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The political context of national digital health policy formulation: Insights from Ghana

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ABSTRACT

Globally, governments are formulating national digital health policies to guide the implementation and regulation of digital technology in their health sectors. Although sufficient evidence focusing on the technical context of formulating national digital health policies exists, research focusing on the political context of national digital health policies and the role of political actors during the development of national digital health policies is limited. This study sought to bridge this gap by investigating the political context of Ghana's formulation of national digital health policy and the role of key political actors in the policy decision-making process. The study adopted a qualitative research approach involving data triangulation of semi-structured interviews with political elites involved in the national digital health formulation process and a document analysis of Ghana's digital health policy. The study used thematic and content analyses as well as systems theory constructions to show that Ghana's digital health policy development is influenced by structured policy inputs, consistent procedures, measurable results, and strong feedback systems. The study recommends a paradigm shift from the vertical approach of national digital health policymaking to a lateral approach, which brings key stakeholders on board from the onset of the process for developing digital health policy.

Contribution/ Originality: Ghana's digital health policy does not explicitly chronicle the political components involved in its formulation. This study uniquely fills that gap by systematically revealing and documenting the political components and processes influencing the formulation of Ghana's national digital health policy.

1. INTRODUCTION AND BACKGROUND

In today's digital age, governments worldwide are increasingly embracing the efficient use of information and communication technologies (ICT) to advance both national and global development goals across critical policy domains such as transport, agriculture, health, and national security. In the health sector, prudent digital health investments are being made by local and national governments to address health sector challenges (Scott & Mars, 2013). According to the World Health Organization & International Telecommunication Union (2012), addressing these national health sector challenges and maximizing returns on digital health investments require a strategic and integrated national policy approach. Consequently, many nations have developed or are taking steps to develop national digital health strategies and policies to streamline the development, implementation, and regulation of ICT interventions in the health sector. Recognizing this, the World Health Organization & International

Telecommunication Union (2012) released a comprehensive national e-health strategy toolkit that seeks to offer specific guidance to individual countries to design and develop their own digital health strategies and policies.

Most research on digital health has focused on the context and scope of digital health policies to understand, assess, and/or explain the conceptualization and operationalization of national digital health strategies (Khoja, Durrani, Nayani, & Fahim, 2012; Mengiste, Antypas, Johannessen, Klein, & Kazemi, 2023; Scott & Mars, 2013). While previous literature has extensively delved into the technical context of digital health policy formulation, including technological infrastructure requirements and system interoperability guidelines (Kante & Ndayizigamiye, 2021; Srivastava et al., 2023), fewer studies have comprehensively probed the political context of digital health policy formulation (Scott & Mars, 2013). This narrow research focus overlooks crucial policy research recommendations by scholars like Agyepong and Adjei (2008), who argue that without analysing and understanding the political context of a policy and how to work within it, researchers and other technical actors may find inadequate evidence to support policy development and reforms. Furthermore, Aryee (2000) argues that the success or failure of a public policy, to a large extent, depends on the political context and the influence exerted by political elites within the environment. Recognising this, some researchers advocate a thorough understanding of the political context of policy development and the influential role of political elites in policy development (Agyepong & Adjei, 2008; Aryee, 2000; Grindle & Thomas, 1991).

Against this backdrop, this study builds on existing research into digital health policies, which has largely focused on the technical context of digital health policies (Kante & Ndayizigamiye, 2021; Srivastava et al., 2023), to address the understudied political context gap by focusing on the political context that shapes the formulation of digital health policies. The primary purpose of this study is to understand the political context of Ghana's digital health policy formulation environment by examining Ghana's 2010 National Digital Health Policy (Ministry of Health, 2010) and investigating the role of political elites in the policy formulation process.

Furthermore, the study's results are organized logically using systems theory concepts, including inputs, processes, outputs, and feedback. This provides structured and evidence-based insights that can help guide future research on the political context of national digital health policies. The study emphasizes the importance of early stakeholder engagement in creating inclusive digital health policies and recommends a shift from vertical to lateral policymaking during the formulation of national digital health policies.

2. LITERATURE REVIEW

Existing literature on national digital health policy formulation has predominantly focused on technical issues such as interoperability guidelines, infrastructure requirements, and system designs (Kante & Ndayizigamiye, 2021; Srivastava et al., 2023). While these studies often contribute significantly to understanding the technical prerequisites of digital health policy formulation, they fail to analyze the broader political context in which digital health technologies operate. For instance, while Scott and Mars (2013) and Khoja et al. (2012) extensively examined digital policy frameworks, both studies sparsely explored the influence of political dynamics and political actors in the formulation of digital health policies. This political context gap limits the applicability of these studies to real-world policy development, where technical feasibility must align with political priorities.

To address this gap, this study analyses the political context of digital health policy formulation by offering evidence-based perspectives on the importance of political alignment and support for digital health policies.

