benefits of having improved laboratory capacity includes rapid diagnosis of infectious diseases, progress in either developing or updating laboratory strategic plans, the establishment and improvement of specimen transport networks, and safety related to storing biologic specimens (Marston et al., 2017).

Healthcare Workforce Development

Workforce development is also an essential factor in bridging the gaps in a fragmented infrastructure because the availability of well-trained staff is crucial to public health responses (General Electric Reports, 2015). This can be implemented through providing training in surveillance and epidemic response. In Liberia, the Frontline Field Epidemiology Training Programs were established in

2015. By 2017, there were more than 120 surveillance officers in Liberia who successfully completed the frontline training with representation from all 15 counties. Training of public health program managers in emergency public health responses, including practice drills, are essential in workforce development (Marston et al., 2017).

Contract Tracing and Medical Supplies

Another factor posing a challenge was contact tracing because of shortage of manpower. Tosh and Sampathkumar (2014) noted that in addition to contract tracing, it is important to quarantine individuals who may have been in contact with patients with EVD. According to Bulter (2014), contact tracing in some regions of Liberia was difficult because of poor road access and unidentifiable streets and city layouts. In addition to limited laboratory capacity to conduct RT-PCR to diagnose EVD (Marston, et al., 2017), personal protective equipment (PPE), including basics such as plastic gloves, was in high demand and resulted in public health workers refusing to see patients without PPE (Butler, 2014). In an attempt to mitigate the shortage of gloves, public health workers were washing or reusing them (Butler, 2014). Finally, in emergency public health response situations, staff training in the safe and efficacious use and disposal of PPE is essential (Tosh & Sampathkumar, 2014). Tosh and Sampathkumar (2014), suggested a team-based approach to addressing the need for PPE in the EVD outbreak. This approach includes hospitals training a core team of healthcare professionals. For example, emergency department should have a core medical response team comprised of nurses, infectious diseases physicians, internists (adult and pediatric), respiratory therapists, and environmental services and laboratory staff. For countries in Africa who already have these healthcare providers on their hospital-based medical response teams, providing the necessary training and how to safely use PPE will be impactful. For those African countries experiencing shortages of healthcare professionals, creating a curriculum or training for medical students, nursing students, and lab technicians is another practical approach to combat EVD outbreaks.

Case Study: Ebola Virus Outbreak in Sierra Leone

As previously mentioned, Sierra Leone was among the three countries in West Africa most impacted by the Ebola virus outbreak. The population of Sierra Leone is an estimated 6 million, of whom

approximately 70% live below the poverty line (WHO, 2014)) According to WHO, 3,589 individuals died because of the virus, and 221 of them were healthcare workers (WHO, 2015). There was a total of 14,124 cases in Sierra Leone (CDC, 2016) and like Liberia, there were several factors that led to Sierra Leone's challenges with the Ebola virus and the country's recent civil war (1991-2002) did not exempt their healthcare infrastructure (World Bank Group, 2015). Prior to the Ebola outbreak in Sierra Leone, the ratio to doctors and nurses were only two doctors and 17 nurses per 100,000 population and most of these healthcare providers were practicing in urban areas (CDC, 2016).

Some factors that attributed to the spread of the EVD were weak surveillance and a poor public health infrastructure. Crowded urban settings allowed the virus spread easily, and differences existed in strategies to control the virus. Prevailing and traditional practices existed among the people of Sierra Leone, and increased mobilization across borders occurred. These factors were also prevalent in Guinea and Liberia (CDC, 2016).

Even though the Ebola outbreak exposed the public health system in these West African countries, at the same time it presented opportunities for the leadership in these countries to work on strengthening poor public health infrastructures. We will explore how Canada identified gaps in their healthcare system and implemented effective systems to address these gaps.

Case Study: Canada's Public Health System

Although many countries are not adequately positioned to respond to local and global infectious disease outbreaks, some have exemplary public health systems. Canada was able to revamp their public health system to optimize public health preparedness and response. What does a good public health system look like? Public health systems are often appraised along three interconnected areas including cost, access, and quality. Cost is evaluated in terms of the real cost of the product or service provided or received. Access may be described as the percentage of individuals in a country who have some type of insurance to access the healthcare system, or the necessary time to receive healthcare services, or both. Quality refers to the quality of the healthcare services provided.

Canada was at a crossroad when it prioritized the evaluation of its healthcare system. This led to the 1974

Lalonde Report and the 1986 Ottawa Charter. These reports confirmed that in order to provide quality and improved healthcare to its citizens, it was necessary to institute publicly mandated, public health strategies to emphasize disease prevention over curative care (CPHA, 1997). In 1995, the Canadian Public Health Association (CPHA) passed a resolution titled "Focus on Health: Public Health in Health Services Restructuring" that highlighted the issues, roles, and challenges facing Canada's public health. The CPHA resolution resulted in a survey to assess the current status of public health authorities and administration in the country. The survey gathered data at three high levels to include (1) the link between the public health sector and other health and non-health entities across the country; (2) the official mandate of public health within each province or territory; and (3) the funding of nationwide public health programs and services. Findings from this study focused on (1) overall effectiveness and efficiency of public health; (2) scope, quality, funding, and staffing of public health; (3) current core public health functions; and (4) expected impact of future public health system reforms. Findings informed the implementation of the following recommendations to improve the efficiency and efficacy of the Canadian public health system (1) reduce cost and waste; (2) share information in an effective and efficient manner; (3) leverage technology to adequately detect, diagnose, treat, and deliver care; (4) improve human capital; (5) increase access of care for patients irrespective of their location; and (6) and increase patient participation in their healthcare.

While Canada's healthcare system is admired today for its public administration, comprehensiveness, universality, portability, and accessibility, these defining characteristics didn't come easy nor overnight. The process was tedious, challenging, and endured several unsuccessful attempts. Success required patience and sacrifice from both the government and the Canadian citizenry. Citizens were an active part of the process and shared their perspectives and concerns to a receptive government. The government was purposeful and intentional to address the healthcare crises and the people held the government accountable to provide an improved healthcare delivery system. To undertake a revamp of the healthcare delivery system in Africa, there needs to be partnership between the citizens and the government. It will require patience, because change is often not immediate, and resilience to not lose hope. Lastly, Africans need to hold their governments

accountable to implement changes that will improve their entire country.

Recommendations for Africa's Infrastructure to Improve its Public Health System

Africa's infrastructure is ailing in every sector. Although this may be alarming, it also presents great opportunities. The benefits of prioritizing, accelerating, and scaling up Africa's infrastructure will far exceed the cost of doing so. Foster and Briceno-Garmendia (2010) estimates that the annual potential dividends of investing in Africa's infrastructure is US $17 billion. The Organisation for Economic Co-operation and Development (OECD) and the African Center for Economic Transformation (ACET) (2020) identify two pathways going forward, (1) Africa needs to apply structure and time frames to the upstream processes for project and program development, integrating quality issues such as environmental, governance, economic linkages and job creation, social returns, community consultations, and financial modelling; and (2) construct a learning platform on African infrastructure development to foster a multi-level, multi-disciplinary community of African infrastructure professionals. Practical implementation includes a coordinated response of multidisciplinary teams of healthcare personnel (e.g., physicians, nurses, nurse practitioners, medical specialists such as internists, pulmonologists, and cardiologists, pharmacists, and community workers), as well as a coordinated response between government and hospitals, clinics, non-profit health centers, and other outpatient settings. All sectors play a major role in addressing the gaps identified in African infrastructure. In many instances, these entities do not collaborate, and efforts and resources are wasted.

When making recommendations to improve and evaluate Africa's public health system, it is important to integrate and tailor measures across systems, interpersonal, and intrapersonal levels. Improving the fragmented public health system will require strong leadership to spearhead changes. Leaders must assume the role of “champions of change” and build on existing resources (e.g., funding, access, technology, human capital). As funding is critical to support improved public health systems, Africa must diversify its funding sources beyond the traditional government funding and foreign aid. It is time to tap into the growing private sector for sustainable initiatives (Kaufman, 2008). A

decentralized or shared system of governance in Africa may make public health services more accessible to the population and improve overall accountability by closer monitoring and evaluation of health outcomes. For example, public health services of Canada empowered the provinces and territories not only to provide quality healthcare, but to build strong partnerships between public and clinical healthcare services and non-healthcare sectors (CPHA, 1977). Ghana, for example, was better prepared to address challenges posed by the recent COVID-19 pandemic in part because of the existence of local Emergency Operation Centers (EOCs) with a defined structure of governance, accountability, and monitoring processes in place (McKinsey & Company, 2020). When Nigeria was challenged with a polio outbreak, they put in place a community-based polio program which set Nigeria on track to eradicating the poliovirus (NPHCDA, 2018, & McKinsey & Company, 2020). The Nigerian polio program was based on a partnership between the Nigerian government and community-based organizations to design and deploy EOCs which improved the collaboration and efficiency among partners.

Equal patient access to rural and non-rural public health services is essential and must include healthcare facilities, and all forms of healthcare information (i.e., written, electronic, or audio), irrespective of race, color, national origin, age, disability, or sex (Luxon, 2015). Accessing and leveraging new digital technology and broadband internet as part of infrastructural reform will be crucial to the speed, cost, efficacy, and safety of progressive reforms in Africa's public health system as well as its overall global competitiveness as a continent. New digital technologies are critical in accessing information in real-time and making it accessible to the public, including public awareness of an outbreak. Factoring appropriate new technologies into service development proposals is one way to address this issue (Luxon, 2015). The strengthening of Africa's public health system will also require ongoing investment in human capital. Training in surveillance and emergency response are critical in building and sustaining public health capacity (Marston et al., 2017). Africa must invest in ongoing training to include the entire clinical team (receptionists or front desk staff, administrators, physicians, nurses, nurse practitioners, etc.). Some examples of trainings include epidemiology, laboratory techniques, infection prevention and control, emergency management, and program management. In addition, there is a need

to create training programs for managers responsible for leading public health initiatives (Marston et al., 2017). Integrated and coordinated teams of trained public health professionals will optimize responses to both infectious disease outbreaks and natural disasters.

Conclusion

Although progress has been noted in Africa's infrastructure and its public health system in recent years, Africa's multisector infrastructure network remains a relic of the past that fails to meet the current needs of the people. Africa can no longer afford to allow a fragmented infrastructure to prevent multi-sector competition at the global level, nor its ability to respond to new and/or reemerging infectious disease outbreaks. A collective, multi-sector, multi-factorial approach will be required to address the complexity of challenges that Africa continues to face. Local to national policy or upstream and evidence-based approaches to multi-sector project and program development that address en-vironmental, social and governance needs, economic linkages and job creation, and social returns are needed. Finally, investment in human capital to attract, train, and retain, multi-disciplinary, multi-sector professionals, inclusive of a rapidly responsive public health workforce, are vital to Africa's progress, stability, security, and competitiveness. The recommendations and case studies presented in this paper may be adopted, enhanced, or tailored as applicable to each African country.

References

An, B., & Tang, S. Y. (2020). Lessons from COVID-19 responses in East Asia: Institutional infrastructure and enduring policy instruments. SSRN Electronic Journal. doi.org/10.2139/ssrn.3602375

Butler, Y. S. (2015). Ebola virus: Exposing the inadequacies of public health in Liberia. Mayo Clinic Proceedings, 88, 1596-8.

Canadian Public Health Association. (1997, Dec). Public Health Infrastructure in Canada. Summary Document. Canadian Public Health Association. Retrieved January 5, 2021,

fromhttps://www.cpha.ca/sites/default/files/assets/policy/phinfra_e.pdf

Centers for Disease Control and Prevention. 2014–2016 Ebola Outbreak in West Africa. 22 Jun 2016 [cited 8 Sep 2017]. Retrieved February 24, 2021, from https://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/index.html.

Collier, P., & Cust, J. (2015). Investing in Africa's infrastructure: Financing and policy options. Annual Review of Resource Economics, 7(1), 473-493. doi.org/10.1146/annurev-resource-100814-124926

Crisp, B. R., Swerissen, H., & Duckett, S. J. (2000). Four approaches to capacity building in health: Consequences for measurement and accountability. Health Promotion International, 15(2), 99-107. https://doi.org/10.1093/heapro/15.2.99

Dzinamarira, T., Dzobo, M., & Chitungo, I. (2020). COVID-19: A perspective on Africa's capacity and response. Journal of Medical Virology, 92(11), 2465-2472. doi.org/10.1002/jmv.26159

Foster, V., & Briceno-Garmendia, C. (2010). Africa's Infrastructure: A Time for transformation. African Development Forum, World Bank, Washington, DC.

General Electric (GE) Reports. Dr. Tom Frieden: protecting the world from the next pandemic. 2015. Oct 29. Retrieved February 24, 2021, from http://www.gereports.com/dr-tom-frieden-protecting-the-world-from-the-next-pandemic

Kaufmann, C. (2008). "Engaging the Private Sector in African Infrastructure", NEPAD-OECD Africa Investment Initiative, OECD Issues Paper.

Kirigia, J. M., & Barry, S. P. (2008). Health challenges in Africa and the way forward. International Archives of Medicine, 1:27 doi:10.1186/1755-7682-1-27. Retrieved February 24, 2021, from http://www.intarchmed.com/content/1/1/27

Katseff, J., Peloquin, S., Rooney, M., & Winter, T. (2020, July). Reimagining infrastructure in the United States: How to build better. Infrastructure agencies need to prepare for two very different scenarios-a sharp rise in funding or a precipitous drop. McKinsey & Company.

Mafusire, A., Brixiova, Z., Anyanwu, J. C., & Mubila, M. (2010, Sept). Infrastructure deficit and opportunities in Africa. The African Development Bank Group. Chief Economist Complex. Economic Brief. Vol 1.

Marston, B. J., Dokubo, E. K., van Steelandt, A., Martel, L., Williams, D., Hersey, S., Jambai, A., Keita, S., Nyenswah, T. G., & Redd, J. T. (2017). Ebola Response Impact on Public Health Programs, West Africa, 2014-2017. Emerging Infectious Diseases, 23(13), S25–S32. doi.org/10.3201/eid2313.170727

Mbaku, J. M. (2012). "Building Opportunities: Addressing Africa's lack of Infrastructure." Foresight Africa: Top Priorities for the Continent in 2013.

Metcalfe, A., & Valerie, D. C. (2019, June). Bridging the African infrastructure gap: Bringing accountants to the Centre of the decision-making process. Association of Chartered Certified Accountants and Chartered Professional Accounts of Canada. Retrieved February 24, 202, from www.accaglobal.com

NPHCDA (2018, Dec). National Primary Health Care Development Agency. 2019 Nigeria Polio Eradication Emergency Plan. Retrieved March 1, 2021, from https://polioeradication.org/wp-content/uploads/2020/01/Nigeria-Final-NPEEP-20190303.pdf

Oleribe, O. O., Momoh, J., Uzochukwu, B. S., Mbofana, F., Adebiyi, A., Barbera, T., Williams, R., & Tayloy-Robinson, S. D. (2019). Identifying key challenges facing healthcare Systems in Africa and potential solutions. International Journal of General Medicine. doi: 10.2147/IJGM.S223882

Organisation for Economic Co-operation and Development. (2011). OECD health data 2011–Frequently requested data. Retrieved March 1, 2021, from http://www.oecd.org/ document/16/0,3746, en_2649_37407_2085200_1_1_1_37407, 00.html

Pottas, A. (2013, August). Addressing Africa's Infrastructure Challenges. Deloitte Corporate Finance Ltd.

Rogowsky, R. A., & Laney-Cummings, K. (2009). Sub Saharan Africa: Effects of Infrastructure Conditions on Export Competitiveness. 3rd Annual Report. U.S

International Trade Commission.

