

# Bridging Policy and Practice: A Content Analysis of Health Data Governance for Insurance Efficiency in Saudi Vision 2030

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## Abstract

The Kingdom of Saudi Arabia is currently on a vigorous healthcare transformation mission in line with its strategic plan, Vision 2030. In this study, a qualitative content analysis of five policy documents that form the basis of health data management and insurance efficiency in the Saudi healthcare ecosystem is introduced. With a rigorous analysis of Vision 2030, Ministry of Health Digital Health Strategy, Council of Health Insurance regulations and reports, and the Health Sector Transformation Programme, this paper determines emerging policy architecture to govern health data and critically analyses the mechanism of implementation and gaps that persist. The review has indicated that although Saudi Arabia has developed detailed strategic frameworks that require the sector to be governed by the data, interoperability standards, and unified health information exchange using the Nphies platform, there are still major problems with the translation of policy directives on an operational level in hospitals. The results indicate a gradual maturity of regulatory policies involving the division of payer, provider and regulators functions although it points out the necessity of improving the technical specifications and the standard requirement of data format. The study is relevant to comprehending how developing countries are building health data governance in the accelerated setting of digital transformation and provides a range of implications to the hospital administrators, policymakers, and health informatics professionals working at the borders of data governance and insurance efficiency.

**Keywords:** Health Data Governance, Saudi Vision 2030, Digital Health Transformation, Health Insurance, Interoperability, Nphies, Policy Analysis.

## 1. Introduction

Health data governance has become one of the most acute healthcare system performance factors, especially as countries are driving agendas of digital transformation that completely restructure the relationships among patients, providers, payers, and regulators (Alsahafi & Gay, 2018). This change is happening in the context of the ambitious vision of reforming healthcare in the turn of the Kingdom of Saudi Arabia Vision 2030, which is a national strategic plan in the country that makes healthcare the key contributor to the appearance of a vibrant society, a prosperous economy, and a nation with ambitious goals (Kingdom of Saudi, 2016). The point of health data governance and insurance efficiency is a very tricky area of policies, which needs to be aligned by various governmental bodies, technical systems should be standardised, and privacy, security, and quality factors should be taken into consideration. The Saudi healthcare industry does have unique problems that make efficient data governance especially impactful.

The health care needs of the population also keep getting stronger with the number of people rising to 39.4 million by 2030 with the expected increase over the years in prevalence of non-communicable diseases like diabetes that is projected to impact 8.4 million individuals by 2030 and on top of that, there is the ageing demographic profile of the population (Health Sector Transformation, 2021). At the same time, the Kingdom aims at curbing the growth in healthcare spending, minimising the duplication of services, improving the quality performance, and shifting towards a treatment-focused model towards the prevention and value-based approach. The above goals cannot be attained unless effective data governance models are in place so that the process of identifying beneficiaries, exchange of information, claims and decision making are done efficiently (Alharbi, 2018).

The given paper considers the policy framework of health data and insurance performance in Saudi Arabia by systematic review of five documents used as the basis of

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this framework. The study will address three interrelated research questions, namely: First, what policy frameworks has Saudi Arabia instituted in order to manage health data throughout the healthcare ecosystem? Second, what are the uses of these frameworks in the view of the particular needs of insurance effectiveness and claims management? Third, which implementation gaps still exist between strategic policy directive and operational requirements on the level of hospital?

This analysis is not only relevant to Saudi context. With the growing number of developing countries becoming interested in speedy digital health transformation, the realisation of how policy frameworks develop, change, and enable practise provides ample lessons in how health systems can be strengthened worldwide (World Health, 2021). The Saudi experience is especially educative in terms of the extent of investment and the reduced time span in which the changes are supposed to be implemented, as well as the overall scope of the transformation agenda.