3. SYSTEMS THEORY AS AN ANALYTICAL FRAMEWORK FOR POLICY FORMULATION

The systems theory is a cross-disciplinary paradigm that has been adopted over the years to understand a system as a whole rather than as a collection of individual units. It is a broad term that is used to describe the entire realm of knowledge and application of systems. Consequently, there seems to be no universal definition for systems theory since the definition varies according to the field of study in which research is undertaken. According to Boulding

(1956), the systems theory is "the skeleton of science in that it aims to provide a framework of systems on which to hang the flesh and blood of particular disciplines and particular subjects in an orderly and coherent manner." Subsequently, numerous variations and applications of the systems theory, such as cybernetics, organizational theory, game theory, and information theory, have been developed and applied over time. These variations have undoubtedly contributed to understanding the organization and interrelatedness of systems in both society and nature. In the field of political science, Easton (1957) work on political systems has significantly contributed to the application and adoption of the systems theory. According to Easton (1957), political systems are unique when compared to biological or mechanical systems due to their ability to transform themselves, their goals, activities, and internal organizational structures. Easton (1957) understood the study of politics to be concerned with "the understanding of how authoritative decisions were made and executed on behalf of a society". He proposed that political life could be viewed holistically as "a system of interrelated activities", rather than piecemeal. Easton (1957) stated, "There is already implicit the notion that each part of the larger political canvas does not stand alone but is related to each other part; or, to put it positively, that the operation of no one part can be fully understood without reference to the way in which the whole itself operates … It is valuable to adopt this implicit assumption as an articulate premise for research and to view political life as a system of interrelated activities."

The systems theory, as applied in this study, was used to effectively understand and explain the political environment and processes that shaped the formulation of Ghana's digital health policy. The theory was applied during the data collection phase of the study to guide the design of the interview schedule. The interview schedule was used to capture the core components (input, processes, output, outcome, and feedback) of the process for formulating Ghana's digital health policy in the context of the political environment. The discussion section of this paper employs the systems theory to logically present the study's findings.

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4. NATIONAL DIGITAL HEALTH POLICIES

Growing expectations, changing demographics, and resource limitations demand prudent digital health investment to address significant health sector challenges. Additionally, the sustainability of these solutions rests on the development and implementation of robust, evidence-based digital health policies and strategies (Scott & Mars, 2013). According to the World Health Organization & International Telecommunication Union (2012), "learnt experiences" suggest that maximizing the benefits of ICT for health requires a strategic and integrated national policy approach. Maina and Singh (2020) posit that the importance of national digital health policies is as follows.

- National digital health policies facilitate the growth and maturity of the e-health sector.
- These policies contribute to the effective implementation of digital health initiatives.
- National digital health policies support the case for funding e-health interventions.
- National digital health policies promote innovation.

In view of this, many developed and developing nations have developed or are developing various digital health strategies and policy documents to streamline the development, implementation, and regulation of ICT interventions in the health sector. For instance, Australia has developed a comprehensive e-health strategy called the National Digital Health Strategy (Australian Digital Health Agency, 2018). Similarly, African countries such as South Africa (Department of Health, 2019), Kenya (Ministry of Health Kenya, 2016), and Ghana (Ministry of Health, 2010) have developed national digital health policies to shape the regulation and implementation of digital health initiatives within their borders.

Ghana is regarded as one of the first African countries to develop a national e-health policy (Maina & Singh, 2020). The policy was introduced in 2010 to harness the potential of ICT to improve the health status of Ghanaian citizens (Ministry of Health, 2010). The policy serves as the national policy document for the development and regulation of e-health and mobile health (m-health) interventions in the country. Ghana's National E-Health Strategy is premised on four pillars, namely:

- The regulatory framework for data management.
- Health capacity.
- Health equity.
- Paperless records and reporting (Ministry of Health, 2010).

These four thematic pillars are each defined and expounded based on specific aims and key implementation actions. For instance, the health equity pillar focuses on the deployment of m-health to address health inequalities. It categorizes m-health as a subset of e-health and situates the national m-health policy within the broader National E-Health Strategy. The policy prioritizes the use of m-health technology and telemedicine to improve access to healthcare services, particularly in rural and underserved communities (Ministry of Health, 2010). The strategy states that a key benefit of Ghana's e-health strategy is to "[i]improve access and availability of healthcare services in remote or rural areas and that through mobile telephony or telemedicine, healthcare consumers will reduce the need for travel and referral to a secondary or tertiary health institution" (Ministry of Health, 2010).

It is worth noting that Ghana has other ICT frameworks that provide agency- and sector-wide guidelines on e-health and m-health, such as the ICT for Accelerated Development (ICT4AD) Republic of Ghana (2003) the Ministry of Health (2005), and very recently the Ghana Health Service (2023), by the Ghana Health Service. Although these agency-related policy documents provide some guidance on digital health in Ghana, they are narrow in their scope as they relate to a specific ministry or agency and do not provide an overall national digital health focus.