Rutty, C., & Sullivan, S. C. (2007). This is public health: A Canadian history. Celebrating a century of public health leadership (CPHA100). ISBN 1-894324-60—9. Oxford University Press

Sankore, R. (2006). How the brain drain to the West worsens Africa's public health crisis. Pambazuka News 269. Retrieved March 1, 2021, from http://www.pambazuka.org/en/category/ comment/37062

Sealy, T. K., Erickson, B. R., Taboy, C. H., Ströher, U., Towner, J. S., Andrews, S. E., Rose, L. E., Weirich, E., Lowe, L., Klena, J. D., Spiropoulou, C. F., Rayfield, M. A., & Bird, B. H. (2016). Laboratory response to Ebola — West Africa and United States. MMWR Supplements, 65(3), 44-49. doi.org/10.15585/mmwr.su6503a7

Shih, A., Davis, K., Schoenbaum, S.C., Gauthier, A., Nuzum, R., & McCarthy, D. (2008). Organizing the U.S. healthcare delivery system for high performance. Retrieved February 24, 2021, from https://www.commonwealthfund.org/sites/default/files/documents/___media_files_publications_fund_report_2008_aug_organizing_the_u_s__health_care_delivery_system_for_high_performance_shih_organizingushltcaredeliverysys_1155_pdf

Shoman, H., Karafillakis, E., & Rawaf, S. (2017). The link between the west African Ebola outbreak and health systems in Guinea, Liberia and Sierra Leone: A systematic review. Globalization and Health, 13(1). doi.org/10.1186/s12992-016-0224-2

Tiedemann, M. (2019, Dec). The Canada Health Act: An Overview. Publication No. 2019-54-E. Legal and Social Affairs Division. Parliamentary Information and Research Services. Retrieved February 24, 2021, from https://lop.parl.ca/staticfiles/PublicWebsite/Home/ResearchPublications/BackgroundPapers/PDF/2019-54-e.pdf

Tosh, P. K., & Sampathkumar, P. (2014). What clinicians should know about the 2014 Ebola outbreak. Mayo Clinic Proceedings, 89(12):1710-7. dx.doi.org/10.1016/j.mayocp.2014.10.010

Todt, M. A. (2011). In sickness and in health, in good times and in bad: A Comparative

analysis of the ideologies governing healthcare reform in Canada and the United States, 1962-1974. Graduate Theses, Dissertations, and Problem Reports. 3464. Retrieved March 1, 2021, from https://researchrepository.wvu.edu/etd/3464

UNDESA. (2019). World Population Prospects 2019, United Nations. Retrieved February 20, 2021, from https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf

World Bank Group. The Socio-Economic Impacts of Ebola in Sierra Leone—Results from a High Frequency Cell Phone Survey. 2015 Jun. Retrieved March 1, 2021, from http://documents.worldbank.org/curated/en/873321467999676330/pdf/97392-WP-P151624-Box391466B-PUBLIC-Socio-Economic-Impacts-of-Ebola-in-Sierra-Leone-June-2015-final.pdf

World Health Organization. (2018). The state of health in the WHO African Region. An analysis of the status of health, health services and health systems in the context of the Sustainable Development Goals. World Health Organization. Regional Office for Africa. Retrieved March 1, 2021, from www.aho.afro.who.int

World Health Organization. Ebola virus disease: Situation report. (2016). Retrieved March 23, 2021, from http://apps.who.int/iris/bitstream/handle/10665/208883/ebolasitrep_10Jun2016_eng.pdf?sequence=1

World Health Organization. (2006). "Working Together for Health: World Health Report 2006." 2006. Retrieved March 1, 2021, from https://www.who.int/whr/2006/whr06_en.pdf

Concrete Strategies to Close the Infrastructure Deficit in Public Health in Post COVID-19 Ghana - A Conceptual Paper

Erika Mamley Osae[1], Andrew Kweku Conduah[2] & Mary Naana Essiaw[3]

Abstract

The world is facing a global health crisis, which is perhaps unsurpassed in both the 20th and 21st centuries, killing people and spreading human miseries. The Corona Virus (COVID-19) is attacking societies at their core and is very much a health infrastructure crisis. Infrastructure has been described as the basic provision for the delivery of public health activities in a productive and meaningful manner. The five components of health infrastructure are skilled workforce, integrated electronic information systems, public health organizations, resources, and research. The paper, therefore, seeks to achieve a substantial improvement in our knowledge base of infrastructure in Ghana's Public Health sector; help Public Administrators better evaluate past and recent interventions during the height of the epidemic, prioritize current funding needs and provide a baseline to monitor future progress. The paper uses the qualitative paradigm of research that used corpus construction in the selection of material to represent a whole, making it functionally equivalent to sampling but structurally different. It used secondary sources focused primarily on archival data and applied documentary methods in studying documents to ascertain the extent of health infrastructure deficit and ingenious way to curb the challenges exposed by the COVID -19. Furthermore, there is a need to make use of modern, scientific, and innovative methods in bringing about developments in health infrastructure. Developments in health infrastructure will render a significant contribution in promoting the health and well-being of all individuals, irrespective of age groups, communities, categories, and backgrounds.

Keywords: Public Health, Infrastructure Deficit, Corona Virus, Ghana.

[1]Faculty of Management Studies, University of Professional Studies. Legon- Accra, Ghana (West Africa). Corresponding Author +233 244-688613. Email:Osae.erika@upsamail.edu.gh

[2]Institute of Work, Employment and Society (IWES) University of Professional Studies, Legon- Accra, Ghana (West Africa)

[3]Institute of Work, Employment & Society (IWES), University of Professional Studies. Legon- Accra, Ghana (West Africa)

Introduction

A mysterious pneumonia was discovered in Wuhan, the capital of Hubei province in China, and later brought to the attention of World Health Organisation (WHO) Country Office in China on 31st December 2019. In January 2020, 41 patients with confirmed infections had been admitted to hospitals in China Huang et al., (2020). To contain the virus, Wuhan was put under lockdown (a combination of regional and individual quarantine measures), and case numbers in China stabilized at around 80,000 by mid-February, ECDC (2020). The WHO pronounced the spate as a public health crisis of global alarm on 30th January 2020, and a plague on 11th March 2020. By then, global air transport had already carried the virus to all continents, and by mid-March, it had been established in 146 countries. Globally, as of 17th March 2021, there had been 120,164,106 confirmed cases of COVID-19, including 2,660,422 deaths, reported to WHO. As of 16th March 2021, 363,691,238 vaccine doses had been administered. Ghana has a total confirmed case of 88,228 with 698 deaths Covidttracker.bsg.ox.ac.uk, (March 2021).

At the onset of this unparalleled health crisis when vaccines to protect against the disease were not ready, coupled with the availability of limited medical interventions to treat it, most countries responded with various forms of health and hygiene protocols, including lockdown (home isolation, voluntary/ required quarantine), social distancing (vulnerable or entire populations), closure of schools/ universities and non-essential businesses/workplaces, cancelling or postponing events such as conferences, trade fairs, concerts and festivals, political debates and campaigns, sports seasons and the Summer Olympics. As the COVID-19 pandemic sculpts its murky entry into the history of humankind, causing serious illness and death and overturning daily life as we know it, national health systems have been stretched, businesses of all types have been shuttered and millions have been confined to their homes. International, regional and local travel restrictions immediately affected all economies, including tourism systems, public transport, hotels and guest houses, cafes and restaurants, conventions, festivals, meetings, as well as sporting events especially football. International air travel slowed because of the plague, as many countries imposed travel bans, closed borders, or introduced quarantine periods, international and domestic tourism declined quickly over a period of weeks.

Statement of the Problem

The world has faced a number of major epidemics in the last 40 years, yet none had similar implications for the global economy as the COVID-19 pandemic. The main reasons for the increasing pandemic threat in the 21st century are: population explosion and mobile world population, the dawn of an urban millennium projected to constitute 80% of urban humanity in developing countries by 2030 (UNFP, 2007), industrialized food production in global value chains, over consumption of processed foods, biophysical drivers such as vegetation, rock and soil type, livestock, military training and recreational facilities, and global transport networks serving as vectors in the spread of pathogens Pongsiri et al., (2009); Labonte et al., (2011). Disease outbreaks like SARS, Ebola, Marburg, Hantavirus, Zika and avian influenza are all outcomes of anthropogenic influence.

These outbreaks, which were largely attributed to weak health systems, slow emergency response systems and climate change, have highlighted the need for countries to build robust systems that can respond to health emergencies. The paper, therefore, seeks to firstly, achieve a substantial improvement in our knowledge base of infrastructure in Ghana's Public Health sector and secondly, to help Public Administrators better evaluate past interventions, recent interventions during the height of the epidemic, prioritize current funding needs and provide a baseline to monitor future progress.

Literature Review

Health infrastructure is an important indicator of the healthcare policy and welfare mechanism within a country. A developed health infrastructure includes a healthy workforce, and this is usually in the form of specialist doctors, nurses, and paramedical professionals, machines and a developed pharmaceutical industry. The World Health Organisation defines a health system as "all the organizations, institutions, resources, and people whose primary purpose is to improve health" (2020). The provision of public health services is dependent upon the presence of basic infrastructural facilities - Public Health Infrastructure, (2020). Public health infrastructure provides communities and nations with the capacity to prevent disease, promote health, and prepare for and respond to both emergency threats and chronic challenges to health. Infrastructure then becomes the foundation for planning, delivering, evaluating, and improving public health. All public health services

depend on the presence of basic infrastructure. All public health programmes such as immunizations, infectious disease monitoring, cancer, and asthma prevention, drinking water quality, and injury prevention requires health professionals who are competent in crosscutting and technical skills, modern information systems, and public health organizations with the capacity to assess and respond to community health needs. Public health infrastructure has been referred to as "the nerve centre" of the public health system Turnock, (2001).

Theoretical and Conceptual Perspectives

System Thinking Concepts

In an ever-changing and complex world, systems theory highlights the importance of understanding the complete system and underlying interactions of all the forces that make up that system (Pidwiny 2006; Checkland 1981). Systems theory has greatly influenced how the world understands and changes organizational performance Best (2007; Atun and Manade, (2006). Being described as a general science of wholeness (Von Bertalanffy, 1976), one of the major tools of the theory is system thinking Pidwimy, (2006). It seeks to help an individual to view systems from a broad perspective that includes the structures, patterns, and cycles in systems, rather than seeing only specific events in the systems Pidwiny (2006); and Atun and Manade (2006). It is, therefore, imperative that the Ghana Health Service should infuse system-thinking concepts into all aspects of health infrastructure, especially, in the areas of service delivery, human resources, medical supplies, governance and finance. This will better place Ghana in the event of future pandemics.

Theory of Health and Development

According to Preston (1975), an increase in life expectancy can lead to increases in human productivity and Ghana's Gross Domestic Product (GDP) per capita. Preston's curve indicates that individuals born in richer countries, on average, can expect to live longer than those born in poor countries. The implication for Ghana is that the relationship between income and health is concave and, therefore, a relatively poor country like Ghana should focus on economic growth, and that health improvement will come about spontaneously because of increases in income Lant and Larry (1996).

Theory of Balanced Growth

The theory emphasizes the need to make simultaneous investments in several industries as this will lead to bigger markets and increase in the need to invest (Nurkse, 1971). Nurske argued that the main impediment to development in developing economies is the vicious cycle of poverty. The theory shows that income is low in developing economies leading to low savings, the latter leads to low investment which eventually leads to low production. This theory, therefore, emphasizes that the major hindrance to development in developing economies is limited market opportunities and narrow markets. As a result, only complementary investments can create mutual demand. Thus, for any government to achieve balance, it must plan for investment Merrifield (2010).

Global Public Goods in Health

Public goods meet salient needs of society and play a crucial role in making it more secure. However, the "free rider" problem leads to a lack of incentives to produce them by profit-seeking private firms. Besides, public goods have positive "spill-over effects" valuable to a community compared to individual consumers that are not reflected by their market value. In this wise, public goods have typically been under-produced by the market so Government of Ghana must take responsibility to provide them domestically.

Methodology

The paper is situated in the qualitative paradigm of research that used Corpus Construction in the selection of material to represent a whole, making it functionally equivalent to sampling but structurally different Bauer and Gaskell (2008). It uses secondary sources focused primarily on archival data from January 2020 to August 2021 and applied documentary methods mainly in studying documents to ascertain the extent of health infrastructure deficit and ingenious ways to curb the challenges as exposed by the COVID-19.

Discussion

Over the past months, COVID-19 has inflicted catastrophic damage on societies and economies and exposed weaknesses in health systems worldwide. While the pandemic continues to unfold across the globe and infections peak and decline in some regions of the world, some countries have eased social and economic restrictions with the view of achieving recovery.

Global Health Functions are Vital but Less Produced and Less Funded

In a global village, health risks and diseases can take on a cross-border nature and result in significant health, social and economic impacts beyond countries. National health capacities and measures alone can be insufficient as evidenced in the current pandemic as well as past health emergencies. Kaki (2004) underscored the relevance of the interplay of endogenous as well as exogenous structures. "On the endogenous level, state agencies alone are not capable of bringing about economic growth and political change. On the exogenous level, historically and currently established relations of interdependence bind national systems with supranational systems. Inter-dependence significantly shapes the course of a nation's development experience" Kaki, (2004:29). Therefore, global health interventions address crucial needs that cut across countries and bring about societal benefits to all. The status of underinvestment in global health functions was amplified during the Ebola epidemic in 2014-2016 in West Africa. The absence of rapid diagnostic tests, treatment or vaccine, and surveillance and preparedness systems were found inadequate Yamey et al., (2019). The situation then, underpinned how the world was unprepared to deal effectively with epidemics and pandemics and other large-scale health challenges that might emerge in the future, which is a certainty because of climate change.

World response to COVID-19 has been encumbered by years of under-investment in the global health system. Research indicates a quarter of donor funds earmarked for health financing goes to global health functions Schäferhoff et al., (2019). This amount stood at $7 billion in 2017 (out of a $24 billion total in donor health financing), but careful estimates point to the need for an additional $9.5 billion annually Yamey et al., (2019). In comparison to the magnitude of the COVID-19, such figures are small when compared with the impacts from major global health emergencies. Prior to the COVID-19, a 2018 study had estimated expected annual losses from pandemic risk alone at $500 billion, or 0.6 per cent of global income Fan, Jamison and Summers (2018). The IMF forecasts a 4.9 per cent contraction of global GDP in 2020, while UN (2020) projections estimate that output losses over 2020 and 2021 could amount to $8.5 trillion, wiping out the cumulative gains of the previous four years in addition to 2,660,422 deaths as of March 17, 2021.

COVID-19 and experiences of past outbreaks necessitate the need for global public goods in health. This should cover robust surveillance and preparedness systems to contain outbreaks across borders. In addition, global institutional structures such as African Centre for Disease Control, European Centre for Disease Control, and Centre for Disease Control (USA) will facilitate inter-country coordination and mobilization of resources. This will greatly reduce delays when epidemics strike and bring about timely international response measures. Global information sharing and resources for research will bridge treatment gaps and economies of scale will bring costs down since individual countries are not producing them alone.

International solidarity and multilateralism as the way forward

Africa marked the move from planning to action in the rollout of COVID-19 vaccines as the WHO hosted African Health Ministers meeting on 17th February 2021. This was in expectation of a rapid vaccine rollout of two versions of the AstraZeneca-Oxford COVID-19 vaccine for emergency use. Here, an independent regional review committee accepted vaccines from 35 low-income African countries eligible for free vaccines from the COVAX Facility. The plans are required for countries to receive vaccines from COVAX, the global initiative to ensure fair access to COVID-19 vaccines led by WHO, GAVI, the Vaccine Alliance, and The Coalition for Epidemic Preparedness Innovations (CEPI).

Though a good global public goods effort in the long-term, the mistake was witnessed by the world in the wake of the Ebola outbreak where international donor financing for global health functions increased, but was not sustained over time Schäferhoff et al., (2019). The world must avoid this trap and ensure sustainable funding arrangements. The Decade of Action for delivering the SDGs for all is gaining traction and, therefore, increasing investment in global public goods for health should be a priority. Therefore, the availability of global public goods in health may appear invisible to most of us. Their absence will be felt, especially in crises. A united world can conquer COVID-19 to bring about normalcy and prepare the world to be more resistant to epidemics and pandemics.

Concrete Strategies to Close the Infrastructure Deficit in Public Health in Ghana.

The areas of health infrastructure where improvements need to take place are weak health systems capacity, clinical and public health emergency services including ambulance services, quality issues in service provision, financing the health sector, human resources for health/health workforce management, low number of health centres/ inadequate number of infectious disease centres, blood safety at blood banks, concentration of healthcare in cities, and non-availability of urgently needed vaccines. United Nations Department of Economic and Social Affairs (2020).

I) International Health Systems Capacity to Contain the Pandemic

Africa and for that matter, Ghana's vulnerability is obvious given the fragile health systems that have struggled to contain other communicable diseases such as cholera and Ebola in the past. Accessibility to hospitals is equally a problem. Table 1 presents the number of hospital beds per 1000 people for seven African countries with the highest number of COVID-19 cases as of 29 May 2020. In comparison, the U.S. has 34 ICU beds for every 100 000 people but is still struggling. The current standard of care for COVID-19 is supportive care as there are no specific treatments yet. This means antipyretics, hydration, and ventilator support if a patient develops respiratory distress. The shortage of ventilators has already been experienced by most of the African countries who are extremely affected by this pandemic. Simply put, African countries' health systems do not have the capacity to contain the pandemic given the increasing infection rate.

Table 1: Number of hospital beds per 1,000 people for seven African countries with the greatest number of COVID-19 cases as of 25 March 2021.

Country	Number of hospital beds/1000 people	Number of COVID -19 cases	Number of COVID -19 deaths
South Africa	2.8	124,215,843	2,734,374
Egypt	1.6	198,661	3,066
Algeria	1.9	116,349	3,006
Nigeria	0.5	162,082	2,031
Morocco	1.1	493,511	734
Ghana	0.9	89,893	734
Cameroon	1.3	38,988	588

Source: Dzinamarira, T. et. al. (2020)

II) Clinical and Public Health Emergency Services, Including Ambulance Service

Provision of clinical emergency services have been poor in Ghana. There were 214 functional ambulances in 2015 with a projection to 300 by 2017. The service response time is estimated to be 50 minutes, but this may vary depending on location. Number of patients/casualties attended to was about 5000 in 2015.

Periodic outbreaks of pandemics and major epidemics have occurred globally over the years including Avian and Pandemic Influenzas, Cholera, and Ebola. Several factors exist currently in the global world to increase the likelihood of severity and spread of pandemics in developing countries including increasing globalization, poor sanitary and veterinary practices, and ineffective surveillance systems for early detection, confirmation and response and already overburdened health systems struggling to deal with other endemic diseases. The Government of Ghana in 2019 bought 307 new ambulances for the Ministry of Health but this was woefully inadequate. Ghana, with a population of, at least, 30 million and 307 ambulances translate to 97,719 persons per 1 ambulance. Therefore, emergency medical services that provide the first line of response to urgent healthcare needs within a community are crucial as the COVID- 19

disruptions have highlighted. Ghana Government should take emergency care needs as a priority and project it as an integral component of planning public health systems.

iii) Financing the Health Sector

Supporting adequate, sustainable, equitable and effective health financing to improve health outcomes is crucial. Health financing refers to the "function of a health system concerned with the mobilization, accumulation and allocation of money to cover the health needs of the people, individually and collectively, in the health system" (WHO, 2005). The advent of COVID-19 makes health financing an imperative task to set the right financial incentives to providers, while making sure all individuals have access to effective public health and personal health care". WHO proposes three main functions of health financing, namely, raising revenue, risk pooling and purchasing. Accordingly, the School of Public Health, University of Ghana provides details of the state's health financing schemes in their 2018 state of the nation's health report.

Table 2: Components of Health Financing

Function	Objectives
Raising revenue	Raise sufficient and sustainable revenues in an efficient and equitable manner to provide individuals with a basic package of essential services to improve health outcomes and provide financial protection and consumer satisfaction
Risk pooling	Manage revenue to equitably and efficiently create insurance pools
Purchasing	Ensure the purchase of health services in an allocative and technically efficient manner

Source: Gorret and Schieber 2006.

iv) Human Resources for Health/ Health Workforce Management

Human Resources for Health (HRH) is an essential component of health infrastructure. Ghana's health sector's ability to deliver the needed healthcare services for optimum health outcomes depends largely on the human resources, their right numbers, professional competence, skills-mix and motivation. Government of Ghana must invest in the training and specialisation of the health workers in terms of both quantity and quality. Studies indicate that physicians have a direct impact on the use of healthcare resources through the prescription of treatments and drugs (Doyle et al., 2012; Kravet et al., 2008). The formal and informal roles they play create an enabling environment which improve practices and performance of health facilities.