## 2. Contextual Background and Policy Landscape

### 2.1 Vision 2030 as Strategic Foundation

The Saudi Vision 2030 is the strategic document upon which other policies of health sector base their mandate and direction. Vision 2030 was introduced in 2016 and outlines the goals of the Kingdom in the economic, social, and governance aspects, making healthcare one of the key components of a vibrant society with satisfied citizens living productive life cycles (Kingdom of Saudi, 2016). The Vision formulates clear goals such as growing life expectancy to 80 years, at least, improving needle striking position of the Kingdom on E-Government Index to one of the top five countries in the world, and making the government more efficient by developing effective and transparent governance systems.

The healthcare strategy contained in the Vision reflects on greater trends of privatisation, efficiency, and digital transformation. It specifically demands the creation of the personal medical insurance to enhance accessibility and corporatization of healthcare delivery by transferring government hospitals to corporations that are competing with the non-state one (Kingdom of Saudi, 2016). The conceptual basis of this division of roles where the government assumes regulatory and supervisory functions defines the further reforms that separate payer, provider and regulator functions. The focus on the growth of e-government to healthcare, the implementation of cloud-based applications, data sharing systems, and enhanced

control over the online service provision are the indications of the prioritisation of online infrastructure as a facilitator of health system goals.

However, Vision 2030 is used as a roadmap and not a working guide. Although defining strategic intent to transform health care, it lacks specific data governance frameworks, interoperability guidelines, and technical specifications of health information exchange (Hassounah et al., 2020). This feature is part of the essence of the document to be a national vision statement, and it introduces an important existing disconnect between aspirational goals and the implementation means that the further policies had to fill.

### 2.2 Institutional Architecture for Health Data Governance

The Saudi health data governance environment is characterised by a set of multiple governmental agents that have dissimilar mandates that connect to each other in a specific way. The Ministry of Health is the main regulator, which is no longer the provider and regulator, but more of a super regulator that oversees, sets standards, and monitors compliance (MOH, 2020). The National Health Information Centre is charged with the responsibility to handle electronic health information networks and the setting up of rules of health information exchange. Mandatory health insurance implementation, provider accreditation, and monitoring of the Nphyes platform to exchange claims fall under the jurisdiction of the Council of Health Insurance (Council of Health, 2023). The Saudi Data and Artificial Intelligence Authority issues general advice on governance of data, which can be applied in all sectors, whereas the National Cybersecurity Authority sets standards and requirements of security that healthcare organisations need to meet.

This multi-institutional setup has presented opportunities and challenges to the health data governance. Although the division of roles in specialised organisations is necessary, it enables specialised skills and specific emphasis on particular elements of the data governance problem. At the same time, it requires large coordination tools to guarantee the policy consistency, absence of duplication, and absence of coverage gaps in the regulatory context (Altuwaijri, 2020). The policy documents considered as a part of this study indicate current attempts to understand the institutional roles and create such governance frameworks which may go beyond the organisational borders.

### 3. Methodology

The present study uses the qualitative content analysis of policy documents when investigating the new model of health data management and efficiency of insurance in Saudi Arabia. Document analysis is a relevant methodological choice of studying policy framework as

official documents are primary sources which represent institutional stand points, mandatory requirements and policy priorities (Bowen, 2009). The sequential examination of various documents makes it possible to define convergent themes, developmental trends, and unresolved gaps throughout the whole policy.

*Table 1: Document Corpus Characteristics*

Document	Source Institution	Date	Pages	Primary Focus
Saudi Vision 2030	Council of Economic and Development Affairs	2016	85	National strategic framework
Digital Health Strategy Framework	Ministry of Health	Dec 2020	~140	Digital health governance and programs
Claims Management Regulation	Council of Cooperative Health Insurance	2023	17	Insurance claims requirements
Annual Report 2023	Council of Health Insurance	2023	~180	Implementation status and metrics
HSTP Delivery Plan	Vision Realization Office	Sep 2021	~85	Health transformation initiatives

The analogue procedure entailed the repetitive coding of document materials based on the themes that pertain to the health information governance and insurance performance. Original codes were developed inductively after reading documents, and they were later narrowed by constant comparison between sources. Data governance structures, interoperability and integration requirements, insurance and claims processing, privacy and security standards, initiatives in digital transformation, and governance structures were the key categories of key codes. The analysis also aimed not only to describe the content of documents, but synthesise the results of the work based on the sources and topic areas and tensions and critically assess the sufficiency of policy provisions in fulfilling proclaimed goals.