4.1. Ghana's Digital Health Policy: A Document Analysis of Ghana's National E-Health Strategy

A document analysis of Ghana's National E-Health Strategy was done to help find key respondents who could give important information about how Ghana's national digital health policy was made and to learn about the political climate in which the policy was made and put into place. The following subsections present the results of the document analysis.

4.1.1. Vision and Objectives

Recognizing the transformational role of digitalization in healthcare delivery, the government of Ghana, through its MoH, developed the National E-Health Strategy to address healthcare challenges and improve overall health outcomes for Ghanaian citizens. The strategy was released in 2010 to provide a comprehensive framework for e-health development in the country. The policy reports Ghana's e-health vision and objectives as follows.

4.1.1.1. The Vision

Ghana's e-health vision is stated as follows:

"E-health will enable the delivery of quality, affordable and up-to-date health services in an equitable and timely manner by enhancing communication and the use of information for planning, managing and delivering health services" (Ministry of Health, 2010).

4.1.1.2. Goals and Objectives

The goals and objectives are as follows.

- Improving access to information in support of safe, efficient, and effective health care delivery in a timely manner and at the point of need.
- Guiding the deployment of information and communication technology at all levels of the health system.
- Enabling the communication and exchange of information among multi-disciplinary health teams to provide better coordinated and seamless healthcare.
- Improving the quality and efficiency of decision making in clinical practice through better access to health information, clinical evidence, and clinical decision-support tools.

- Provide access to appropriately packaged information to enable individuals to make informed health choices to manage, control, and improve personal health outcomes in all parts of the country.
- Improve reporting of data, health activities, and health outcome information in a timely and accurate manner and thus facilitate evidence-based decision making at all levels.
- Provide standards and outline processes for ensuring interoperability, data safety, and information confidentiality in all aspects of electronic data management within the health sector.
- Put in place structures that will improve the governance of investment in e-health solutions in the health sector and ensure maximum benefits for such investments" (Ministry of Health, 2010).

4.1.2. Governance Mechanism

The policy document identifies the MoH as the principal government body for setting the national e-health agenda, priorities, and implementation guidelines. The cardinal responsibility of the MoH, as stated in the e-health strategy document, is:

" The development of specific e-health solutions will be predominantly driven by the Ministry of Health in collaboration with stakeholders and solution vendors. We anticipate that these arrangements will facilitate the creation of e-health solutions tailored to specific health sector requirements. The government, through the Ministry of Health, will therefore have overall responsibility for setting the national e-health agenda and priorities. The government will be responsible for directly funding, implementing, and operating e-health infrastructure. The government will also stimulate and encourage the market to develop quality, scalable e-health solutions that are standards-compliant and aligned with national priorities." (Ministry of Health, 2010).

To achieve this mandate, the strategy calls for the creation of an interministerial committee and a technical advisory agency to make its duties easier to carry out. The strategy outlines the role of this committee as follows:

"An Interagency Ministerial Committee will, therefore, be put in place and will be responsible for setting the overall national e-health direction and priorities. It will also review and approve e-health projects, monitor the progress and outcomes of the e-health strategy, and review implementation priorities as needed. The committee will advise the Minister of Health on e-health investment cases. A Technical Advisory Committee will also be established to provide support for e-health initiatives and to test compliance with national standards. This committee will report to the Interagency Ministerial Committee." (Ministry of Health, 2010).

4.1.3. Implementation Strategy

Ghana's e-health strategy document outlines and explains the strategic implementation roadmap of its national e-health agenda. Table 1 highlights the implementation timelines of key milestones.

Table 1. Implementation plan.

Key milestone	Implementation timeline
Establishment and functioning of e-health coordinating structures	First 18 months
Adoption of a regulatory framework	First 18 months
Establishment of m-health pilot	Within the first two years
Broadband connectivity at all levels	Within the first three years
E-health capacity development	By the third year
Establishment and functioning of telemedicine pilot.	Within the first three years
Initiation of electronic public interaction with the health sector	By the fourth year
Piloting of an electronic patient records system in selected facilities	By the fourth year
Rolling out of a web-based district health information system	By the fourth year

Source: Ministry of Health (2010).