Other studies on health systems performance and clinical governance emphasize the importance of strong clinical leadership to drive improvement efforts and initiatives (Gauld and Horsburgh 2014; Tilburt et al., 2013; Braithwaite and Travaglia, 2008). Hence, there is a positive relationship between the performance of hospitals and medical specialists taking up work beyond direct patient care, as this will yield co-operation with executive board. It is equally important to note that when leadership of other professionals are involved in the decision-making process, health systems, generally, improve even though the status of the medical profession is unique.

v) Low Number of Health Centres/Inadequate Number of Infectious Disease Centers

The Ghana Infectious Disease Centre (GIDC) is a new, 100-bed hospital in Accra, was built in response to the COVID-19 pandemic. As the first infectious disease centre in Ghana, the GIDC will provide needed healthcare services to residents in the capital. Due to the urgent need for an infectious disease centre, the hospital was built in a record time of 100 days. The Ghana COVID-19 Private Sector Fund, a private sector-led initiative committed to providing a prompt response to the hardship and suffering caused by the COVID-19 pandemic, developed the GIDC. Ghana Government should replicate this facility in the Western, Ashanti, and Northern regions of Ghana and aim to complete them by 2023. The Ghana Armed Forces, Ghana Institution of Architects, Ghana Institution of Engineers and all allied professionals as well as Corporate Ghana should be marshalled to complete this national

assignment.

vi) Remove Obstacles and Allow Immediate Access to Research Results and Local Production of Urgently Needed Vaccines

COVID-19 vaccination in Africa is gathering pace, with more than 7 million doses so far administered although the continent received vaccines later than other regions of the world and in limited quantity (African Centre for Disease Control, 2021). The current vaccine manufacturing capacity in Africa is fewer than 10 African manufacturers with vaccine production based in five countries namely, Egypt, Morocco, Senegal, South Africa and Tunisia. There is very limited upstream production with most local companies only engaging in packaging and labelling. The COVID-19 disruptions have highlighted the limitations in vaccine availability during disease emergencies, as immediate facilities cannot be calibrated for large-scale production through strategic partnerships. It is, therefore, important that African vaccine manufacturers establish supply networks to export to other markets.

Ghana has experience with malaria vaccine when the vaccine was tested across seven countries in a five-year clinical trial that ended in 2014 where more than 2,500 Ghanaian children took part at sites in Agogo and Kintampo. A range of institutions, including the School of Medical Sciences at the Kwame Nkrumah University of Science and Technology, Agogo Presbyterian Hospital, and the Ghana Health Service's Kintampo Health Research Centre participated. Malaria vaccine introduction in Ghana will be a historic moment and point the way toward a future when malaria is finally brought under control and then eliminated.

Similarly, Sibiri, Zankawah and Prah (2020), highlighted Ghana's scientific, technological innovations and break-through during the peak of the pandemic. Despite its serious healthcare and scientific infrastructure deficit, Ghanaian scientists were among the first in Africa to successfully sequence the genome of the novel coronavirus (SARS-CoV-2). The country's laboratories that led the fight also introduced some innovative testing methods allowing the country to test a far greater scale per million than the rest of Africa. There is a need to focus on core issues such as innovative financing, enabling local and regional regulatory capacity to assure quality, critical technical elements including skills development, technology transfer and product development partnerships, good

manufacturing practice, facility design, and estab-lishment.

vii) Digital Transformation: COVID-19 is Accelerating the Pace of Digital Transformation

Successive lockdowns and confinement measures put in place by governments to curb the spread of COVID-19 are accelerating the pace of digital transformation as information and communications technology (ICTs) are used to sustain daily lives and support business continuity. For example, GH Covid-tracker App was developed by some Ghanaians to assist in contact-tracing. This is a digital transformation for the health sector and great stride in dealing with existing communicable diseases. In addition, healthcare services were taken online through Covid Situation Dashboard by Ghana Health Service to provide information and to get into contact with citizens. In line with the digital acceleration in the health sector, individuals are increasingly moving online to work, communicate, socialize, consume and seek entertainment, influencing a surge in Internet traffic OECD (2020). Consequently, it is expected that the number of employees working remotely globally should double in 2021 as companies and industries adapt to the trend, accelerating the digitization of their products portfolio, core internal operations (e.g., back-office, production and R&D processes) and supply-chain interactions by three to four years Chavez-Dreyfuss et al. (2020). National and local governments are broadening the range of services provided online including business registration, submission of tax, birth certificates, and forms of identification UNDESA (2020b).

To close the digital divide, there is a need to ensure that every person has affordable access to the Internet by 2030. This requires the government to promote universal access to ICT infrastructure, address affordability, enhance digital skills and literacy, and improve the relevance and awareness of the benefits of being online. While digital inclusion alone is not a 'silver bullet' in the fight against poverty and inequality, it has become a fundamental component of promoting social inclusion. As such, digital inclusion is central to Member States' commitment to leave no one behind in the implementation of the 2030 Agenda and enable a socially just transition towards a more inclusive, equitable, resilient and sustainable future for all.

Conclusion

COVID-19 has shown that state agencies alone are not capable of bringing about economic growth and political change. Historically and recently, established relations of interdependence bind national systems with supranational systems to ensure global health interventions address crucial needs that cut across countries and bring about societal benefits to all. COVID-19 disruptions have highlighted the crucial role emergency services in response to urgent healthcare needs at all levels of the society. It is recommended that the government of Ghana takes emergency care needs as a priority and project it as an integral component of planning public health systems. These should include pre-hospital care, transportation, and hospital care. Furthermore, a focus on implementing the three health financing functions to respond to future disruptions in an equitable, efficient and sustainable manner is crucial. Health infrastructure in the form of well-equipped medical facilities, well-trained workforce, regulatory capacity to assure quality, technology transfers in the use of digital applications and collaboration with the private sector will strengthen the foundations for more inclusive, resilient and sustainable healthcare systems in future.

Recommendations

The WHO, should per its mandate, serve as a springboard for countries to collaborate, coordinate and navigate the future of the global health system to bring about leadership and stewardship that can generate knowledge-sharing crucial in the fight against COVID-19. More state actors and inter-governmental organizations including the science community, the private sector and civil society should all be marshalled in research and production to have an integral global community. One key priority area for rebuilding is the need to strengthen Ghana's healthcare infrastructure by the Government of Ghana. Admittedly, the COVID-19 pandemic has highlighted the shortcomings of global health systems. Thus, for a robust and resilient recovery to be achieved, intercontinental improvements in health systems cannot be ruled out, particularly, when it comes to investing in global public goods. It is important that Ghana focuses on effectively implementing the three health financing functions in order to achieve the basic objectives of improving health outcomes, ensuring financial protection, and responding to consumers in an equitable, efficient, and sustainable manner.

Contribution to Body of Knowledge

This paper contributes to our knowledge as practitioners of Public Administration so that we can strive to support the provision of adequate, sustainable, equitable and effective health financing to improve health outcomes. In order to achieve these goals, countries must adopt innovations in the delivery of Public Health Services, Public Health Data and Services as well as Systems Research. These play an important role in the development of evidence-based focus on translating research into practice.

Author's Notes

References

Anderson, M., Andrew P., Jingjing J., & Madhumitha K. 2019. 10 per cent of Americans don't use the internet. Who are they? Pew Research Centre. 22 April 2019.

Atun, R. & Manade, N. 2006 Health systems and systems thinking. Maidenhead, Berkshire: Open University Press, McGraw-Hill Education.

Baker G. R., Denis J-L. Medical leadership in health care systems: from professional authority to organizational leadership. Pub Money and Management. 2011; 31:355–62.

Baker G. R., MacIntosh-Murray A, Porcellato C, et al. High performing health care systems: delivering quality by design. Toronto: Longwoods; 2008.

Bauer, M.W., and Gaskell, G. 2008. A Progressive Response Programme for Social Psychology

Bayliss. P., Hill, P., KennethCalman, K., and JohnHamilton, J. 2001.Education for clinical governance. British Journal of Clinical Governance ISSN: 1466-4100

Best, A. (2007) Greater Than the Sum: Systems Thinking in Tobacco Control. Bethesda, MD: National Cancer Institute, U.S. Dept. of Health and Human Services, Public Health Service, National Institutes of Health.

Bohmer R. M. J. The four habits of high-value Health Care Organizations. N EnglJ Med. 2011; 365:2045–7.

Botje D, Plochg T, Klazinga NS, Wagner C. Clinical governance in Dutch hospitals. Clin Governance: An International J. 2014; 19:322–31.

Braithwaite, J and Travaglia, J.F. 2008. An overview of clinical governance policies, practices and initiatives. Australian Health Review 2008 Vol. 32 No 1.

Checkland, P. 1981 Systems Thinking, Systems Practice. New York: John Wiley & Sons. Von Bertalanffy, L. (1976) General System Theory: Foundations, Development, Applications. New York:

Compendium of Digital Government Initiatives in Response to the COVID-19 Pandemic. New York: UN. UNDESA (2020b). E-government Survey 2020. New York: UN UNECA 2018).

Connecting humanity: Assessing Investment Needs of Connecting Humanity to the Internet by 2030. Geneva: ITU. ITU (2020b).

Connecting the Unconnected: Working together to Achieve Connect 2020 Agenda Targets. Geneva: ITU. ITU (2018).

Daly J, Jackson D, Mannix J, Davidson PM, Hutchinson M. The importance of clinical leadership in the hospital setting. J Health Leadership. 2014; 6:75–83.

Denis J-L, Van Gestel N. Leadership and innovation in healthcare governance. In: Kuhlmann E, Blank RH, Lynn Bourgeault I, Wendt C, editors. The Palgrave International Handbook of Healthcare Policy and Governance. Hampshire: Palgrave Macmillan; 2015. p. 425–40.

Diane, T., Finegood, Ö. K. & Carrie, L. M. 2008. Getting from analysis to action: framing obesity research, policy and practice with a solution-oriented complex systems lens. Healthcare Papers, 9, 36–41.

Dzinamarira, T., Dzobo, M. & Chitungo, I. 2020. COVID-19: A perspective on Africa's capacity and response. J. Med. Virol. 92, 2465–2472 (2020).

Doyle, C., Lennox, L., Bell, D. 2012. A systematic review of evidence on the links between patient experience and clinical safety and effectiveness.

Gauld, R and Horsburgh, S. 2014. Measuring progress with clinical governance

development in New Zealand: perceptions of senior doctors in 2010 and 2012 BMC Health Services Research volume 14, Article number: 547 (2014)

Huang C., Wang Y., Li X., Ren L., Zhao J., & Hu Y., 2020. "Clinical features of patient's infected with 2019 novel coronavirus in Wuhan, China". Lancet. 395 (10223): 497506. doi:10.1016/s0140-6736(20)30183 5. PMC 7159299. PMID 31986264."Naming the coronavirus disease (COVID-19) and the virus that causes it". World Health Organization (WHO). (Accessed: March 9 2021).

https://www.csir.org.gh/index.php/r-d/thematic-areas-of-research/item/357 biomedical-and-public-health. (Accessed: March 20 2021).

https://www.afro.who.int/news/what-africas-vaccine-production-capacity. (Accessed: March 25 2021)

https://www.afro.who.int/news/africa-getting-ready-roll-out-covid-19-vaccines. (Accessed: March 25 2021).

https://www.pewresearch.org/facttank/2019/04/22/some-americans-dont-use-the internetwho-are-they/ Brito, Carlos (2020). Covid-19 has intensified the digital divide. World Economic Forum. 24 September 2020.

https://www.weforum.org/agenda/2020/09/covid-19-hasintensified-the-digital-divide/Broadband Commission (2019)

https://www.weforum.org/agenda/2020/10/permanent-remote-workers pandemiccoronavirus-covid-19 workhome/#:~:text=The %20 number 20 of% 20 employees %20 permanently, from %20 retail %20 to% 20real %20 estate Digital Future Society (2019).

https://www.mckinsey.com/business-functions/strategy-andcorporate-finance/our-insights/how-covid-19-has-pushedcompanies-over-the-technology-tipping-point-and transformed-business-forever# Montoya, Silvia (2020).

http://uis.unesco.org/en/blog/importance-monitoring-andimproving-ict-use-education-post-confinement OECD (2020).

https://africacdc.org/download/outbreak-brief-61-coronavirus-disease-2019-covid-19-pandemic. (Accessed March 26 2021.

https://www.oecd.org/coronavirus/policy-responses/keeping-the-internet-upand-running-in- times-of-crisis-4017c4c9/ UN (2020a).

https://www.politico.com/newsletters/morning-trade/2020/03/24/export-restrictionsthreaten-ventilator-availability-786327. (Accessed: March 3 2021.

http://data.worldbank.org/ country/ghana. (Accessed: March 21 2021).

https://data.unicef.org/resources/remote-learningreachability-factsheet/

https://foreignpolicy.com/2020/03/26/africacoronavirus-pandemic-economic-crisis/. (Accessed: March 3 2021).

https://www.who.int/bloodsafety/publications/ReportUniversalAccesstoSafeBloodTransfusion.pdf

https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/business-in-2020-and-beyond.

ICTs, LDCs and the SDGs: Achieving universal and affordable Internet in the least developed countries. Geneva: ITU (2019).

Institute of Medicine. The Future of the Public's Health in the 21st Century. Washington, DC: National Academies Press, 2003.

Iyengar K, Bahl S, Vaishya R, Vaish A. Challenges and solutions in meeting up the urgent requirement of ventilators for COVID-19 patients. Diabetes Metab Syndr. 2020. 14:499-501. Export restrictions threaten ventilator availability.

Kaki, R. (2004). The Narrative Foundations of International Development. In Mudacumura, G.M, Mebratu, D., Haque, S. (eds.). Sustainable Development Policy and Administration. New York: CRC Press. pp. 25-43.

Keeping the Internet up and running in times of crisis. OECD Policy Responses to Coronavirus (COVID-19). 4 May 2020.

Kravet, S.J., Shore, A.D., Redonda Miller, R., Gary B. Green, G.B., Ken Kolodner, K., and Scott M. Wright, S.M. Health Care Utilization and the Proportion of Primary Care Physicians American Journal of Medicine, The, 2008-02-01, Volume 121, Issue 2

Labonte, R., Mohindra, K., & Schrecker, T. (2011). The growing impact of globalization for health and public health practice. Annual Review of Public Health, 32(1), 263–283. https://doi.org/10.1146/annurevpublhealth-031210-101225

Measuring the margins: A global framework for digital inclusion. https://collections.unu.edu/eserv/UNU:7584/n201219_Report-7_A_global_ framework_for_digital_inclusion-2.pdf ITU (2017).

Measuring Digital Development: Facts and Figures 2019. Geneva: ITU (2020a).

Measuring Digital Development: Facts and Figures 2020. Geneva: ITU

McKinsey, D. V. H., Sneader, K., and Sternfels, B. 2020. How COVID-19 has pushed companies over the technology tipping point—and transformed business forever. 5 October 2020.

Nurske, R. (1971). "The Theory of Development and the Idea of Balanced Growth." In Developing the Underdeveloped Countries, edited by A. B. Mountjoy. New York: John Wiley and Sons, pp. 115-128.

Pidwimy, M. 2006. Definitions of Systems and Models: Fundamentals of Physical Geography, 2nd edn. Available at http://www.physicalgeography.net/about.html (Accessed: March 9 2021).

Sibiri, H., Zankawah, S. M., and Prah D. Coronavirus diseases 2019 (COVID-19) response: Highlights of Ghana's scientific and technological innovativeness and breakthroughs. Ethics, Medicine and Public Health (2020) 14, 100537.

Paina, L. & Peters, D. H. 2012. Understanding pathways for scaling up health services through the lens of complex adaptive systems. Health Policy and Planning, 27, 365–373.

Pongsiri, M. J., Roman, J., Ezenwa, V. O., Goldberg, T. L., Koren, H. S., Newbold, S. C., Ostfeld, R. S. Pattanayak, S. K., & Salkeld, D. J. 2009. Biodiversity loss affects global

disease ecology. BioScience, 59(11), 945–954. https://doi.org/ 10.1525/ bio.2009.59.11.6

Preston, S.H. 1975. "The Changing Relation between Mortality and Level of Economic Development." Population Studies 29(2)

Public Health Infrastructure 2020. Retrieved March 23, 2021, from healthypeople.gov

Policy Brief: Education During COVID-19 and Beyond. August 2020. UN 2020.

Roadmap for Digital Cooperation. New York: UN UNDESA 2020a.

Sibiri, H., Zankawah, S. M., and Prah D. Coronavirus diseases 2019 (COVID-19) response: Highlights of Ghana's scientific and technological innovativeness and breakthroughs. Ethics, Medicine and Public Health (2020) 14, 100537.

Health Care Utilization and the Proportion of Primary Care Physicians. The American Journal of Medicine.

Towards improved access to broadband Internet in support of Africa's transformation. Eca Policy Brief, no. ECA/18/003. https://archive.uneca.org/sites/ default/files/ Publication Files/eca_policy_brief_improved_ access_to_broadband_rev1_0.pdf UNICEF (2020). COVID-19: Are children able to continue learning during school closures? UNICEF, August 2020.

Tilburt, J.C., Wynia, M.K., Sheeler, R.D., and Thorsteinsdottir, B.B (2013) Views of US physicians about controlling health care costs Jama, 2013 – Jama network.com Accessed September 22, 2021. 2. American College of Physicians. High value care.

The Importance of Monitoring and Improving ICT Use in Education Post-Confinement. UNESCO Institute for Statistics, 15 May 2020.

The World Bank. Hospital beds (per 1,000 people) https://data.worldbank.org/ indicator/SH.MED.BEDS.ZS. (Accessed: March 3, 2021).

The State of Broadband 2019. Geneva: ITU, UNESCO. Chavez-Dreyfuss, Gertrude 2020.