### 4. Findings and Analysis

#### 4.1 Data Governance Framework Development

The discussion shows the gradual evolution of health data governance systems throughout the policy documents in which more recent sources are more specific and operational in nature. Vision 2030 sets the requirement of a data-enabled transformation of healthcare with nothing said about the governance dynamics, with

further documentation successively operationalising that requirement.

The Ministry of Health Digital Health Strategy (December 2020) is the most elaborate statement of the data governance requirements. The document directly requires the Digital Health of the Ministry to develop sector-wide framework of digital health data governance, as well as set and implement standards and policies of privacy and security of health data in accordance with applicable national legislation (MOH, 2020). This requirement is applied to the observation and adherence to the set policies and requirements in all healthcare organisations. The Strategy is linked to data governance as the necessary aspect of attaining its strategic objective of empowering a secure, integrated, and data-driven health ecosystem (MOH, 2020, p. 71).

Notably, the Digital Health Strategy places data governance as being part of the data value chain that consists of data storage and retention, data quality, data sharing, and data management (MOH, 2020). This breadth implies the realisation that governance must address data throughout its lifecycle, and not the process of collecting or exchanging data. It is also mentioned in the document that there is a requirement of alignment with National Data

Management office and National Health Information centre due to the multi-institutionality aspect of data management

as required in Saudi environment.

*Table 2: Thematic Coding Matrix Across Documents*

Governance Theme	Vision 2030	MOH Digital Strategy	CCHI Regulation	CHI Report 2023	HSTP
Data Governance Framework	X	✓	Partial	✓	Partial
Interoperability/HIE	X	✓	✓	✓	✓
Insurance Claims Requirements	Partial	Partial	✓	✓	✓
Privacy & Security Standards	Partial	✓	✓	✓	✓
Digital Transformation	✓	✓	X	✓	✓
Unified Health Record	X	✓	X	X	✓
Governance Structure	✓	✓	✓	✓	✓

Note: ✓ = Comprehensively addressed; Partial = Mentioned but not detailed; X = Not addressed

Table 2 presents strategy that outlines particular strategic goals containing measured key performance indicators pertaining to data governance. Objective 2.1 is focused on making sure that there is the availability and compliance of digital health data and interoperability standards, which will be measured in the percentage of published policies and guidelines against the target and the rates of compliance with data value chain policies among vendors and healthcare facilities (MOH, 2020, p. 85). Such framing places data governance into the category of performance of health systems that can be measured and held accountable.

#### 4.2 Health Information Exchange and Interoperability

The Nphies platform formation can be considered the most tangible reflection of interoperability infrastructure of the Saudi health data ecosystem. It is created as a result of combining the formerly distinct health information exchange and insurance claims processing systems as it is manifested that clinical and financial information flows need an integrated infrastructure (Council of Health, 2023). The Council of Health Insurance Annual Report 2023 identifies Nphies as a programme that the Council oversees its implementation and seeks to share the information, data, and transactions associated with health insurance involving service providers, insurance businesses, claims management firms, and the Council in a manner that complies with insurance data standards, and in a safe and reliable electronic form (Council of Health, 2023) p. 15).

This definition identifies Nphies as the established tool to provide standardised data exchange among the health insurance ecosystem, talking specifically of insurance data standards and security requirements in table 3.

The Annual Report provided in 2023 states that the implementation has already been made in terms of the Nphies coverage achieved in the healthcare sector, i.e., 93% of infrastructure was deployed (Council of Health, 2023). Research in the Report finds that Launch Nphies Platform is a strategic initiative that has completed 92% of the work, and related issues in the development of data infrastructure and introduction of a single authoritative source of truth are in progress. These indicators imply that there is significant achievement of operational health information exchange but there is still work required on implementation.