5. RESEARCH METHODOLOGY

A qualitative research approach was followed, triangulating both primary and secondary data. This method was chosen over other econometric and quantitative models because the main goal of the study was to understand and interpret the political context of digital health policies. This meant giving a detailed account of the roles and points of view of political elites in the creation of digital health policies. Hence, the focus of the study was not to measure or test a specific phenomenon; the research also did not aim to achieve generalizability or replicability. Therefore, the qualitative methodology adopted for this study was most appropriate, as it was more effective in capturing the experiences and perspectives of political actors involved in the formulation of digital health policies. The document under review, which is Ghana's national e-health policy document, formed the basis for understanding the context of Ghana's National E-Health Strategy and was used to identify key respondents who would be able to provide firsthand information on formulating national digital health policy within the political context. The document revealed Ghana's MoH, supported by the Ministry of Communications, as the government ministry responsible for developing national digital health policies in Ghana. In light of this, permission was sought from the respective ministries, and key officials (identified as elites) of these ministries involved in the process of formulating digital health policy were recruited and interviewed through a snowballing technique until saturation was reached after the 11th interview. The snowball sampling technique minimized the difficulty associated with persuading this elite group of respondents to participate in the interviews. The initial contact aided in convincing other elite respondents to be part of the interviews after being fully assured by the researcher of the anonymity of research participants in this study. Semi-structured interviews were conducted with an interview guide developed based on systems theory constructs (input, process, output, outcome, and feedback) that were in line with this study's theoretical conceptualization. This questionnaire guided the asking of pertinent policy development questions in line with the research objective of the study, which was to explore the key factors and forces within the political environment that shaped the agenda-setting and policy formulation process of Ghana's digital health policy. With the respondents' permission, the interviews were audio recorded, and with the aid of computer-assisted qualitative data analysis software (NVivo), codes and themes were developed from the verbatim interview transcripts using thematic analysis. The themes were categorized into systems theory constructs to enhance the logical presentation of the findings.

Consequently, the use of data triangulation, which in this study involved the collection of data from more than one data source (interviews and policy documents) and using more than one method of analysis (document and thematic analyses), enhanced the validity and reliability of this study. Because the study involved interviewing humans, ethical clearance was sought and obtained from the College of Business and Economics Research Ethics Committee of the University of Johannesburg.

6. DATA ANALYSIS AND RESULTS

As mentioned earlier, both primary and secondary data were collected and analyzed in this study. Thematic analysis was used to analyze the primary data. This section describes the results obtained from the semi-structured interviews.

6.1. Thematic Analysis

With the aid of the NVivo software, the interviews were transcribed, and after undertaking initial coding on a semantic level (close to the data), 12 initial codes emerged, as listed in Table 2.

Table 2. Initial codes.

Code 1	Financial resource allocation
Code 2	Human resource mobilisation
Code 3	Justification and evidence gathering
Code 4	Stakeholder engagement
Code 5	Policy approval process
Code 6	Policy effectiveness
Code 7	Infrastructure development
Code 8	Service delivery quality
Code 9	Technical capacity enhancement
Code 10	Infrastructure expansion
Code 11	Policy review and update
Code 12	Stakeholder collaboration improvement

In line with the research objective, four themes were developed from the initial codes, namely resource requirements, policy formulation process, policy implementation, and areas requiring improvement. These themes were further grouped into constructs of the systems theory to ensure a systematic presentation of the findings.

Table 3 presents the themes developed from the initial codes that emerged from the data analysis conducted. The themes are further categorized into constructs of the systems theory to ensure a systematic presentation of the study's findings.

Table 3. Theme development.

Component	Theme	Code
Input	Resource requirements	Financial resource allocation
		Human resource mobilisation
Process	Policy formulation process	Justification and evidence gathering
		Stakeholder engagement
		Policy approval process
Output	Policy implementation	Policy effectiveness
		Infrastructure development
		Service delivery quality
Feedback	Areas requiring improvement	Technical capacity enhancement
		Infrastructure expansion
		Policy review and update
		Stakeholder collaboration improvement

The themes are discussed below.

Resource requirements identify the human and financial resources required in the development and implementation of digital health policies, as captured in the following participant statements:

"Financially, the government of the day should be able to approve that policy and ensure that resources are allocated to it. Some policies that are done might need human resources" (Participant 6).

"We have some advantages when it comes to the development partners [DPs]. We have many DPs. We have a lot of civil society organizations that show interest in some of these areas. In the policy development process, once we identify the gaps and write a concept note, we engage with a development partner who, in my opinion, may align with our goals. Apart from the development partners, we also have the UN agencies—that's the WHO, UNICEF, and UNFPA—who also support us in some of these processes" (Participant 2).

The policy formulation process describes the steps involved in formulating a digital health policy. The steps, as articulated by the interviewees, include:

- Policy justification.
- Evidence gathering.
- Stakeholder engagement.

- Approval processes.
- Policy communication and dissemination.

The interviewees explained these steps as follows:

"Before policies are reviewed or formulated, there should be the need for the justification. And the justification can come by way of evidence within society for the need. And when this justification is profound, then you begin to formulate a policy to close that gap" (Participant 1).

"You know, policies are for people, and so if you don't engage the right stakeholders, our implementation becomes a challenge. Therefore, we are capable of providing guidance on the appropriate processes they should employ. First of all, get evidence. Then you constitute a technical working group. The technical working group brings together the subject matter expertise. We occasionally present an initial draft, which we then refine over time. Then you engage a stakeholder in what you have done. You send your work to the Health Sector Working Group and others for review and ministerial approval after stakeholder engagement. After becoming a policy, you must submit it to the cabinet for approval (Participant 1).