The number of permanent remote workers is set to double in 2021. World Economic Forum. 23 October 2020.

Turnock, B. J. 2001. Public Health—What It Is and How It Works, 2nd ed. Gaithersburg, Md.: Aspen Publishers.

United Nations Department of Economic and Social Affairs (UNDESA). World Social Report 2020: Inequality in a Rapidly Changing World.

Weinstein, M.C. 2001. Should physicians be gatekeepers of medical resources? Journal of Medical Ethics 2001; 27:268–274

WHO 2009. Systems thinking for health systems strengthening. Geneva: World Health Organization.

World Bank. 2020a. Air transport, passengers carried. (Accessed: March 4 2021) from https://data.worldbank.org/indicator/is.air.psgr

World Bank. 2020b. International tourism, number of arrivals. Retrieved March 4, 2021, from https://data.worldbank.org/indicator/ST.INT.ARVL

Yamey, G., Jamison, D., Hanssen O., and Soucat A. 2019. Financing Global Common Goods for Health: When the World is a Country Health Systems & Reform, 5:4, 334-349, DOI:10.1080/23288604.2019.1663118

UNICEF (2020). COVID-19: Are children able to continue learning during school closures? UNICEF, August 2020.

[1] Funding Details: None Ethics approval and consent to participate. Not applicable as this was mainly a documentary study.Acknowledgement(s) The author(s) gratefully acknowledge the Ghana Statistical Service (GSS), Ministry of Finance (MoF) and Bank of Ghana (BoG). Disclosure statement No potential conflict of interest was reported by the author. Author Contributions EMO Conceptualization, writing of manuscript AKC Conceptualisation, curation, literature review. MNE Conceptualisation, editing of manuscript.Data Curation: Erika Mamley Osae, Andrew Kweku Conduah, Mary Naana Essiaw.

Zimbabwe's COVID-19 Pandemic Response: Contextual Conditions And Means Nexus

Shin Kue Ryu*[1] and Phil S. Nyaku[2]

Abstract

Zimbabwe was not immune to the global COVID-19 pandemic in 2020 with more than 10,000 cases and 300 deaths as of December 2020. However, this figure reads relatively controlled considering the country's total population of 14 million. Employing process-tracing research design on government briefings data, the study identifies the country's pandemic response model. It then analyzes whether the response mechanism is a convincing explanation to the longitudinal case figures. The findings identify the decoupling between the two where explanations lie in contextual conditions. The country modified its COVID-19 response to play upon its strengths while recognizing its weaknesses. Thus, prevention and containment become the focus as it plays to the strengths of security capacity of the country. The lack of policy discussion on other important pandemic response components is meaningful as the deliberative absences also provides meaningful information. The implication results in a timely discussion on how to design effective interventions in unique developing country governance settings.

Keywords: Zimbabwe, COVID-19, Government Response, 2020

[1]Assistant Professor, Department of Political Science, Idaho State University, Pocatello, ID 83201
*Corresponding author
[2]Doctoral Student, Department of Political Science, Idaho State University, Pocatello, ID 83201

Introduction

2020 was a sweeping year for COVID-19, as it spread like wildfire across the globe. Zimbabwe, a landlocked county in sub-Saharan Africa, was not immune to the worldwide pandemic. The country registered its first COVID-19 case on March 25, 2020 (Ministry of Health and Child Care, 2020a). Soon after, the number of cases rose within the country with the first peak reaching 490 new daily cases on August 1, 2020 (Ministry of Health and Child Care, 2020b). As depicted in Figure 1, the cases then abated, indicating a flattening of infections in the country. However, towards the end of the year, the cases started to spike again.

This study examines the Zimbabwe Governments' COVID-19 pandemic response. Using the Government's official press releases issued by the Ministry of Health during the entire calendar year of 2020, the study explores to what extent the Government's activities provide explanations behind the known case patterns. The range of policies examined were bound to their relevant to the COVID-19 pandemic. The process- tracing method guidelines outlined by Beach and Pedersen (2013, 2019) were employed to construct the country's pandemic response mechanism.

From evidence, the following findings emerge: 1) weak governance does not necessarily mean pandemics will not be controlled, 2)government's response plays to their strengths, and 3) meaning information can be shared in deliberate absence of discussions on important components by the government. These findings have implications on the field as it hints to the following: 1) generalization of developing country contexts and their response to COVID-19 pandemic is problematic, 2)capacity discussions become more meaningful when studied in context and looking at unique strengths, and 3)information on administrative capacity can be drawn from what is not discussed, especially when discussions of those components are vital to known pandemic responses.

Literature Review

Two broadly defined groups of literature are relevant for this study. First, literature on emergency management, particularly with emphasis on pandemic response, is relevant as it provides details on policy designs for public sector response. Second, literature on Zimbabwe's unique contextual situation is relevant since

policies and its embodied mechanism does not operate in institutional vacuum. Rather policies are overlaid on existing institutions which are product of the country's history and it idiosyncratic conditions. Both are essential, as one lends insight to the normative responses to a pandemic and the other details conditional factors influencing the effective operation of such normative courses of action.

Since the pandemic is the main focal point of the study, it is essential to cover pandemic response scholarship. In gathering and reviewing pandemic response literature, it is unfortunately U.S.-centric. However, it still lends insight on how a typical pandemic response mechanism is logically structured. Pandemic response frameworks are nested within emergency response literature (Clements, 2009; Farazmand, 2014; Haddow, Bullock, & Coppola, 2021; Landesman & Burke, 2017). This is a product of decentralized emergency management structure due to U.S. federalism and the active preservation of the "local primacy" principle (Haddow, Bullock, & Coppola, 2021). The emergency circumstances permit expanded support activities the local community from the State and the Federal governments following emergency declarations by broader encompassing jurisdictional governments. The declaration being relevant since it recognizes the situation is exceeds the response capacity of the locality and it permits the supra-government entities to intervene and offer support.

Pandemic response in the U.S. operates within this institutional arrangement. As for contours of support by the Federal government, it is set upon the Public Health Service Act enacted in 1944 and its subsequent refinement with additional legislation (Landesman & Burke, 2017). It grants quarantine authority to the Federal government with aims to prevent domestic contagion from foreign sources. The authority that is later transferred to the Centers for Disease Control and Prevention (CDC). Subsequent legislations expanded the Federal government capacity to enable in the mitigation and response of public health disasters. These include the Public Readiness and Emergency Preparedness Act of 2005 and the Pandemic and All-Hazards Preparedness Act of 2006. The latter was reauthorized in 2013.

As for specific response actions to unknown disease outbreaks, Landesman outlines five unique essential components: (1) detection of unusual events, (2) investigation and containment of

potential threats, (3) organization of care, (4) laboratory capacity, and (5) coordination and communication (2012, p. 261). The challenge local communities' face is in their capacity to execute these functions during an emergency. Typically, first responders may detect unusual events. However, this is limited to sensory observation of symptoms. Granted modern advancements in bacteriology permits us to better pinpoint the microscopic culprits, these require investments in medical laboratories (Duffy, 1990). Labs are not typically available in the locality unless there is a constant need for such services as in the case of hospitals.

Organization of care depends on the availability and capacity of the medical response entities. Recognizing the community health centers and general hospitals are not equivalent in their ability to deliver medical services, it begs the question on local area capacity to bed infectious patients and deliver necessary medical treatment. A question of same nature is thrown to laboratory capacity since most labs have limits in demand surge response sets by lab technicians and chemical inventory. Thus, comes the necessity in coordination and communication. These are mainly in accessing capacity outside of the locality to temporarily gain response capacity by utilizing assets in the broader response network.

The other set of relevant literature is on Zimbabwe. The aforementioned pandemic response mechanism is heavily based on U.S. institutional arrangements and local conditions. Zimbabwe's circumstances differ significantly from the U.S. Table 1 illustrates some of the broad socioeconomic differences.

Table 1: Contextual Condition Comparison between Zimbabwe and the United States

Indicators	Zimbabwe	United States
Population	14,645,468 [1]	328,239,523 [1]
GDP	21.4 billion[1]	21.4 trillion[1]
GDP per capita (PPP)	$2,961.4[1]	$65,297.5[1]
Hospital beds (per 1,000 people)	1.7[2]	2.9[1]
Physicians (per 1,000 people)	0.21[3]	2.6[4]
Nurses and midwives (per 1,000 people)	1.9[3]	14.5[4]
Poverty headcount ratio at national poverty lines (% of population):	38.3%[1]	N/A
Gini index (World Bank estimate):	44.3[4]	41.1[5]
Urban population (% of total population)	32%[1]	82%[1]

Note: Reported figures are from the latest available figure at the time of writing in March 2021. The superscript and pertaining year are as follows: 1 2019, 2 2011, 3 2018, 4 2017, and 5 2016. Source: World Bank (https://data.worldbank.org/country/zimbabwe)

Zimbabwe country Health Performance: A brief Background

Zimbabwe's health care system can be understood within a context of strong authoritarian tendencies and a struggling economic system. The country's health care system has its problems in Robert Mugabe's authoritarian regime which "destroyed one of Africa's most robust healthcare systems". Zimbabwe saw the forced resignation of Africa's strongman as window of opportunity for the Mnangagwa administration to start rebuilding the health sector. Such concerns means that before the onset of COVID-19 pandemic, the country's health care system experienced a catalog of problems from brain-drain of health professionals due to poor remuneration, infrastructural decay caused by a period of economic stagnation as result of the effects of economic structural adjustment policies (ESAP) which placed the 'market' in a central position of dominance and arbitrator of all processes. There has been an increasing gap between rural and urban health care systems as, apart from a shrinking economic base, the general lack of infrastructure makes most rural areas unnavigable due to poor road network. This gap has often been ignored by the Government of Zimbabwe even during the time of implementation of structural adjustment policies from 1991 to 1995. In Zimbabwe a decade ago, 65% of health care services were provided by the public sector. Severe social and economic challenges have precipitated an unprecedented deterioration of health care infrastructure, loss of experienced health sector personnel, and a general decline in the quality of health services in the country. The same problems experienced more than a decade ago are still present, putting a strain on the capacity to deal with both known and unknown health threats. These facts about Zimbabwe's health care system became relevant in the fight against COVID-19 since its outbreak in the country in 2020. It is, hence against this background, and many other factors that Zimbabwe's response mechanism will be discussed.

The country's unique historical development in the health sector had indelible imprints. As consequence,

Zimbabwe health care system indicators fare relatively poorly when compared to the U.S. Politics of the country, particularly Mugabe's government, is attributed to the poor investments in the country's health sector (Green, 2018). Despite having the right to health in the 2013 constitution, the country's share of public spending on health hovered below in 10%, short of the 15% commitment in the 2001 Abuja Declaration. The 10% investment was also a rise from the 4.4% in 2007 during the Mugabe's regime. It is unclear to what extent the rise in health investment is dedicated to resuscitating dilapidated facilities and empty medicine stock. This is also in the backdrop of continued high rates of HIV, malaria, and tuberculosis in the country (Mukwenha, Dzinamarira, Mugurungi, & Musuka, 2020).

These figures are also in light of the country's health workers having the lowest wages in the region. A situation that frequently results in strikes, as the purchasing power of salaries fluctuating in tandem with the changing commodity prices of the country. A situation that occurred when the government rose fuel prices from US$1.24 to $3.31 per liter for petrol and from US$1.36 to $3.11 per liter for diesel, which effectively increased transportation costs of healthcare workers and subsequently erasing their disposable income margins (Makoni, 2019).

The challenges in Zimbabwe's responsive health care system parallels those of preventive health care, particularly on detection. The country has been identified to be at risk of COVID-19 due to its exposure to travel from China (Gilbert, et al., 2020). (Although actual reported figures of foreign origins are initially from those returning from European countries and border-sharing neighboring countries.) Limited screening points, simple fever testing, and incomplete travel history log of entering travelers identified as weak detection capacity (ibid). Furthermore, shortage of diagnostic equipment and lab technicians along with a single laboratory for the whole population are other contextual limitations. Isolation centers are few with 3 major isolation centers but more concerning since the centers do not have functioning ventilators and lack personal protective equipment (ibid). Thus, contextual conditions differ. Hence, the question on how they factor into both the formulation of pandemic response and its effectiveness.

Methodology

Process-tracing method is employed as the inquiry focuses on public sector responses along with its complementary and consequential outcomes (Beach & Pedersen, 2019; Weiss, 1998). A mechanismic research design outlined by Beach and Pedersen is utilized (2013; 2019). The preference of such method rests on the rationale that it best captures the public sector responses to the pandemic. Public sector responses are distilled into a synthesis of a mechanism that emerges as it is triggered into action by a predetermined cause. Responses also require to adapt to evolving situations. Accordingly, the research design entails constructing a narrative of events from collected data and isolating pivotal components of the mechanism. The design allows us to gain a more accurate understanding of what actually happened rather than examine probabilistic outcomes. It is anchored on ontological determinism, as defined there are reasons behind why an outcome has occurred (Beach & Pedersen, 2019).

Process-tracing method is case-centric because cause-mechanism-outcome linkages occur within cases rather than across cases (Russo & Williamson, 2011). Thus, it is where one first needs to look to search for answers to the question of what happened. Furthermore, the answer to the research question requires examination into the mechanism activated by the cause in presence of contextual conditions. Mechanisms may be in place but it does not necessary mean it is in operation, as evident in contingency plans. Given a pandemic is a public health emergency, this design fits since it allows us to examine activated contingency plans and how response plans evolve with changing on-the-ground circumstances in Zimbabwe. It has all the necessary components for theory-testing process-tracing, as the cause is clear with a mechanism in place and with ample evidence to identify contextual variables.

Relevance evidence is used to identify the mechanism. The term defined as it is in the court of law, which is, “any evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would without evidence” (Michigan Legal Publishing, 2018). These empirical fingerprints serve as traces of the mechanism in operation in response to the triggering cause and contextual conditions. Due to the plentitude of evidence, constructing the narrative of events using the evidence facilitates

tracing the contours of the mechanism. This is presented in the analysis section. The research design helps identify the mechanism in operation that was not evident in absence of a triggering event. A pandemic situation is such an event. It also helps capture longitudinal modifications to the initially planned mechanism. This is particularly relevant for public health challenges such as pandemics since mechanisms need to evolve with later identified outbreaks that required a modified response. Although the process-tracing is not common in public health evaluations, it is appealing for its qualitative nature that can be used to unwrap whether, why, and how an intervention causes a health outcome.

Data

For Zimbabwe COVID-19 related public sector response data, the study relied on situational reports posted by the Ministry of Health and Child Care (MoHCC). The compiled dataset can be found at https://https://www.shinkue.com/post/data-of-zimbabwe-covid-19-response. The reports were posted as quotidian updates about the new corona virus cases, deaths, case-distributions, recoveries, and, in some cases, reminders about ongoing monitoring and prevention strategies. Reports were gathered by a time- consuming process of downloading files from official channels operated by the MoHCC. These were the official Ministry of Health Twitter handle, whose first report came on March 6, 2020, and the Ministry of Health website, whose first PDF report came on March 13, 2020. Most of the documents on the government website between March and April, as well as those between November and December, could not be opened.

An important aspect of research involves ensuring validity and reliability of the data involved. Essential pointers of the quality of a gaging instrument are the validity and reliability of the measures (Kimberlin & Winterstein, 2008). What this means is that for a study to be reliable and valid, there should be an explanation where data is missing. Moreover, where more than one official source for the data exists, there should be an effort to collate the data in a way that attempts to account for the gaps. In this case data was retrieved from the MoHCC website as well as from the MoHCC Twitter handle. The data can be downloaded in its entirety at https://www.shinkue.com/post/data-of-zimbabwe-covid-19-response. The two official channels are duplicates of each other in terms of government response documentation archives. However, as the study noticed, the maintenance of the archives varies between the channels. Fortunately, the

missing PDFs in the MoHCC website could be located on the MoHCC twitter handle. However, there were still gaps in the archives with documentation missing from the MoHCC website for December 14 through December 31st. To fill this gap, the study relied on the updates posted on MoHCC twitter page which reported through December 31st. There were a few anomalies between the two government feeds concerning timeline of events. For example, the MoHCC twitter handle reported that the first lockdown started on March 30th while the government slotted it somewhere between April 3rd and April 4th. Triangulation was performed to flush out the irregularities as much as possible. For this example, the earlier date is accurate as the President's speech supports the earlier date (Mnangagwa, 2020a). The posted daily case figures on the MoHCC twitter feed and the MoHCC website were identical. The variation only lies in availability of the press briefings. Out of 282 daily briefing reported between March 25 and December 31 in 2020, only were 3 were missing: March 25, May 13, and May 26. However, 14 additional reports were illegible: 4 in March, 8 in April, 1 in May, and 1 in June.

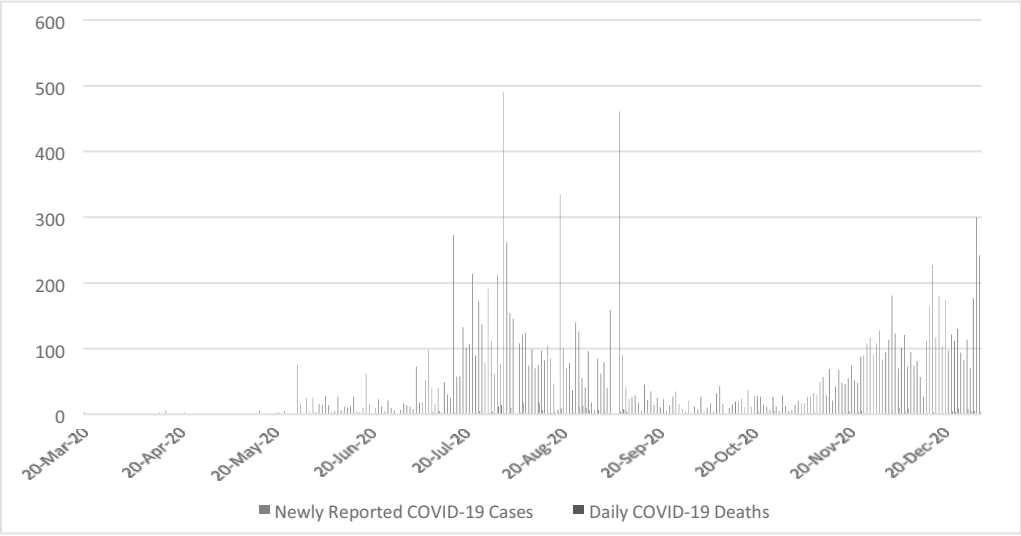
There were inconsistencies on data reporting in some cases. For example, the MoHCC reported cases in a cumulative format noting new daily cases as well. However, on April 30th the MoHCC reported the total confirmed cases to be 40, then reported the cases to be 34 on May 1st. This inconsistency led some people to express doubt in their comments to the MoHCC Twitter handle (MoHCC, 2020). To allay people's doubts, the MoHCC explained on its Twitter handle that, "The 6 cases from Harare previously recorded as positive on 29 April have been confirmed negative after Quality Assurance" (MoHCC, 2020).