#### 4.3 Insurance Efficiency and Claims Processing

The insurance claims processing regulatory framework demonstrates the highest operational specificity of all the governance areas that have been examined and corresponds to the transactional nature of claims management and the established presence of the Council of Health Insurance as the sector regulator.

The Claims Management Regulation sets its timeline requirements so that the workflow of claims is structured (Council of Health, 2023). The service providers should present claims within 90 days after the service date and this presents a time frame within which claims may be prepared

*Table 3: Implementation Status of Key Digital Health Initiatives (2023)*

Initiative	Completion Rate	Strategic Relevance
Nphies Platform Coverage	93%	Claims exchange infrastructure
Nphies Platform Launch	92%	National HIE operationalization
Digital Maturity Enhancement	90%	Sector-wide digital capability
Cyber Security Portfolio	96%	Data protection compliance
Data Infrastructure Development	80%	Foundation for data governance
Provider Classification & Accreditation	63.66%	Quality standards enforcement
Single Source of Truth	In progress	Data integrity assurance

Source: Compiled from Council of Health Insurance Annual Report 2023

and presented. With a settlement period under 60 days of payment cycle expectations, insurance companies need to fulfil claims after receiving that report. Contested disputes should be solved in 30 days giving a channel that disputed matters are addressed without undetermined time. These

operational parameters are generated by these temporal requirements which have to be included in the workflow design and performance management by hospital billing departments.

*Table 4: Claims Processing Timeline Requirements*

Process Stage	Timeline	Regulatory Reference	Operational Implication
Claims Submission	Within 90 days from service date	Article 9	Hospital billing workflow design
Claims Settlement	Within 60 days from receipt	Article 40(5)	Payment cycle expectations
Dispute Resolution	Within 30 days	Article 21(6)	Contested claims management
Coverage Verification	Prior to service	Article 7(2)	Pre-authorization processes

Source: Compiled from CCHI Claims Management Regulation

The Regulation also outlines documentation needs of legitimate claims, which are supported by documents, like invoices, prescriptions, physician reports and referrals and also by identifying and verifying a beneficiary (Council of Cooperative Health, 2020). This documentation standard provides minimum requirements in data contained in claims to be processed, and implicitly creates a definition of what will be needed in data capture at the point of care. Healthcare providers need to gather and store a set of designated information elements to facilitate further submission of claims to establish operational relationships between clinical documentation and financial processes. Claims processing is contextualised (under more general financing reform goals) as the Health Sector Transformation Programme. The Programme projects the Centre of National Health Insurance to be a federal organisation charged with the duty of improving the value and quality of healthcare by strategically buying services provided

by healthcare providers (Health Sector Transformation, 2021) p. 62). One of the functions that are under special consideration within the e-health effort is the authorisation of service costs, patient accounts, revenue cycles and claims management, which makes claims processing efficiency one of the aims of the digital health investment (Health Sector Transformation, 2021), p. 65).

#### **4.4 Privacy, Security, and Compliance Frameworks**

The presence of privacy and security terms can also be found in several documents under analysis, which confirms the awareness of the fact that data governance must provide the protection aspect as well as the consideration of access and exchange. The regulatory framework is shown in compliance with the national requirements and international standards with the specifics of the implementation.

The Digital Health Strategy sets strategic priorities of

growing “secured access to health information, with the relevant privacy controls,” which explicitly balances the access and protection imperatives (MOH, 2020) (p. 78). One of the key performance indicators is the proportion of healthcare facilities that are in adherence to cybersecurity, specifically the National Cybersecurity Authority Essential Cybersecurity Controls (NCA-ECC), the policies of the Department of Cyber Security of the Ministry of Health, and the standards of high security involving HIPAA and ISO 27799 (MOH, 2020) p. 85). This multi-standard strategy is an expression of the global investment standard of the Kingdom but still in consonance with the national regulatory standards.