"You take it to cabinet because of government support. If you develop a policy and it do[es]n't have political support, it dies a natural death. So as soon as it goes there and it is approved, it means you have government support to implement the policy" (Participant 1).

The theme of the policy implementation framework delves into the process involved in implementing a digital health policy by discussing the effectiveness of the existing national digital health policy (Ministry of Health, 2010). The interviews touched on stakeholder engagement, infrastructure development, and service delivery, as captured below.

> *"So, policies: we can look at policies as the intent aspect of it and policy as practice. The intent aspect of policy is the idea and the concept that it propounds. And for the m-health and e-health, basically, it's about the convenience of care to the population, wherever you are"* (Participant 11).

"The question of how efficient or effective the policy has been arises, as you cannot implement it alone. So, the bottom line is that it is also part of the way the policy formulation process was conceptualized. If it was conceptualized as a lateral policy or a vertical policy, then you might not have many people, many stakeholders, coming on board. And you know, with respect to public policy, if you don't bring somebody on board, even from the conceptual stage, and you want that person at the tail end to support you to implement, they won't do it" (Participant 7).

"The infrastructural system in the country is also a determinant of the effectiveness and efficiency of digital health policy implementation. For instance, Ghana has a colossal population density. Therefore, the country can leverage mobile telephony infrastructure to make e-health packages efficient and far-reaching" (Participant 1).

Areas requiring improvement highlight areas where further improvement in terms of technical capacity, infrastructure expansion, policy review, and stakeholder collaboration is required. The interviews conducted revealed this.

"I must say that there are policy frameworks, but when you look at the reference period and the year those policies were made, you could see that a lot has gone on. I think we should start with the health sector and possibly review our ICT security to see where we can go from there" (Participant 5).

"There is also the issue of supporting the infrastructure base of digital health. For instance, the telecommunication companies have a very advantageous position to support the health sector in carrying out our e-health agenda by providing the required telecommunication network infrastructure" (Participant 5).

"The other thing is that there is the need for people to build capacity in the digital health space" (Participant 2).

"There is a need for more collaboration on those fronts. The support systems for the health technology, e-health, and m-health come from outside the health sector. And that is why I am saying that these days you don't do vertical policies; you do lateral" (Participant 1).

7. FINDINGS AND DISCUSSION

This study's findings are presented logically based on constructs from the systems theory. This offers a systematic understanding of the various political components of this study. Organizing the discussion in this way gives credence to Easton (1957) assertion that "there is already an implicit notion that each part of the larger political canvas does not stand alone but is related to each other part; or, to put it positively, that the operation of no one part can be fully understood without reference to the way in which the whole itself operates … It is valuable to adopt this implicit assumption as an articulate premise for research and to view political life as a system of interrelated activities". The discussion in this section is presented based on the systems theory constructs (input, process, output, and feedback) as illustrated and explained in Figure 1.