Analysis

The first recorded death was in March 2020. Data reveals few confirmed COVID-19 case numbers between March and May 2020. From March to the end of May, reported new cases registered below 50 per day. This pattern grouped as the first phase depicted in Figure 1. Coinciding with this phase, the President of Zimbabwe declared a state of emergency on the 15th of March. The country entered its first lockdown at the end of March. Following the lockdown, the number of reported COVID-19 cases continued to stay low throughout April and May. The first lockdown was accompanied by a mask mandate in public places. Security personnel from the Zimbabwe Republic Police (ZRP) and the military also ensured, sometimes through excessive coercion,

observance of lockdown rules (Maulani, Nyadera, & Wandekha, 2020). The second lockdown was announced on April 19, 2020 even as cases were very few in the first phase. According to the MoHCC (2020) and Aljazeera News (2020), the President announced that the country had not yet met conditions set down by the World Health Organization (WHO) to lift the measure, imposed on March 20 and as a result the lockdown would be extended by another two weeks.

Figure 1: Zimbabwe's 2020 COVID-19 Figures



Source: Graph created by authors by combining all of Ministry of Health and Child Care daily

COVID-19 updates in 2020.

The period between end of May and end of July forms the second phase. The beginning of June saw a gradual increase in newly recorded cases and for the first time in July, the number surpassed 250. The gradual increase started around the end of May despite a third lockdown which came into effect on April 30. This period coincides with the lag in the re-opening of industry and commerce effective May 4 announced by the President. If mandatory testing of employers and employees are adhered to business can reopen. However, the problem with this policy is that it states, "companies are encouraged to procure the COVID-19 Rapid test kits for themselves, guided by the Ministry in

terms of test kits specifications" (Ministry of Health and Child Care, May 3, 2020). The effective adherence to this policy components is questionable since the first report on private sector testing tallies the figure at 140 on May 8, 2020 (Ministry of Health and Child Care, 2020).

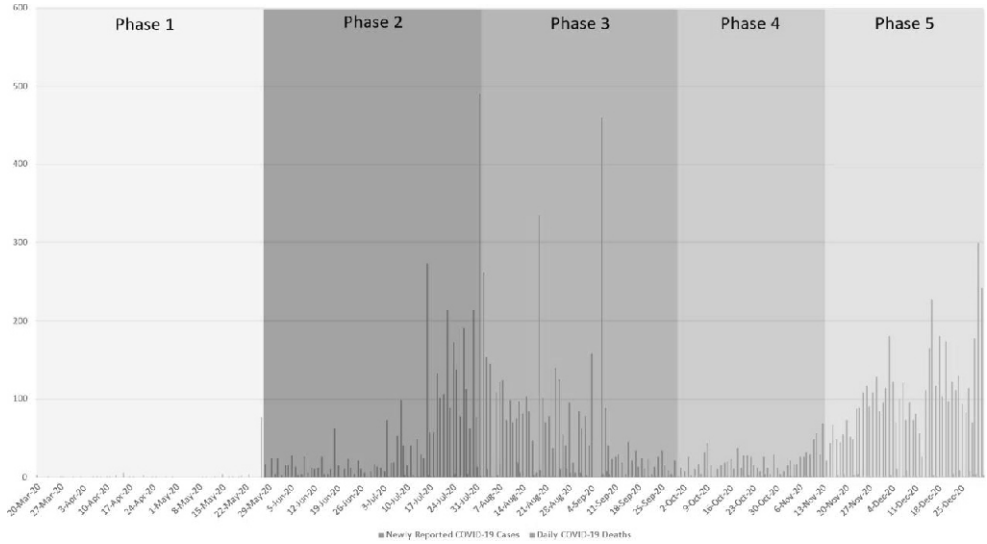
Many of those cases that tested positive were returnees from abroad, for example, updates from May 28th and June 3rd indicated that all the seventeen and sixteen cases, respectively, were returnees from abroad (Ministry of Health and Child Care, May 28, 2020; June 6, 2020). In July, the highest case record was a little shy of 500. This would also be the all-time high for the entire year. The spike in the second half of the second phase can thus be attributed to the influx of citizens most of whom were affected by the lockdowns in their countries of employment, mostly from neighboring South Africa. Travelling back home became a better survival option although the effects of influx of these returning citizens caused the fast spread of coronavirus.

Traveling back home became a better survival option given that, South Africa experienced a 21- percentage point decline in active employment as a share of the working population (Jain, Budlender, Zizzamia, & Bassier, 2020). What this meant is that those who lost employment, the number of which included Zimbabweans, lost a means to an income.

The first week of June saw mandatory testing for all returnees. The rising influx of expatriates returning home, combined with better identification is reflected in the rising COVID-19 cases in the country. The mandatory testing and quarantine of those entering the country, resulted in higher figures but also helped prevent its spread. This is evidenced in the third phrase where newly reported COVID-19 cases started to decline. Although there were days of sporadic spikes in cases between 300 and 450 on some days, the general trend was negative. A possible explanation is the quarantine requirements of COVID-19 positive individuals who are prevented from spreading the virus to others. Mask awareness education could also explain trends in certain places. Like any mandate, the mask wearing mandates are not totally immune to violations.

The beginning of October to the first week of November is grouped as phase four. The period had very few cases which fluctuated between 10 and 60 per day. A plausible explanation behind the trend is that testing and quarantine of traveler entering the country is effective. Foreign

Figure 2: Zimbabwe COVID-19 Pattern (March 2020 to December 2020)

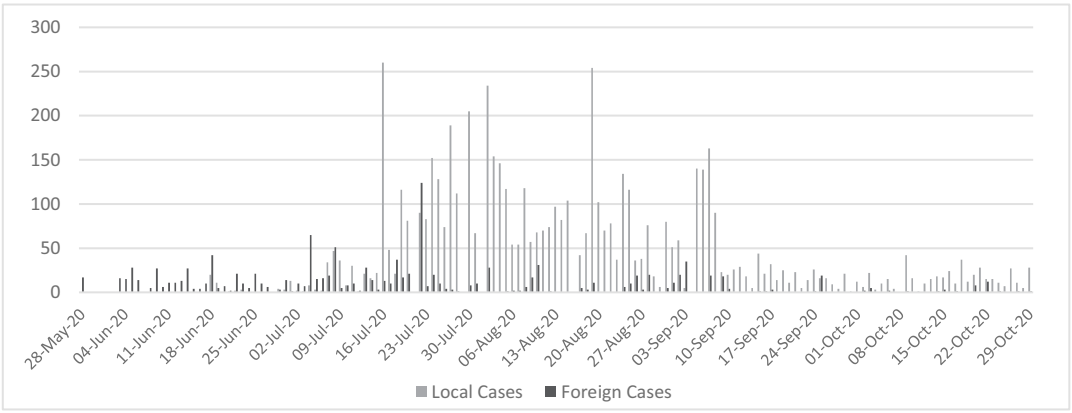


Source: Graph created by authors by combining all of Ministry of Health and Child Care daily COVID-19 updates in 2020.

origin COVID-19 patients were being identified and prevented from spreading the disease in the country. Responsible citizen behavior such as abiding to the mask mandate prevented spread in the local communities. Throughout the year the MoHCC recommended widespread use of masks to reduce the virus spread. A case in point is the joint campaign held on November 25th by WHO Zimbabwe, MoHCC, and Zimbabwe Republic Police moving in different suburbs of Harare emphasizing the importance of wearing a mask and other measures meant to prevent the spread of COVID-19 (WHO Zimbabwe, 2020).

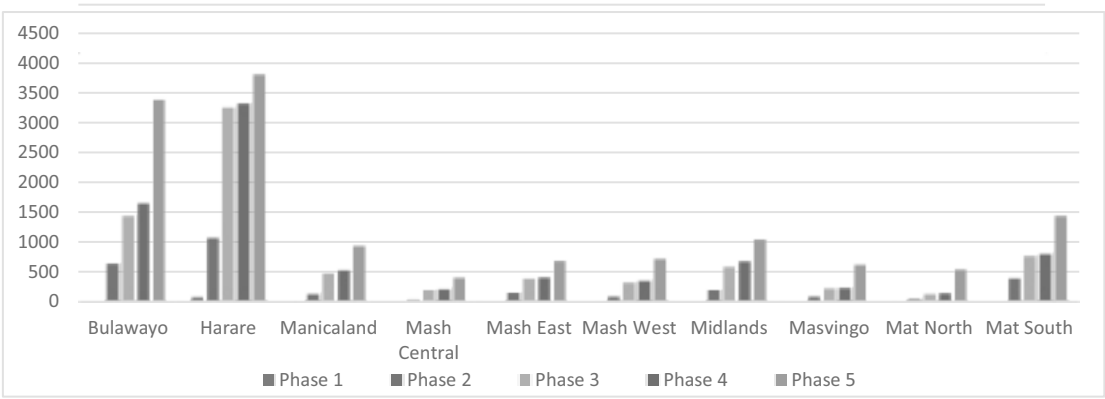
The few cases prevalent point to the nature of Zimbabwean livelihoods which, "predisposes people to multiple contact cases with each other, directly contradicting the lockdown and social distancing thrusts" (Musarandega & Chitongo, 2020). Such activities occurred in urban centers where, out of need for survival, people flouted lockdown regulations. Because of an under-resourced health-care system, high unemployment, densely populated urban areas and shortages of basic commodities (including water and food) in Zimbabwe, lockdowns are difficult to adhere to and enforce (Mackworth-

Figure 3: Origins of Confirmed COVID-19 Cases



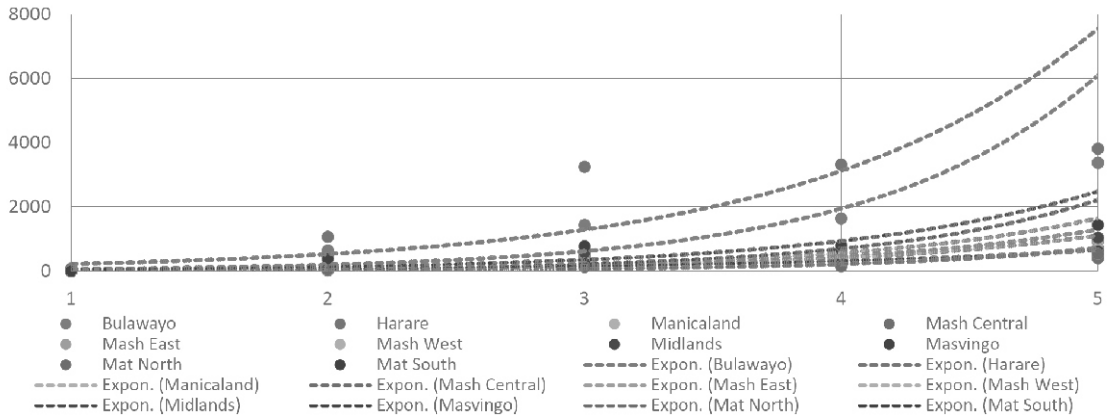
Source: Graph compiled from daily figures reported by the Ministry of Health and Child Care.

Figure 4: Cumulative COVID-19 Cases by Region Divided into Phases



Source: Graph compiled from daily figures reported by the Ministry of Health and Child Care.

Figure 5: Cumulative COVID-19 Cases by Region with Exponential Trend Lines



Source: Graph compiled from daily figures reported by the Ministry of Health and Child Care.

Young, et al., 2020). This partially explains the prevalence of even the smallest numbers in COVID-19 cases.

Unfortunately, the beginning of November marked the onset of an increase that gave way to the fifth and final phase within the 2020 calendar year. For the first time in three months, cases rose above 100 per day. The majority of cases being reported were local. Hence, it pointed to the possibility of local transmission unlike the first spike in the midyear. The small case numbers in phase brought complacency on the part of authorities and on September 15, the Ministry of Health and Child Care reported that business hours were to be extended as "government eases lockdown" (Ministry of Health and Child Care, September 15, 2020). This complacency would see a surge in local transmissions up to a point where the growth pattern is exponential indicating a growth of new infections dwarfing existing patient figures. Previously, the Government of Zimbabwe had made it mandatory for all returnees to be tested on arrival at the ports of entry. This step was not applied to local populations.

[1] Agency refers to the actor-induced actions where the term separates it out from structurally-driven outcomes.

Given the porosity of Zimbabwean borders with some countries like Botswana (Dube, 2020), and South Africa, all the potentially positive cases that slipped through the borders would potentially trigger community spread. Thus, it is not surprising that the government's relaxed stance coincided with the second ridge on the graph with rising figures reaching 200 per day as depicted in Figure 2.

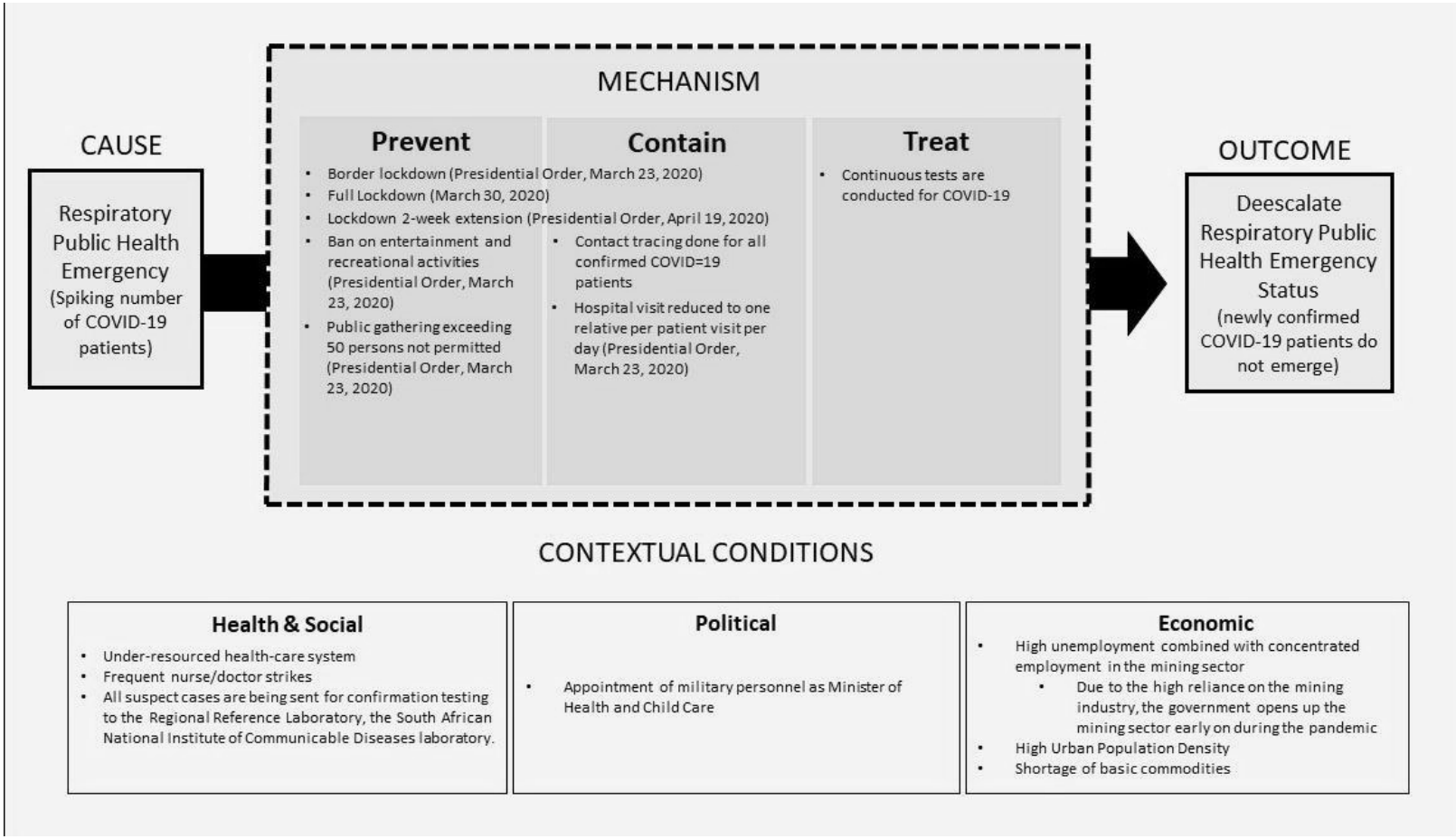
By separating out the foreign cases from the domestic cases, as depicted in Figure 3, it becomes evident that domestic contagion is well underway. Domestic cases dwarfs, foreign origin cases. Performing a cross-tabulation exercise on the domestic cases, it becomes evident that case emergence varies by province as shown in Figure 4. As for projected exponential growth patterns, it is led by the metropolitan centers as depicted in Figure 5. This is expected due to the human-to-human transfer of the virus. This is followed by Matabelend South, a province that shares the border with South Africa, which is the biggest neighboring economy.

The trends illustrate an interesting pattern especially when juxtaposed to government response mechanisms as summarized in Figure 6. The response aligns with known good practices. It engages in a draconian response of a lockdown. However, it was not airtight, as those infected and traveling from abroad were still entering the country. It is also evident that not all travelers are being accounted for. Zimbabwe's a landlocked country. There are other paths outside of official border control points where people can move in and out of the country. With the unknown origin domestic cases spiking, it hints to infected carriers actively mobile in the country.