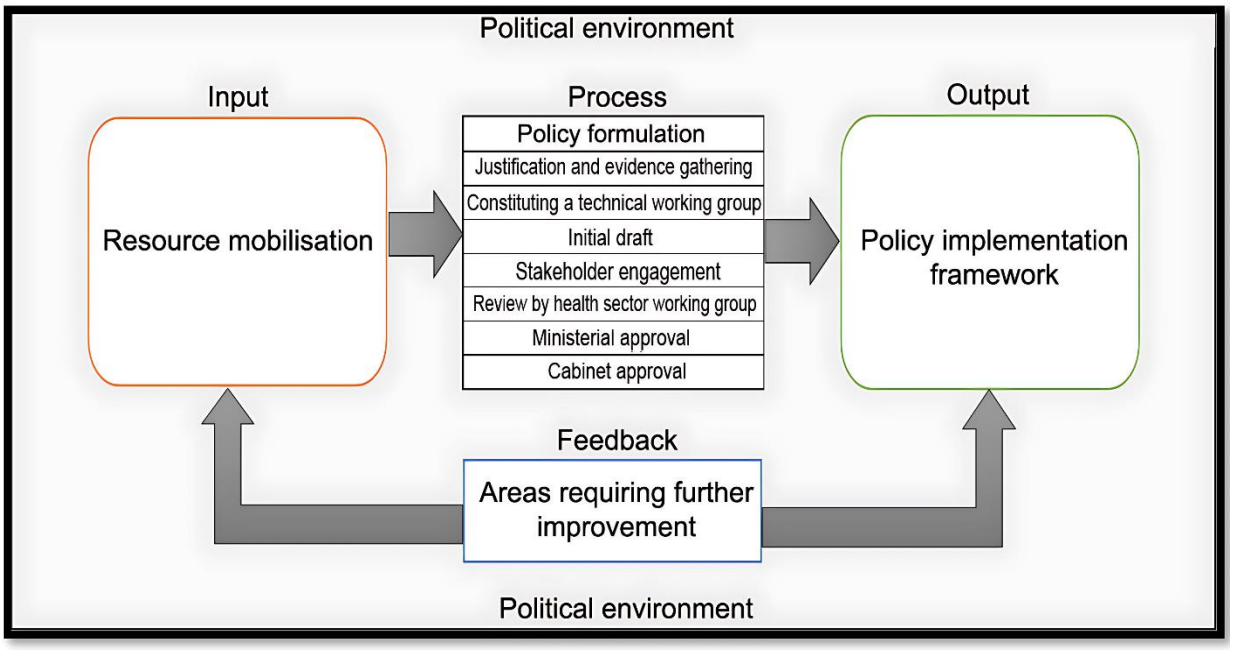

Figure 1. Application of the systems theory in this study.

7.1. Input

The objective of this study required understanding the resources, such as technical assistance, financial resources, and communication resources, that go into the formulation of a digital policy, using Ghana's approach to formulating e-health policy as a case study. The theme developed based on the findings was *resource requirements*, where the findings revealed that financial resources to support digital health policy formulation come from the government and development partners who show interest in this area. In terms of technical resources, the e-health policy strategy document mandates the MoH to establish an interministerial committee and a technical advisory agency to provide the requisite technical assistance to the MoH during the formulation and implementation of digital health strategies. Human capital for the formulation and implementation of the policy comes from the MoH, as aptly articulated by the study's participants and as stated in Ghana's National E-Health Strategy. The study, therefore, established a mix of human capital, technical assistance, and financial resources as the inputs required for the formulation and implementation of digital health policies, as demonstrated in this political context. This finding is consistent with previous studies by Scott and Mars (2013) and World Health Organization & International Telecommunication Union (2012). These studies highlighted that adequate funding, technical expertise, and human capital are key elements in the formulation of national digital health policies (Scott & Mars, 2013; World Health Organization & International Telecommunication Union, 2012).

7.2. Process

This element of the system is responsible for generating the intended outputs based on the inputs that have been agreed upon. In relation to this study, the *policy formulation process* of Ghana's digital health policy was identified as the systematic steps involved in converting inputs (human capital, technical assistance, and financial resources) into an output (national digital health policy).

Although Ghana's Ministry of Health (2010) does not explicitly chronicle the steps involved in digital health policy setting, interviewing political elites revealed the following steps:

1. Justification and evidence gathering: The interviewees indicated that before a national digital health policy is formulated or reviewed, there ought to be justification or evidence within society to trigger the process.
2. Constituting a technical working group: After the need has been established, a technical working group, which involves bringing together experts and relevant stakeholders, is formed.
3. Initial draft: After constituting the technical group, a policy draft is prepared by the Policy, Planning, Monitoring and Evaluation Unit of the MoH in consultation with the relevant stakeholders.
4. Stakeholder engagement: A thorough stakeholder consultation is conducted on the initial draft to enrich and refine the policy document.
5. Review by the Health Sector Working Group: An interviewee recounted that *"[a]after doing the stakeholder engagement on what you have done, you shoot it through the system, where the Health Sector Working Group and others look at it, and it goes to the minister for approval" (*Participant 2).
6. Ministerial approval: After the review process, the policy document goes to the Minister of Health for approval.
7. Cabinet approval: The final stage of the digital health formulation/review process was stated by a key participant of the study as mandatory cabinet approval. The participant categorically stated: *"You take it to cabinet because of government support. If you develop a policy and it doesn't have political support, it dies a natural death"* (Participant 1).

The sequential and chronological steps outlined above illustrate the essence of political support at various stages of the policy formulation process. This finding reinforces Aryee (2000) assertion on the critical influence of political elites in public policy success.

7.3. Output

A system's output is the result of processing an input. This study sought to understand the process and inputs involved in developing a national digital health policy. It was evident from the collected and analyzed data that Ghana's e-health policy, just like any other national digital policy, went through systematic stages of inputs and processes before it officially became a national policy. These processes resulted in a detailed and comprehensive e-health policy with a clear vision, objectives, and an implementation plan, as depicted in the content analysis conducted for the study. Additionally, the thematic analysis revealed the *policy implementation framework* as the output generated by the political system. The interviewees generally asserted that the desired output was not just the policy document but the proper implementation of the guidelines enshrined in the national policy for digital health. This finding revealed that a well-coordinated digital health formulation process produces a well-structured digital health policy document. This aligns with recommendations by the World Health Organization and the International Telecommunication Union for the formulation of structured and actionable digital health policies that reflect the unique context of every country (World Health Organization & International Telecommunication Union, 2012).