Notable public sector responses of Zimbabwe are in its emphasis on prevention and containment. There is few treatment capacity enhancing discussions in the country. Given the known weak healthcare capacity in the country, the strategy to overcome the pandemic rests primarily on prevention and containment which utilizes resources outside of the healthcare sector. The border lockdowns utilizes customs and the military. Domestic regulation enforcement depends on security entities. Given the security background of the President and his tendency to appoint military cadres to government posts, the country's public administration capacity is skewed toward regulation enforcement rather than healthcare technical capacity. This is evident in the unusual post of the Air

Commodore Jasper Chimedza as the permanent secretary for Health and Child Care. Having an air force general run the health ministry is usual, since technical line ministry posts are staffed by technical experts since policy formulation and policy implementation troubleshooting requires technical expertise to efficiency and effectiveness. Thus, the anomaly begs the question of what policy reforms emerged following the appointment. Without further data, it suggests the continued emphasis on prevention and containment.

Figure 6: Zimbabwe COVID-19 Response Mechanism



Discussion

The relevance of context for effective governance is emphasized in an ever-globalizing world (Levy, 2014; der Wal, den Berg, & Haque, 2021). The emphasis due in recognition of the specific foundations on top which governance is exercised varies depending on idiosyncratic historical institutionalism tied with state formation and its circumstances of subsequent growth (Herbst, 2000; Levy, 2014). Although isomorphic familiar modern state structures are found across the globe, operational effectiveness varies. The question often then lies on whether the bottlenecks are in non-form related factors such as policy design, implementation procedures, or capacity of implementation units. That is the suspects responsible for the disconnect between form and function lies in the agency[1]-related instruments and activities.

A natural experiment to see this variation across different public administration entities is in their response to a pandemic caused by a common viral strand. The threat, which is the COVID-19 pandemic, and the institutional form vary marginally across different countries (Dzigbede, Gehl, & Willoughby, 2020). The variation in response effectiveness can be attributable to variation in agency response on top of existing capacity variations (Dzigbede, Gehl, & Willoughby 2020; Moon, 2020; Huang, 2020; Moloney & Moloney, 2020). This is what is captured here with details on public sector response mechanism that spurs to life with a preset trigger. Also, since pandemics are never static, responses must adjust to evolving circumstances. Thus, Zimbabwe's public sector response details preset pandemic response plan, its implementation, and its adjustment. The mechanismic description captures the essential components.

The study brings into focus Zimbabwe's initial plan which prioritizes controlling incoming populations. This is evident with the President's speech delivered on March 25, 2020 (Mnangagwa, 2020a). The prioritization justified by the predominance of the early COVID-19 confirmed cases belongs to those traveling from abroad, mostly from the U.K. and South Africa as evidenced in Figure 3. Screenings were conducted on entry points (ibid). The data suggests that the screening at official entry points, most notably at the airport, was effective when combined with a national lock-

[1] Agency refers to the actor-induced actions where the term separates it out from structurally-driven outcomes.

down that initially was imposed until April 20 and later extended for another 2 weeks into May (Mnangagwa, 2020b). However, based on rising infection rates past this period, it was clearly insufficient in identifying and separating out those infected from the rest of the population. Following the Phase 4 lockdown, the country entered a Phase 2 lockdown with less stringent restrictions. Consequently, there was an accelerated transmission since "prevention behavior slackened" (Dzinamarira, et al., 2020, p. 1). This is evident in the spiking and continuously emerging COVID-19 cases starting the month of July. A combination of factors is suspect to this trend. This may be due to opening of the mining sector from April 20 onwards is one such factor (Mnangagwa, 2020b). Precious metal, mineral products, and metal industries account for 70% of total exports of the country in 2019 (Observatory of Economic Complexity, n.d.). Thus, the prolonged lockdown would have directly impacted the country's economic status. This may also be due to those un-accounted carriers that are spreading COVID-19 in the country. It was reported approximately 7% fled quarantine and are involved in border jumping and smuggling (Mnangagwa, 2020c). One report documented that about 209 people had fled quarantine upon return from abroad (ANA Reporter, 2020). Even in designated quarantine centers, occupants seldom practiced maximum safety measures to limit person to person transmission within the facilities (Dzinamarira, et al, 2020). This is further confirmed in the President's August 5th speech, as he accounts the increase to returning Zimbabweans unable to be treated in South Africa (Mnangagwa, 2020e). Zimbabwe is a landlocked country sharing borders with South Africa, Botswana, Zambia, and Mozambique.

Border closures did not mean people did not cross through illegal points. Porous borders had a significant effect in case surges and local transmissions. The numerous undesignated ports of entry presented a serious challenge since the people using these entry points are neither documented nor tested before they mingle with other people in the society (Dzinamarira, et al, 2020). There are other unaccounted paths to enter the country outside of road stops. This combined by the infrastructural weakness of where only 36.8% of the population has access to basic hand-washing facilities including soap and water makes enforcing environmental sanitation difficult (World Bank, n.d.).

Testing is key in screening cases. Even in

places where successful containment took place, for example South Korea, testing on a massive scale, especially the "virologic polymerase chain reaction testing that detects active disease," forms a strong defense against community transmission (Walensky & del Rio, 2020). Such testing, add Walensky and del Rio, should be quick and accessible to people with visible symptoms. For Kavanagh et al. in "the absence of a vaccine or highly effective treatment, widespread testing is crucial to halting transmission and death, especially with presymptomatic transmission responsible for up to 44% of secondary infections" (2020, p. 1735). Yet in Zimbabwe, testing has not matched those countries that have reported higher cases, for example South Africa. As an example, Dzinamarira et al. observed that the two main hotspots in Zimbabwe, that is Harare and Bulawayo, had a low testing capacity although these provinces had a high density of testing sites (2020). Hence, the overall number of positive cases in the first phase may have been low because of suppressed testing strategies. Even after calls and promises for a widespread testing strategy by the President in his addresses, many areas in Zimbabwe lagged behind in testing. Dzinamarira et al. decried that the cost of testing deterred widespread testing as most countries relied on the Cepheid test kits whose cost was pegged at $19.80 per kit (2020). It would be very difficult for countries where individuals survive on less than $2.00 per day to spend the amount of money individuals would rather use for more than a week's survival. Also, the requirement that companies meet conditions for re-opening of the economy by making sure that they test their employees defeats a comprehensive mitigation plans. This is because leakages happen in the system.

The flattening in the number of cases during author-categorized Phase 3 and Phase 4 periods coincides with more aggressive measures by the Zimbabwean Government. On August 3rd, the President appoints Air Commodore Jasper Chimedza as permanent secretary of Health and Child Care (Mnangagwa, 2020d). The aggressive measures keep the COVID-19 figures low until November. This occurred amid lockdown rhetoric that underscored the role of security forces in enforcing lockdown rules as well as observing the 6 PM to 6 AM curfew which continued since its announcement on July 22nd 2020. The aggressive measures kept the COVID-19 figures low until November.

Starting November, the figures start to rise and my mid-November it becomes clear COVID-19 cases spike. The growth is

expotential in character as demonstrated in Figure 5. The metropolitan areas of Bulawayo and Harare sees the greatest growth suggesting the spread is not being controlled as effectively compared to the preceding phase. While it is difficult to attribute the surge to any single factor, Zimbabwe's socio-economic climate plays a key role in these spikes. Zimbabwe strongly relies on the informal sector and people are already food stressed with an estimated 7.7 million people experiencing food shortages in 2020 (United Nations World Food Programme, 2021). As Beltrami (2020) predicted, countries, especially the less developed, experiencing significantly high levels of food insecurity are more vulnerable to, and ill-prepared for, an epidemic outbreak. Because lockdown travel restrictions minimize people's movement, there is a high likelihood of "a total loss of income for casual [labor], vendors, minibus drivers and others reliant on daily wages" (Price, 2020, p. 4). The absence of evidence of an effective social security net that covers struggling population from the effects of lack of employment, there is a likelihood that people may defy lockdown rules to look for food. It is against this background that Price sees a strong relationship between effects of food shortages and the compulsion to defy lockdown rules in search of food at local markets (2020). If any such defiance indeed took place, it may be credible to assume that these activities were partial causes to certain upsurges of the virus at different times in the year.

Conclusion

Like every other country, Zimbabwe was not immune to COVID-19 entering its borders. Zimbabwean leadership was well aware of the challenges that it will bring. It formulated a plan based on consultation and best practices advised by the World Health Organization. However, modifications were needed in light of unique contextual conditions. Institutions and implementation capacity are products of history. In Zimbabwe's case, it meant working around a weak healthcare sector due to continued underinvestment in the past decades. Also, poor hygiene and sanitation conditions due to weak availability of piped water onto premises with soap meant handwashing, a public advisory note to prevent spread of COVID-19, was not fully implementable based on settings.

The modifications based on local conditions are reflected in the plans. There is less reporting on hospital material support. Hygiene supply support also lacks much discussion. Rather the

emphasis is on prevention and containment via social regulation. This plays to the strengths and character of the Zimbabwean government. Security capacity is high is Zimbabwe with the President from a military background and his military aides occupying cabinet positions.

The effectiveness of Zimbabwe's modified COVID-19 response is yet uncertain. Based on reported data, the government appears to be effective until November. It identified those infected entering the country. It identified the domestic population that are infected. It seems to have flattened the curve reaching up till November. However, it is of healthy skepticism on whether the figures are fully capturing the full extent of the pandemic outbreak in the country. This is because the country suffers from a high poverty rate with relatively weak access to health care facilities. The combination is ripe for unreported simply because people do not visit the health care facilities for concern over fees. Recognizing lockdown are likely to have eliminated service industry incomes, the burden of the fee will rise due to shrinking disposable incomes.

Even if the modified response was effective, it raises the question of the rising figures in November. This is still a conundrum of this study. The collected data identifies this trend, but the reasoning is still uncertain since there are no evidence of significant policy change coinciding with the time-frame. This is the outstanding homework of the study. The study anticipates that as additional studies emerge on Zimbabwe, a continued meta-study will bring the explanations into better focus.

Despite the limitations, this study provides three major contributions. First, it provides a detailed trend identification and analysis for Zimbabwe's COVID-19 situation in 2020. At the onset of the study, there was concern that Zimbabwe's pandemic response was going to be weak and the data would support that assumption. However, contrary to expectations, Zimbabwe's response was relatively contained despite the known underinvestment in the public health sector. Thus, this led to the important discussion of what exactly was Zimbabwe's pandemic response mechanism. This was captured by the study by compiling official Zimbabwe COVID-19 data.

Second, it highlights how Zimbabwe modified its public sector response based on its public administration capacity strengths and its known weaknesses in the health care sector. Third, it propels

the discussion on variant of COVID-19 responses in developing country context. It provides a suggestive framework of how to better identify the challenges by emphasizing and categorizing what we do not see. This opens up discussions on how the absences informs us on public administration capacity.

References

Aljazeera. (2020). Zimbabwe extends coronavirus lockdown by two weeks. Retrieved from Aljazeera: https://www.aljazeera.com/news/2020/4/19/zimbabwe-extends-coronavirus-lockdown-by-two- weeks.

Beach, D., & Pedersen, R. B. (2013). Process-Tracing Methods: Foundations and Guildlines. Ann Arbor: The University of Michigan Press.

Beach, D., & Pedersen, R. B. (2019). Process-Tracing Methods: Foundations and Guidelines (2nd Edition ed.). Ann Arbor: University of Michigan Press.

Beltrami, S. (2020, March 16). How to minimize the impact of Coronavirus on food security: Avoiding protectionism, monitoring prices and supporting the vulnerable through social safety nets can limit the impact of the outbreak . Retrieved from United Nations World Food Programme: https://www.wfp.org/stories/how-minimize-impact-coronavirus-food-security

Bobrow, E. A., Munson, A. J., & Davis, H. B. (2019). Evaluating Programs for Prevention of Mother-to-Child Transmission of HIV Using Process Tracing: Guide and Sample Protocol. Chapel Hill: MEASURE Evaluation.

Chikanda, A. (2006). Skilled Health Professionals' Migration and its Impact on Health Delivery in Zimbabwe. Journal of Ethnic and Migration Studies, 32(4), 667-680.

Clements, B. W. (2009). Disasters and Public Health: Planning and Response. Burlington: Butterwoth- Heinemann.

der Wal, Z. v., den Berg, C. v., & Haque, M. S. (2021). Comparative Public Administration in a Globalized World: Moving Beyond Standard Assumptions towards Increased Understanding. Public Administration Review.

Dube, M. (2020, March 24). Botswana, with No COVID-19 Cases, Closes Borders After Death in Zimbabwe. Voice of America.

Duffy, J. (1990). The Sanitarians: A History of American Public Health. Chicago: University of Illinois Press.

Dzigbede, K. D., Gehl, S. B., & Willoughby, K. (2020). Disaster Resiliency of U.S. Local Governments: Insights to Strengthen Local Response and Recovery from the COVID-19 Pandemic. Public Administration Review, 634-643.

Dzinamarira, T., Mukwenha, S., Eghtessadi, R., Cuadros, D. F., Mhlanga, G., & Musuka, G. (2020). Coronavirus Disease 2019 (COVID-19) Responde in Zimbabwe: A Call for Urgent Scale-up Testing to meet National Capacity. Clinical Infectious Diseases, 2020(ciaa1301), 1-8.

Farazmand, A. (Ed.). (2014). Crisis and Emergency Management: Theory and Practice (2nd ed.). Boca Raton, FL: CRC Press.

Gilbert, M., Pullano, G., Pinotti , F., Valdano, E., Poletto, C., Boëlle, P.-Y., . . . Colizza, V. (2020). Preparedness and vulnerability of African countries against importations of COVID-19: a modelling study. The Lancet, 395, 871-877.

Global Health Workforce Alliance. (2021). Zimbabwe. Retrieved from Global Health Workforce Alliance: https://www.who.int/workforcealliance/countries/zwe/en/

Green, A. (2018). Zimbabwe post-Mugabe era: reconstructing a health system. The Lancet, 391, 17-18. Haddow, G. D., Bullock, J. A., & Coppola, D. P. (2021). Introduction to Emergency Management (7th ed.). Cambridge: Butterworth-Heinemann.

Herbst, J. (2000). States and Power in Africa: Comparative Lessons in Authority and Control. Princeton: Princeton University Press.

Huang, I.-F. (2020). Fighting COVID-19 through Government Initiatives and Collaborative Governance: The Taiwan Experience. Public Administration Review, 665-670.

Jain, R., Budlender, J., Zizzamia, R., & Bassier, I. (2020). The labor market and poverty impacts of COVID- 19 in South Africa (CSAE Working Paper WPS/2020-14). Cambridge: Centre for the Study of African Economies.

Kavanagh, M. M., Erondu, N. A., Tomori, O., Dzau, V. J., Okiro, E. A., Maleche, A., . . . Gostin, L. O. (2020). Access to life-saving medical resources for African countries: COVID-19 testing and response, ethics, and politics. Lancet, 395, 1735-38.

Kidia, K. K. (2018). The future of health in Zimbabwe. Global Health Action, 1496888.

Kimberlin, C. L., & Winterstein, A. G. (2008). Validity and reliability of measurement instruments used in research. American Journal of Health-System Pharmacy, 65(23), 2276-84.

Landesman, L. Y. (2012). Public Health Management of Disasters: The Practice Guide (3rd ed.). Washington, DC: American Public Health Association.

Landesman, L. Y., & Burke, R. V. (2017). Public Health Management of Disasters: The Practice Guide (4th ed.). Washington, DC: APHA Press.

Levy, B. (2014). Working with the Grain: Integrating Governance and Growth Strategies in Development Strategies. New York: Oxford University Press.

Mackworth-Young, C., Chingono, R., Mavodza, C., McHugh, G., Tembo, M., Chikwari, C. D., . . . Ferrand, R. A. (2020, May 12). 'Here, we cannot practice what is preached': early qualitative learning from community perspectives on Zimbabwe's response to COVID-19. Bulletin of the World Health Organization.

Makoni, M. (2019). Doctor strikes in Zimbabwe: fighting for provision of health. The Lancet, 393, 391- 392.

Maulani, N., Nyadera, I. N., & Wandekha, B. (2020). The generals and the war against COVID-19: The case of Zimbabwe. Journal of Global Health, 10(2), 020388.

Michigan Legal Publishing. (2018). Federal Rules of Evidence. Grand Rapids: Michigan Legal Publishing, Ltd.

Ministry of Health and Child Care. (2020). CORONAVIRUS (COVID-19) UPDATE: 08 MAY 2020. Harare: Ministry of Health and Child Care.

Ministry of Health and Child Care. (2020). CORONAVIRUS (COVID-19) UPDATE: 21 MARCH 2020. Harare: Ministry of Health and Child Care.

Ministry of Health and Child Care. (2020). COVID-19 UPDATE (01/08/2020). Harare: Ministry of Health and Child Care.

Ministry of Health and Child Care. (June 6, 2020). COVID-19 UPDATE (03/06/2020). Harare: Ministry of Health and Child Care.

Ministry of Health and Child Care. (May 28, 2020). COVID-19 UPDATE (28/05/2020). Harare: Ministry of Health and Child Care.

Ministry of Health and Child Care. (May 3, 2020). CORONAVIRUS (COVID-19) UPDATE: 03 MAY 2020. Harare: Ministry of Health and Child Care.

Ministry of Health and Child Care. (September 15, 2020). Zimbabwe Covid-19 SitRep 15/09/2020. Harare: Ministry of Health and Child Care.