7.4. Feedback

According to the systems theory, the feedback mechanism is the process of comparing a system's actual output to its desired output. The interviews conducted for this study assessed feedback on Ghana's digital health policy within the political environment, aligning with the study's main objective. The thematic analysis of the responses to the interview question posed to the respondents resulted in *areas requiring further improvement* as the dominant theme, and this formed the basis for the study's contributions and recommendations, as discussed in the concluding section of the study. The study's contributions and recommendations addressed the limited political context literature gap in existing digital health policy studies Khoja et al. (2012), Scott and Mars (2013), and Mengiste et al. (2023) proposed evidence-based recommendations aimed at improving Ghana's digital health policy framework.

8. CONCLUSION

This study explored the key factors and forces within the political environment that shaped the agenda-setting and policy formulation process for Ghana's digital health policy. By adopting a combination of document analysis (Ministry of Health, 2010) and interviewing elites, this study investigated how ideas travel through the political system to become a national digital health policy. The findings revealed that the political environment in which digital health policies operate consists of interrelated components, including structured policy inputs, procedural consistency, tangible outcomes, and robust feedback mechanisms. By systematically formulating and presenting evidence-based digital health policy benchmarks that can be tailored to different political and health system contexts for broader applicability and impact, the findings of this study serve as a foundational guide for countries developing or refining their digital health policies.

9. CONTRIBUTION, RECOMMENDATIONS, AND LIMITATIONS

9.1. Contribution of the Study

9.1.1. Methodological Contribution

The data triangulation method used in this study enhanced the credibility and robustness of the results by combining document analysis with semi-structured interviews with key informants. The study's results were based on both policy documents and first-hand accounts of key policy actors. The application of systems theory constructs also ensured clarity and coherence in the presentation of the study's findings and provided a systematic understanding of the political environment within which digital health policies are formulated. This structured presentation of findings, which consists of inputs, processes, outputs, and feedback, provides a clear, cohesive framework for analyzing the political components involved in digital health policy formulation and reinforces Easton (1957) recommendation of a holistic approach to understanding the interrelated activities of political systems.

9.1.2. Policy Contributions

The study made evidence-based contributions regarding the key state policy actors in the formulation of digital health policies. Their recommendations emphasized a paradigm shift from the vertical approach of policymaking to a more lateral approach, which brings key stakeholders on board from the onset of the policy development process. This position is consistent with Scott and Mars (2013)'s viewpoint and ensures an inclusive policy that addresses the needs of various segments of a country's population.

9.1.3. Contribution to the Literature

By focusing on the political context of policy formulation in Ghana, this study contributed to filling a literature gap in this area of digital health policy research by highlighting the political dynamics and political actors in the formulation of digital health policies. This study focused on the importance of political alignment and support for digital health policies. Exploring this research dimension also provided a new perspective on future research in the

field of digital health governance and enriched existing knowledge on formulating national digital health policies. In conclusion, the study fills the limited political context literature gap identified in previous digital health policy research (Khoja et al., 2012; Mengiste et al., 2023; Scott & Mars, 2013; Srivastava et al., 2023).

9.2. Recommendations

9.2.1. Review of Ghana's Digital Health Policy

The study's document review analysis revealed that the reference point of Ghana's digital health policy (Dated 2010) predates modern technological trends, such as the adoption of artificial intelligence in healthcare. Therefore, the policy will require a review in order to keep up with the fast-evolving technological landscape. Additionally, a review of Ghana's current national digital health policy will make it consistent with the recommended guidelines for formulating digital health policy by WHO-ITU (World Health Organization & International Telecommunication Union, 2012).

9.2.2. Leveraging External Expertise from Inception

This study found that the political hierarchy within the health sector heavily relies on technical assistance from experts and stakeholders outside the health ecosystem during the development and approval of national digital health policies. However, the policy formulation process engages these experts and stakeholders either in the middle or towards the end. It is therefore recommended that these collaborations and engagements take place from the onset of the policy development process to facilitate the development of robust national digital health policies. A universal and broader application of this approach will enhance the robustness of new digital health policies and improve the efficiency of existing ones.

9.2.3. International Collaboration

Due to globalization and support from foreign partners, there is a need for more cross-country and cross-ministry collaborations to enrich efforts to develop national digital health policies through knowledge sharing, cross-country technical assistance, and inter-country resource mobilization. International collaborations could foster the transfer of knowledge and the benchmarking of international best practices in digital health policy formulation and implementation.

9.2.4. Inclusive Policy Design

The study highlighted the need for national digital health policymakers to move from traditional vertical policymaking to lateral policymaking, which embraces collaboration and integration across different stakeholders and segments of the population. This is because the evidence presented in this study revealed that the diverse nature of stakeholders and population segments requires an inclusive digital health policy that caters to the needs and interests of all these groups and also addresses issues of disparities and inequalities in the digital health space. The study recommends that nations adopt this inclusive approach when formulating digital health policies. This process will ensure that the outcome of digital health policies is accessible, relevant, and equitable for everyone.