Mnangagwa, E. D. (2020, March 25). Address to the nation by His Excellency the President, Cde Emmerson Dambudzo Mnangagwa in the wake of the coronavirus pandemic. Retrieved from Office of the President and Cabinet: http://www.theopc.gov.zw/index.php/552-address-to-the-nation-by-his-excellency-the-president-cde-emmerson-dambudzo-mnangagwa-in-the-wake-of-the-coronavirus-pandemic

Mnangagwa, E. D. (2020, August 3). President appoints Health secretary. Retrieved from Office of the President and Cabinet: http://www.theopc.gov.zw/index.php/579-president-appoints-health- secretary

Mnangagwa, E. D. (2020, July 22). President Mnangagwa Announces New Measures & Stresses Enforcement. Retrieved from Office of the President and Cabinet: http://www.theopc.gov.zw/index.php/571-president-mnangagwa-announces-new-measures- stresses-enforcement

Mnangagwa, E. D. (2020, April 20). President Mnangagwa's Speech on Extension of Lockdown. Retrieved from Office of the President and Cabinet: http://www.theopc.gov.zw/index.php/562-president- mnangagwa-s-speech-on-extension-of-lockdown

Mnangagwa, E. D. (2020, August 5). President values lives of all Zimbabweans. Retrieved from Office of the President and Cabinet: http://www.theopc.gov.zw/index.php/578-president-values-lives-of- all-zimbabweans

Moloney, K., & Moloney, S. (2020). Australian Quarantine Policy: From Centralization to Coordination with Mid-Pandemic COVID-19 Shifts. Public Administration Review, 671-682.

Moon, M. J. (2020). Fighting COVID-10 with Agility, Transparency, and Participation: Wicked Policy Problems and New Governance Challenges. Public Administration Review, 651-656.

Mukwenha, S., Dzinamarira, T., Mugurungi, O., & Musuka, G. (2020). Maintaining robus HIV and tuberculosis services in the COVID-19 era: A public health dilemma in Zimbabwe. International Journal of Infectious Diseases, 100, 394-395.

Musarandega, H., & Chitongo, L. (2020). A Contextual COVID-19 Social Distancing Monitoring Strategy for Remote Communal Settings: Insights from Biriiri Communal Lands, Zimbabwe. African Journal of Governance & Development, 9(1.1), 309-328.

Nyazema, N. Z. (2010). The Zimbabwe Crisis and the Provision of Social Services: Health and Education. Journal of Developing Societies, 26(2), 233-261.

Observatory of Economic Complexity. (n.d.). Zimbabwe. Retrieved from Observatory of Economic Complexity: https://oec.world/en/profile/country/zwe

Price, R. (2020). Impacts of COVID-19 regulatory measures on small-scale and informal trade in Zimbabwe. Brighton: Institute of Development Studies.

Russo, F., & Williamson, J. (2011). Generic versus Single-Case Causality: The Case of Autopsy. European Journal of the Philosophy of Science, 1(1), 47-69.

Ryu, S.-K., & Chung, S.-G. (2021). Korea's Early COVID-19 Response: Findings and Implications. International Journal of Environmental Research and Public Health, 18(16), 8316.

United Nations World Food Programme. (2021). Zimbabwe. Retrieved from United Nations World Food Programme: https://www.wfp.org/countries/zimbabwe

Walensky, R., & del Rio, C. (2020). From Mitigation to Containment of the COVID-19 Pandemic: Putting the SARS-CoV-2 Genie Back in the Bottle. JAMA, 323(19), 1889-1890.

Weiss, C. H. (1998). Evaluation (2nd ed.). Upper Saddle River: Prentice Hall.

World Bank. (1993). World Development Report 1993: Investing in Health. Washington, DC: World Bank.

World Bank. (n.d.). People with basic handwashing facilities including soap and water (% of population)- Zimbabwe. Retrieved from The World Bank: https://data.worldbank.org/indicator/SH.STA.HYGN.ZS?locations=ZW

Prospective Analysis of The African Continental Free Trade Agreement: opportunities for and Challenges to Economic Integration Through Public Procurement.

Jean-Claude Mansanga Ndongo[1]

Abstract

This paper examines the link between the African Continental Free Trade Area agreement (AfCFTA) and public procurement in Africa. The AfCFTA is projected to increase opportunities for economic growth and social equity in many African countries by reducing poverty and increasing the involvement of the population in public-private partnerships. Using an interdisciplinary theoretical framework, this paper constitutes a conceptual study of the potentially beneficial impact of the AfCFTA and innovation on the public procurement field in Africa. With this study, I posit that, despite some challenges to its implementation, the AfCFTA will enhance government contracting practices and policies. This paper adds to the nascent academic research on government contracting in Africa, provides suggestions for future research, and recommends that policymakers consider the benefits of the AfCFTA on public procurement despite some challenges to its implementation.

Keywords: AfCFTA, trade agreements, domestic policies, public procurement, innovation

Introduction

January 1, 2021 marked the beginning of a new era in international trade agreements: the African Continental Free Trade Area agreement (AfCFTA) was officially launched. As the largest international trade agreement to date, the AfCFTA was conceived in 2012 and ultimately signed in 2018 during an African Union summit in Kigali, Rwanda (Kende-Robb, 2021; World Bank, 2020). The AfCFTA promotes free trade among African nations by significantly reducing tariffs and non-tariff-related trade obstacles and supporting policy and regulation changes that will ensure improved technical and sanitary conditions tied to effective trading throughout the continent (World Bank,

[1]Ph.D. Student Florida Atlantic University Jndongo2019@fau.edu

2020). The agreement provides trade autonomy to its 55 members, equips African countries with the tools to reduce poverty, and promotes social equity and inclusion by creating business and employment opportunities for marginalized groups, especially women and the youth. By reducing administrative and logistical hassles, the AfCFTA also creates a uniquely inclusive market for goods and services produced by African entrepreneurs (Kende-Robb, 2021).

The successful implementation of the AfCFTA faces several challenges such as corruption, existing economic, financial, and procurement policies based on previous agreements with international institutions, post-colonial ties to Western countries, differences in political, linguistic, and legal systems, as well as gains or losses in welfare by some countries in comparison to others due to uneven levels of development (Pasara, 2020). The different stages of development among the various members of the AfCFTA can present a significant challenge: the asymmetry in supply and demand among countries involved in trade agreements can engender higher benefits from the trade for countries that are more industrialized to the detriment of less developed ones (Kilolo, 2020).

Although the AfCFTA is an agreement among countries, it also provides benefits at the local level such as opportunities for public-private partnerships between individual African countries and the businesses and entrepreneurs within their borders. Many countries will have to overhaul their infrastructures and build processes to ensure the agreement's successful operation and sustainability. Some African local governments may rely upon existing businesses in their countries or foster the creation of new ventures to supply necessary goods and services through public procurement. Historically, international trade agreements have impacted public procurement policy at the national level by requiring that individual countries practice transparency and fairness in the public procurement procedures that will be impacted by the trade agreement. For example, chapter 19 of the Comprehensive Economic and Trade Agreement (CETA), a trade agreement between Canada and the European Union, required a greater inclusion of businesses owned by individuals of Aboriginal origins as well as reforms in industries ranging from financial services to research and development (Mauro, 2017). Similarly, Chapter 15 of the Trans-Pacific Partnership Agreement (TPP) allowed member countries to participate in each other's public procurement activities (Anderson & Pelletier, 2016).

The AfCFTA does not require individual countries to review their procurement practices (World Bank, 2020); however, the successful implementation of the agreement will create a synergy between entrepreneurial opportunities and public procurement policies in individual countries. African nations could leverage the benefits of free trade by providing

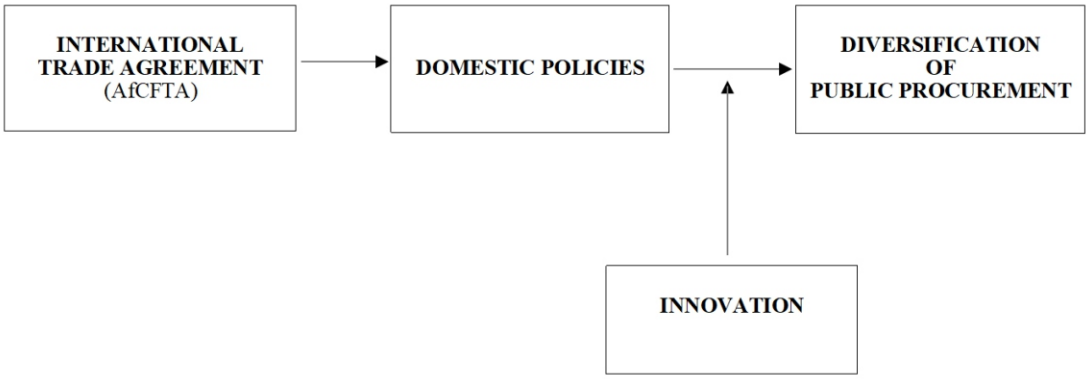
domestic small and medium-sized enterprises (SMEs) with incentives for addressing some of the existing hurdles to the country's business environment. Prioritizing government contracts for those businesses will safeguard their viability, growth, and innovative mindset while ensuring that the government activities outsourced to those firms will be completed competitively and with quality (World Bank, 2020).

This study is being done to address the dearth of research on the relationship between international trade agreements and public procurement in African countries. Additionally, given the scarcity of research on innovative and gender-based procurement in Africa as mentioned by Nyeck (2015), this paper will add to the nascent literature in those areas. I suggest that the business activities and policies that will occur after the AfCFTA's implementation will provide data for future empirical studies of public procurement in Africa. The current lack of research on this topic is partially due to a lack of data; therefore, this conceptual study constitutes a prospective approach to the impact of the AfCFTA on the broadening of public procurement activities on the African continent. In this paper, I provide an overview of the theoretical frameworks upon which this study is based, offer a set of propositions indicating my proposed research questions, develop a conceptual model, review the existing literature, and suggest recommendations for future research. It is worth noting that, although I discuss some policies currently in place in individual countries throughout the paper, I refer to the continent as an entity: my study takes a broader approach to procurement in Africa and, akin to Nyeck's (2015) study of government contracting in Africa, I do not compare countries or recommend procurement policies for individual countries.

Theoretical framework and Conceptual Model

The existing academic research on public procurement research has generated a limited number of theories as the field often borrows from other specialties ranging from economics to management (Koala & Steinfeld, 2018; Trammell et al., 2020). I aim to contribute to the theoretical discourse in public procurement by applying the following three theories to my propositions: the theory of trade agreement from the field of economics, the systems theory of public administration, and the diffusion of innovation theory from management.

Conceptual Model



I propose that the signing of the AfCFTA will impact the diversification of public procurement and that domestic policies in African countries will have a mediating effect on that relationship. Additionally, I propose that the relationship between domestic policies and the diversification of procurement activities will be moderated by innovation.

Proposition 1: the signing of the AfCFTA affects the domestic policies of African nations.

As indicated in the conceptual model above, the theory of trade agreement applies to the relationship between the AfCFTA, as an international trade agreement, and the domestic policies of the member countries. The objective of this trade agreement is its successful implantation. This goal aligns with the theory of trade agreement which suggests that, in multinational trade agreements, member countries agree on the terms and objectives of the accord as they share common interests (Bagwell & Staiger, 2002). My model is based on African countries' agreement to reduce tariffs and non-tariff barriers, emphasize gender equality, and increase employment; therefore, I suggest that these nations will enact domestic policies that will enable the successful implementation of the AfCFTA.

Proposition 2: Changes in domestic policies impacts the diversification of public procurement activities.

Systems theory has previously been used effectively in public procurement research (Prier & McCue, 2009). It is one of the main theories of public administration and it applies to bureaucracies and their interactions with the environment (Farazmand, 2002). In this study, systems theory corresponds to the mediating role of bureaucratic domestic policies of African countries on the relationship between the AfCFTA and the diversification of domestic public procurement activities.

Proposition 3: Innovation moderates the relationship between domestic policies and the diversification of public procurement activities in member countries of AfCFTA.

The third relationship in my model represents the moderating effect of innovation on the relationship between the domestic policies and the diversification of the public procurement activities in individual member nations of the AfCFTA. This relationship is grounded in the diffusion of innovation theory which implies that society, communication, and time impact the innovation process (Lundblad, 2003). That theory applies to my model as the following innovative factors improve the social context of the continent: the digitalization of public procurement by African nations, the widespread use of mobile banking well as the increasing use of innovative educational, communication, and health methods.

Literature Review

According to Thai (2001) and McCrudden (2004), although government contracting has been practiced around the globe for centuries, the field of public procurement has only been studied for approximately two decades. Further, Arrowsmith et al. (2013) noted that research on public procurement in African nations is also nascent; correspondingly, the literature on the AfCFTA is scarce due to the newness of this agreement and the resulting lack of sufficient data to perform in-depth analyses.

Scholars who have written about public procurement have focused on theory-building to cement the place of procurement within the public administration discourse (Prier & McCue, 2009; Trammell et al., 2020). Additionally, the current literature often focuses on bridging the communication gap that

sometimes exists between academics and practitioners, and it is laden with descriptive statistical information about the role of public procurement in a nation's economy or the relationship between government contracting and business growth. For instance, the literature indicates that public procurement represents approximately 10 to 30 percent of many nations' GDP and procurement reforms often result in innovation and diversification of suppliers, goods, services, and activities (Anthony, 2017; Bolton, 2016). While those assertions are helpful, they do not constitute empirical research.

Other studies on public procurement policies and practices also show that many nations have been implementing reforms to support SMEs and their integration into procurement spaces (Flynn, 2018; Flynn & Davis, 2017). Furthermore, many governments regularly promote public-private partnerships by implementing fiscal policies, subsidizing programs geared towards small and medium-sized enterprises (SMEs), and streamlining processes to foster entrepreneurship (Preuss, 2011). In a case study of British local governments, Preuss (2011) found that SMEs' entry into public procurement is facilitated by the support of government agencies and contracting officers' understanding of the mutual benefits of providing contracts to SMEs.

Public procurement in Africa

Public procurement policies and systems in several African countries continue to face large structural challenges stemming from post-colonial ties to European countries. The inadequacy and inefficiency of local infrastructures as well as a focus on the exportation of raw materials rather than on the development of transformative industries preserve exploitative procurement structures that originated during colonial times (World Bank, 2020; Arrowsmith et al., 2013; Nyeck, 2016). The public procurement landscape in many African countries is also plagued by the insufficient education of public servants, low rates of digitalization, and inadequate legal frameworks (Arrowsmith et al., 2013). Additional hurdles in government contracting occur in the involvement of SMEs: for example, In Nigeria, Kenya, and Uganda, SMEs face low opportunities of interactions with buying agencies, a dearth of knowledge about opportunities, a breakdown in communication between agencies and the private sector, the opacity of the procurement process, and corruption (Akenroye & Aju, 2013).

The African Continental Free Trade Agreement (AfCFTA)

Studies on the AfCFTA are still emergent and often consist of assessments of the trade's impact on the economy of the member countries. Furthermore, many of the publications originate from international organizations, economists, and practitioners who express their projections of the benefits and disadvantages of the AfCFTA. Some of those reports also pertain to the AfCFTA's provisions to shield nascent industries from adverse effects of tariffs and non-tariff barriers and to the trade's potential to encourage public-private partnerships that can make a significant impact on the African continent. For example, Esmel (2019) noted that individual countries could implement policies such as "public procurement lists being selectively opened to private operators and limited access to value chains, while defining a competition law that is business-enabling" (p. 1). Additionally, international experts report that the free flow of goods and services on the continent will require governmental regulations and infrastructure that can be outsourced to African entrepreneurs; this will create public procurement opportunities in the areas of manufacturing, supply chain, transportation, digital connectivity, and many other industries (World Bank, 2020; Esmel, 2019). Lastly, recent studies indicate that the AfCFTA's signing will bolster entrepreneurship, gender equality, youth employment, and innovation (World Bank, 2020).

As previously mentioned, the current literature on the AfCFTA displays a narrative character and constitutes of case studies or brief policy analyses or predictions. For example, Nwankwo & Ajibo (2020) reported that, following the AfCFTA's implementation, some countries could resort to protectionist actions to protect some of their industries from foreign competition resulting from free trade. Public procurement could be a solution to that concern as national governments could leverage the agreement and enact policies to foster innovation, encourage entrepreneurship, and support SMEs in their respective countries. Nwankwo & Ajibo (2020) also noted that the African business landscape is dominated by SMEs; those enterprises generate half of the continent's GDP and employ approximately 80 percent of the

workforce. SMEs as well as innovative and nascent firms and industries across the continent will benefit from the AfCFTA's commitment to free trade if the governments can leverage those firms' increased capacity by involving them in public procurement (Nwankwo & Ajibo, 2020).

Opportunities

I posit that the gradual implementation of the AfCFTA presents several opportunities for the diversification of government contracting on the continent through the adoption of domestic policies favorable to business creation and innovation. Many executives in the African private sector already recognize the AfCFTA's potential for helping develop the continent, creating self-reliance for African nations through business and job creation, halting political and social uprisings, and bringing peace (Bathily, 2020). Homegrown African multinational groups such as Dangote, Ecobank, and NTM have already demonstrated the potential to increase employment; additionally, initiatives such as the Tony Elumelu Entrepreneurship Programme (TEEP) which support startup firms on the continent can further assist in the establishment of a class of entrepreneurs who can become important contributors to the public procurement sector in Africa. It is also worth noting that the TEEP displays some similarities to the AfCFTA as the Programme supports innovation, combats youth unemployment, and aims at reducing gender-based social inequalities all over Africa (Togobo, 2016). The hope that the AfCFTA carries is matched by the growth in innovation as well as improvements in public procurement practices on the African continent. By the turn of the 21st century, countries such as Ghana, Ethiopia, Kenya, and Botswana had enacted procurement reforms based on the UNCITRAL Model Law (Arrowsmith et al., 2013). While the restructured policies in those countries emphasize efficient procurement costs and processes; they also encourage local industries to participate in government contracting with initiatives to end poverty, especially among women and the youth (Arrowsmith et al., 2013). Several African countries have also committed to enacting "horizontal policies" in procurement by focusing on "labour and equality, industrial development and economic growth, crime prevention and social concerns such as poverty alleviation and wealth distribution" (Arrowsmith et al., 2013, p. 370). Other nations have implemented specific reforms to include SMEs in the public

procurement realm. For example, Egypt has enacted the Small and Medium-Sized Enterprises Development Act in 2004 to allocate 10 percent of government contracts to SMEs, and South Africa has legislated initiatives to tailor advice, financing, payment methods, and contracts to SMEs (Akenroye et al., 2020). Experts also suggest that public procurement accounts for nearly half of the budgetary allocations in most Sub-Saharan African countries and that, although those activities can be subject to corruption and mismanagement, they represent an untapped area of opportunity for women entrepreneurs (Nyeck, 2015).