9.3. Study Limitations

9.3.1. Scope and Setting

The need for this study was as a result of the difficulty of locating literature on the political context of developing and setting agendas for national digital health policies in developing nations, especially Ghana. It is therefore limited in terms of its scope, which exclusively assessed the political context of formulating national digital health policy, and in its setting, which exclusively focused on Ghana. Caution must thus be exercised when extrapolating the findings

to other settings; rather, the study's research methodology must be systematically applied to the unique context of the country being studied to generate similar results.

9.3.2. Focus of Analysis

The study focused extensively on policy formulation and very little on policy implementation. Future research could explore the barriers and facilitators of implementing national digital health policy to provide a more detailed understanding of the policy process.

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REFERENCES

Agyepong, I. A., & Adjei, S. (2008). Public social policy development and implementation: A case study of the Ghana National Health Insurance scheme. *Health Policy and Planning*, *23*(2), 150-160. https://doi.org/10.1093/heapol/czn002

Aryee, J. R. A. (2000). *Saints, wizards, demons and systems: Explaining the success or failure of public policies and programs.* Paper presented at the Inaugural Lecture at the Amegashie Auditorium School of Administration, University of Ghana, Accra, Ghana.

Australian Digital Health Agency. (2018). *National digital health strategy. Australian Digital Health Agency.* Retrieved from https://www.digitalhealth.gov.au/

Boulding, K. E. (1956). General systems theory—the skeleton of science. *Management Science*, *2*(3), 197-208. https://doi.org/10.1287/mnsc.2.3.197

Department of Health, R. o. S. A. (2019). *National digital health strategy for South Africa 2019–-2024.* Retrieved from https://www.health.gov.za/wp-content/uploads/2020/11/national-digital-strategy-for-south-africa-2019-2024-b.pdf

Easton, D. (1957). An approach to the analysis of political systems. *World Politics*, *9*(3), 383-400. https://doi.org/10.2307/2008920

Ghana Health Service. (2023). *Policy and strategy on digital health 2023–2027.* Retrieved from https://ghs.gov.gh/wp-content/uploads/2023/04/POLICY%20&%20STRATEGY%202023-2027.pdf

Grindle, M. S., & Thomas, J. W. (1991). *Public choices and policy change: The political economy of reform in developing countries.* Baltimore, MD: Johns Hopkins University Press.

Kante, M., & Ndayizigamiye, P. (2021). Internet of medical things, policies and geriatrics: An analysis of the national digital health strategy for South Africa 2019–2024 from the policy triangle framework perspective. *Scientific African*, *12*, e00759. https://doi.org/10.1016/j.sciaf.2021.e00759

Khoja, S., Durrani, H., Nayani, P., & Fahim, A. (2012). Scope of policy issues in eHealth: Results from a structured literature review. *Journal of Medical Internet Research*, *14*(1), e34. https://doi.org/10.2196/jmir.1633

Maina, A. M., & Singh, U. G. (2020). *Why national ehealth strategies matter: An exploratory study of ehealth strategies of African countries.* Paper presented at the Proceedings of the 2020 International Conference on Electrical and Electronics Engineering (ICE3) (pp. 670–-675). IEEE.

Mengiste, S. A., Antypas, K., Johannessen, M. R., Klein, J., & Kazemi, G. (2023). eHealth policy framework in low and Lower Middle-income countries; a PRISMA systematic review and analysis. *BMC Health Services Research*, *23*(1), 328. https://doi.org/10.1186/s12913-023-09325-7

Ministry of Health, G. (2005). *Health sector ICT policy and strategy*. Retrieved from https://www.moh.gov.gh/wp-content/uploads/2016/02/Health-Sector-ICT-Policy-and-Strategy.pdf

Ministry of Health, G. (2010). *National e-health strategy*. Retrieved from https://isfteh.org/

Ministry of Health Kenya. (2016). *Kenya national ehealth policy 2016–-2030*. Retrieved from https://repository.kippra.or.ke/bitstream/handle/123456789/1786/2016-2030%20Kenya%20National%20E-Health%20policy.pdf?sequence=1&isAllowed=y

Republic of Ghana. (2003). *The Ghana ICT for accelerated development (ICT4AD) policy*. Retrieved from https://nita.gov.gh/theevooc/2017/12/Ghana-ICT4AD-Policy.pdf

Scott, R. E., & Mars, M. (2013). Principles and framework for eHealth strategy development. *Journal of Medical Internet Research, 15*(7), e2250. https://doi.org/10.2196/jmir.2250

Srivastava, D., Van Kessel, R., Delgrange, M., Cherla, A., Sood, H., & Mossialos, E. (2023). A framework for digital health policy: Insights from virtual primary care systems across five nations. *PLOS Digital Health, 2*(11), e0000382. https://doi.org/10.1371/journal.pdig.0000382

World Health Organization & International Telecommunication Union. (2012). *National eHealth strategy toolkit*. Retrieved from https://iris.who.int/handle/10665/75211