The AfCFTA constitutes an opportunity for many African countries to reevaluate domestic policies geared towards the empowerment of women and the youth as recent reforms have provided opportunities in business sectors in which women entrepreneurs have thrived traditionally such as transportation, social services, and agriculture (Arrowsmith et al., 2013; Nyeck, 2015). For many women, business ownership represents an opportunity to generate an income, contribute to the economy, and use skills that they have developed through previous experiences or education. African women are involved in 70 percent of the informal international trade on the continent despite the traditional trade barriers, dangers, and injustices that they face regularly (Diallo & Phoolchund, 2019). According to the Commissioner for Trade and Industry of the African Union, Ambassador Albert Muchanga, AfCFTA is one of the most appropriate tools to eradicate disparities in public procurement (Muchanga, 2020). Ambassador Muchanga called for African governments to recognize the opportunity that this agreement offers to include women-owned businesses into public procurement. He noted that, although public procurement represents a $15 trillion market worldwide, “only 1% of this goes to women-owned businesses” (Muchanga, 2020, p.45). Further, Dr. Vera Songwe, the current Executive Secretary of the United Nations Economic Commission for Africa (ECA) and Under-Secretary-General at the United Nations has highlighted the AfCFTA's considerable potential for igniting the industrial sector, empowering women entrepreneurs, tackling unemployment, and transforming the continent's business landscape (States News Service, 2019). Her call for African governments' investments in those areas represents an invitation to capitalize on the agreement by providing procurement platforms to local entrepreneurs. Aside from women,

Diallo & Phoolchund (2019) also noted that the youth, who represent approximately one-fifth of the African continent's population, have been greatly affected by unemployment. Local African governments should dedicate public procurement opportunities to that segment as well.

The expansion of public procurement opportunities created by the AfCFTA could also lead to an increase in innovation within government contracting. The AfCFTA will strengthen many industries including those working with the public sector of each country. Public institutions can adopt an entrepreneurial mindset as they partner with local businesses and practice innovation-oriented public procurement or public procurement for innovation (PPI) (Uyarra et al., 2020). PPI is "the purchase of a good that is not yet in existence or that is in existence but whose design and production will require further, if not completely new technological development, for example by means of research and development (R&D)" (Bolton, 2016, p. 4). Governments that use PPI encourage innovative concepts from their suppliers of goods and services; in many cases, contracting agencies express the need for a non-existent product or service and finance the innovation tied to the production of that service or product (Appelt & Galindo-Rueda, 2017). Furthermore, Bolton (2016) suggested that PPI encourages the development of nascent industries; this suggestion mirrors the AfCFTA's vision for intra-African trade through the development of entrepreneurship on the continent.

South Africa is one of the few African countries that have introduced PPI in their reformed public procurement policies. Some South African government agencies have begun partnering with their suppliers in the private sector for the acquisition of innovative products or services and they have started providing them with incentives to reward innovation (Bolton, 2016). However, due to the cost of some of those initiatives and a shortage of experienced contracting officers, South Africa has had difficulties implementing PPI initiatives to procurement (Bolton, 2016).

Despite the lack of measurement for the costs and benefits of PPI initiatives and the risk aversion displayed by some contracting officers on the continent, PPI initiatives bring many advantages to local economies such as increased demand for goods and services from the supplying private firm, an increased production, scalability, decreased production costs, and private firms' exposure to more

markets (Daria, 2020). Applied to the AfCFTA, these advantages will help local businesses remain viable because of the profit assurance and support of government contracting while also taking advantage of international markets as a result of the removal of trade barriers.

The impact of innovation on the African continent has been visible in many sectors; for example, several countries have seen an increase in financial inclusion due to a rise in access to cellular phones; consequently, Africa has one the highest rate of mobile money adoption which constitutes an opportunity to streamline and optimize transactions while increasing the rate of business activities (Allard & Williams, 2020). Several African countries have also become early adopters of e-government practices, notably through the implementation of Sustainable Public Procurement (SPP) programs tied to the United Nations' Sustainable Development Goals (SDGs) which aim at ensuring a better tomorrow for future generations (Adjei-Bamfo et al., 2019). The use of technology will not only improve procurement activities but can also help diversify the types of goods and services, administrative tasks that the government can procure from the private sector. The AfCFTA provides an opportunity for an interactive platform for governments' SSP initiatives and businesses' corporate social responsibility (CSR) goals. Further, African governments can capitalize on the resilience and resourcefulness of their entrepreneurs to find imaginative ways to help support the implementation of the AfCFTA. By providing SMEs with the latitude to develop new products and new processes through PPI, African governments can stimulate competition among local businesses which can engender diversification as SMEs, backed with the security of government contracting, can be more innovative (Tammi et al., 2020).

A 2020 report by the World Bank confirmed that the successful implementation of the AfCFTA will boost the growing information and communications technology (ICT) sector in Africa and further facilitate inter-national trade and communication (World Bank, 2020). Several solutions such as the partnership between Google and Tata Telecommunications Smart Africa Alliance, and Africa Digital Solutions already aim at digitally connecting African countries and further providing populations with access to the Internet which can help increase access to education, job opportunities, entrepreneurship, and e-government

practices in the public sector (Bathily, 2020). The intersection of those initiatives and the policies resulting from the AfCFTA will further help develop electronic procurement practices on the continent. Lastly, the COVID-19 pandemic has highlighted the increasing importance of innovation and exposed the pressing need for the industrial transformation that can result from the AfCFTA; this transformation will improve international trade and help individual countries in the fight against the virus as the removal of trade barriers will facilitate a greater circulation of healthcare goods, equipment, medical expertise, and healthcare staff. Public health officials and agencies in many countries can also leverage the assistance of private professionals in their countries to help establish policies and provide the government with solutions related to the fight against COVID-19 and other disasters (State News Service, 2021).

Challenges

The main challenges presented to the AfCFTA's success are its newness, large geographical footprint, unproven track record as an international agreement, and the current state of government contracting on the African continent. Additionally, the public procurement landscape in many African countries also suffers from the insufficient education of public servants, a low rate of digitalization, and inadequate legal frameworks (Arrowsmith et al., 2013). Those obstacles may impede the successful implementation of the AfCFTA and its potential impact on public procurement.

Summary

As mentioned throughout this paper, the AfCFTA represents an opportunity for greater liberalization of trade among African nations and can contribute to an increase in employment and business opportunities with an emphasis on social equality. This agreement could also result in revisions of domestic policies in African countries to foster the growth and diversification of public procurement through the revitalization of local industries in various sectors such as indigenous art, homegrown digital technology, or traditional construction methods. Given the preponderance of opportunities resulting from this agreement in comparison to anticipated challenges, I posit that the AfCFTA will positively impact the public procurement landscape on the continent.

Conclusion

In conclusion, this study will add to the burgeoning research on the field of public procurement in Africa by contributing to the discourse on the intersection of government contracting and trade agreements on the continent. My paper also contributes to existing recommendations to African policymakers to enact government contracting policies that would make the most of opportunities engendered by the AfCFTA. As my model constitutes a conceptual representation of the impact of the AfCFTA on public procurement in African countries, I believe that the eventual availability of data related to this agreement will generate empirical studies on the subject including in-depth research at the individual country level. My paper presents additional areas of opportunity: future studies could examine my research questions considering regional, linguistic, and cultural differences as well as the impact of prior international agreements between African countries and their partners. Future studies could also focus on the different business sizes and sectors that could be impacted by changes in government contracting following the AfCFTA's implementation. Lastly, future research could also discuss the impact of the African diaspora and transnational entrepreneurship on my research questions.

References:

Adjei-Bamfo, P., Maloreh-Nyamekye, T., & Ahenkan, A. (2019). The role of e-government in sustainable public procurement in developing countries: A systematic literature review [Article]. Resources, Conservation & Recycling, 142, 189-203. https://doi.org/10.1016/j.resconrec.2018.12.001

Akenroye, T. O., & Aju, O. (2013). A Taxonomy of Approaches for Promoting SMEs Access to Public Procurement Market. Journal of Enterprising Culture, 21(3), 335-357. https://doi.org/http://www.worldscientific.com/loi/jec

Akenroye, T. O., Owens, J. D., Elbaz, J., & Durowoju, O. A. (2020). Dynamic capabilities for SME participation in public procurement. Business Process Management Journal, 26(4), 857.

Allard, G., & Williams, C. (2020). National-level innovation in Africa [Article]. Research Policy, 49(7). https://doi.org/10.1016/j.respol.2020.104074

Anderson, R. D., & Pelletier, P. (2016). The Government Procurement Chapter of the Trans-Pacific Partnership Agreement: An Assessment of its Potential Impact. European Procurement & Public Private Partnership Law Review, 11(4), 270.

Anthony, F. (2017). Re-thinking SME disadvantage in public procurement [JOURNAL]. Journal of Small Business and Enterprise Development, 24(4), 991-1008. https://doi.org/10.1108/JSBED-03-2017-0114

Appelt, S., & Galindo-Rueda, F. (2017). Measuring the link between public procurement and innovation. OECD Directorate for Science, Technology & Industry. Science, Technology & Industry Working Papers, 1-82.

Arrowsmith, S., & Quinot, G. (Eds.). (2013). Public procurement regulation in Africa. Cambridge University Press.

Bagwell, K., & Staiger, R. W. (2002). Economic theory and the interpretation of GATT/WTO. American Economist, 46(2), 3.

Bathily, S. (2020). "The AfCFTA is an opportunity for companies that want to change Africa" [Article]. African Business (473), 38-40.

Bolton, P. (2016). Public procurement as a tool to drive innovation in South Africa [research article]. PER: Potchefstroomse Elektroniese Regsblad, 19(1), 1-35. https://doi.org/10.17159/1727-3781/2016/v19n0a1286

Daria, C. (2020). Buying with intent: public Procurement for innovation by provincial and municipal governments [article]. The School of Public Policy Publications, 13(18), 1-43. https://doi.org/10.11575/sppp.v13i0.69277

Diagne, I. N. E. (2019). Empowering Africa's young people in the digital economy: Africa's new open trade area has the potential to generate jobs, growth in the services market [Article]. International Trade Forum, 1-3.

Diallo, A., & Phoolchund, R. (2019). AfCFTA for more prosperity: Africa's new open trade area has the potential to generate jobs, growth in the services market [Article]. International Trade Forum, 1-4.

Dilger, R. J. (2020). SBA women-owned small business federal contracting program ([Library of Congress public edition]. ed.) [Updating Web site Bibliographies Government documents Electronic document]. Congressional Research Service.

Esmel, A.-E. (2019). Private sector has key role to play in realizing AfCFTA's promise: Trade agreement creates opportunity for investment, involvement on a continental basis [Article]. International Trade Forum, 1-4.

Farazmand, A. (2002). Modern organizations. [electronic resource]: theory and practice (2nd ed. ed.) [Bibliographies Online Non-fiction Electronic document]. Praeger.

Flynn, A. (2018). Investigating the implementation of SME-friendly policy in public procurement [Article]. Policy Studies, 39(4), 422-443 https://doi.org/10.1080/01442872.2018.1478406

Flynn, A., & Davis, P. (2017). Investigating the effect of tendering capabilities on SME activity and performance in public contract competitions. International Small Business Journal: Researching Entrepreneurship, 35(4), 449.

Kende-Robb, C. (2021). 6 reasons why Africa's new free trade area is a global game changer. Retrieved March 21, 2021, from https://www.weforum.org/agenda/2021/02/afcfta-africa-free-trade-global-game-changer/

Kilolo, J.-M. M. (2020). Country asymmetry, trade agreements, and transfers. Economics & Politics. https://doi.org/10.1111/ecpo.12156

Koala, K., & Steinfeld, J. (2018). Theory building in public procurement [Article]. Journal of Public Procurement, 18(4), 282-305. https://doi.org/10.1108/JOPP-11-2018-017

Lundblad, J. P. (2003). A Review and Critique of Rogers' Diffusion of Innovation Theory as it Applies to Organizations. Organization Development Journal.

Mauro, R. (2017, 11/01/). The Impact Of New Trade Agreements On Public Procurement. http://search.ebscohost.com/login.aspx?direct=true&AuthType=shib&db=edsggo&AN=edsgcl.512670319&site=eds-live&scope=site&custid=s8475288

McCrudden, C. (2004). Using public procurement to achieve social outcomes. In (Vol. 28, pp. 257-267). Natural resources forum: Blackwell Publishing Ltd.

Muchanga, A. M. (2020). The heart of the matter: Gender equality lies 'at the heart' of processes establishing the new open trade era in Africa, said one of its architects. (3-4), 44.

Nwankwo, C. M., & Ajibo, C. C. (2020). Liberalizing Regional Trade Regimes Through AfCFTA: Challenges and Opportunities. In (Vol. 64, pp. 297-318).

Nyeck, S. N. (2015). (Out) bidding women: Public procurement reform diffusion and gender equality in Africa [Article]. Wagadu: A Journal of Transnational Women's & Gender Studies, 14, 13-56.

Nyeck, S. N. (Ed.). (2016). Public Procurement Reform and Governance in Africa. Palgrave Macmillan.

Obeng-Odoom, F. (2020). The African Continental Free Trade Area [Article]. American Journal of Economics & Sociology, 79(1), 167-197. https://doi.org/10.1111/ajes.12317

Pasara, M. T. (2020). An overview of the obstacles to the African economic integration process in view of the African continental free trade area [Article]. Africa Review, 12(1), 1-17. https://doi.org/10.1080/09744053.2019.1685336

Preuss, L. (2011). On the contribution of public procurement to entrepreneurship and small business policy. Entrepreneurship & Regional Development, 23(9/10), 787.

Prier, E., & McCue, C. P. (2009). The implications of a muddled definition of public procurement [Article]. Journal of Public Procurement, 9(3/4), 326-370. https://doi.org/10.1108/JOPP-09-03-04-2009-B002

Rogerson, C. M. (2004). Pro-Poor Local Economic Development in South Africa: The Application of Public Procurement. Urban Forum, 15(2), 180.

Roundup: AfCFTA should be instrument for Africa's development, not just trading accord: AfCFTA Secretariat chief. (2021, 01/01/). http://search.ebscohost.com/login.aspx?direct=true&AuthType=shib&db=edsggo&AN=edsgcl.647191415&site=

eds-live&scope=site&custid=s8475288

State News Service (2021). Private Sector Key to AfCFTA Success and Africa's Recovery From COVID-19. http://search.ebscohost.com/login.aspx?direct=true&AuthType=shib&db=edsgbc&AN=edsgcl.649330869&site=eds-live&scope=site&custid=s8475288

States News Service (2019). Effective AfCFTA Implementation Can Create 2 Million Jobs for East Africa, Says Songwe. http://search.ebscohost.com/login.aspx?direct=true&AuthType=shib&db= edsgbc&AN=edsgcl.604928470&site=eds-live&scope=site&custid=s8475288

Tammi, T., Saastamoinen, J., & Reijonen, H. (2020). Public procurement as a vehicle of innovation – What does the inverted-U relationship between competition and innovativeness tell us? [Article]. Technological Forecasting & Social Change, 153. https://doi.org/10.1016/j.techfore.2020.119922

Thai, K. V. (2001). Public procurement re-examined. In (Vol. 1, pp. 9-50). Journal of public procurement.

Togobo, L.-G. (2016, 11/03/). Kenyan, Ugandan & Nigerian Start-Ups Lead African Entrepreneurship & Benefit Most From US$100m Tony Elumelu Fund. http://search.ebscohost.com/login.aspx?direct=true&AuthType=shib&db=edsggo&AN=edsgcl.468741270&site=eds-live&scope=site&custid=s8475288

Trammell, E., Abutabenjeh, S., & Dimand, A.-M. (2020). A Review of Public Administration Research: Where Does Public Procurement Fit In? International Journal of Public Administration, 43(8), 655.

Uyarra, E., Zabala-Iturriagagoitia, J. M., Flanagan, K., & Magro, E. (2020). Public procurement, innovation and industrial policy: Rationales, roles, capabilities and implementation [Article]. Research Policy, 49(1). https://doi.org/10.1016/j.respol.2019.103844

World Bank (2020). The African Continental Free Trade Area: Economic and Distributional Effects. Washington, DC: World Bank. doi:10.1596/978-1-4648-1559-1. License: Creative Commons Attribution CC BY 3.0 IGO

AJPAM SUBSCRIPTION FORM

1. I/We wish to subscribe to ……..
   Copy/copies of the AFRICAN JOURNAL OF PUBLIC ADMINISTRATION AND MANAGEMENT with effect from the …….. 20……. Issue.
   My/Our mailing address is:
   Name……..
   Address …….

2. I/We attach My/Our Banker's Order/ Standing Order of US Dollars cheque/ convertible cheque for the sum of US$.....
   (See Subscription Rates)
3. I/ We undertake to notify AAPAM of any changes of address
   Signature……..
   Subscription Forms should be returned to:

The Secretary General,
African Association for Public Administration and Management (AAPAM)
UN Avenue 132 Fuchsia close, Gigiri
P. O. Box 48677, 00100
Nairobi, Kenya
Tel: +254 0202629650/ +254 721366787
Email: aapam@aapam.org/ info@aapam.org
www.aapam.org

Subscription Rates

	Per Issue
Members of AAPAM	$ 20.00

Advertising in AJPAM

The Editorial Board of AJPAM welcomes advertisements in the Journal. Prospective clients are advised to forward their advertisements at least four months before the intended date of publication. The rates are as follows:

	Per Annum	Per Insertion
Full page	$ 300.00	$ 150.00
Half page	$ 150.00	$ 80.00
Quarter page	$ 80.00	$ 40.00

AFRICAN ASSOCIATION FOR
PUBLIC ADMINISTRATION AND
MANAGEMENT (AAPAM)

ASSOCIATION AFRICAINE POUR
LADMINISTRATION PUBLIQUE
ET LE MANAGEMENT (AAAPM)