Council of Health Insurance Annual Report 2023 states that on its cybersecurity portfolio initiative, it achieves 96% of success, which means that it has made significant strides on security implementation at the level of sector oversight (Council of Health, 2023) p. 41). The Report recognises cybersecurity and health data protection as the part of Data and Digitalization strategic branch along with unified electronic health records and virtual care models (Health Sector Transformation, 2021) p. 72). This positioning will incorporate security as part of the overall digital transformation agenda and not as a distinct compliance area.

#### 4.5 Digital Transformation and E-Health Strategy

*Table 5: Policy Gap Analysis Summary*

Requirement for Hospital Data Governance	Policy Status	Evidence Source
Strategic policy direction	Complete	Vision 2030; HSTP
Data governance framework mandate	Complete	MOH Digital Strategy (p. 60)
Interoperability platform (Nphies)	Complete (93% coverage)	CHI Report 2023
Claims documentation requirements	Complete	CCHI Regulation Art. 1(23)
Claims processing timelines	Complete	CCHI Regulation Art. 9, 40(5)
Privacy and security standards	Complete	MOH Strategy; CHI Report
Hospital-level technical specifications	Partial	Not detailed in analyzed documents
Detailed data format standards	Partial	Referenced but not elaborated
Consent management protocols	Gap	Not addressed in analyzed sources

## 5. Discussion

### 5.1 Policy Coherence and Evolutionary Development

The evaluation shows that there exists a high degree of policy coherence among the five documents despite the

E-health is best described as the effective, safe utilisation of information and communication technologies to facilitate health and its associated goals through the Health Sector Transformation Program, whereby e-health is defined as the effective, safe use of information and communication technologies to support health and its related objectives (including healthcare services, health monitoring, health literature, health education, knowledge and research) (Health Sector Transformation, 2021) p. 63). This definition creates wide coverage of digital health investment beyond the clinical systems to other activities related to health as a whole.

The HSTP pinpoints several advantages that it expects e-health investment to be having concerning the governance of data and efficiency of insurance. These are known as safer and more effective services provided by full access to the health status of the patient and diagnostic information; greater productivity among healthcare practitioners due to automation of the administrative process; effective and integrated systems that facilitate the better integration across facilities and information sharing; and the creation of a new knowledge industry that leverages health information assets (Health Sector Transformation, 2021) pp. 64-65). Automation of the articulation of productivity is directly related to the goals of insurance efficiency since simplified administrative is lower in relation to the cost of preparing and processing claims.

variations in their institutional origin, time periods, and their focus on functionality. Vision 2030 sets strategic direction, which will be further implemented through the Health Sector Transformation Programme, Digital Health

Strategy, and Council of Health Insurance instruments are in response to particular regulatory demands aligned with the wider transformation agenda (Aldosari, 2017). This coherence is indicative of good translation of national vision into sector policy, facilitated by the governance structures such as the Vision Realisation Office and inter ministerial coordination structures.

The trend observed in the evolution of documents indicates developmental process of policy. Documents on aspirations and strategic intent are written earlier, whereas those nearer the operations are given gradually. The annual report 2023 reporting of implementation metrics suggests the shift of policy formulations to platform implementation/executive with indication of measurement of progress in platform deployment, expansion of coverage and capacity development (Council of Health, 2023). This trend implies the maturing of the policy environment that is shifting towards the implementation and institutionalisation phases. However, the occurred analysis also indicates tensions in the policy framework that should be managed on a constant basis. The decoupling of payer, provider and regulator roles, which is one of the key principles of the transformation agenda, poses coordination issues regarding data governance across these functional boundaries (Almalki et al., 2011). Provider generated patient information is to approach payers to process claims and to regulators to monitor quality, demanding a governance structure that goes beyond institutions. Although there are documents that recognise this need to coordinate, cross-institutional governance mechanisms are not quite developed as compared to intra-institutional provisions.

### ***5.2 Implementation Gaps and Operational Challenges***

Although the strategies are well defined in details, the analysis shows that there are systemic gaps between articulation of policies and operational definition of the same especially at the hospital level. Although in documents, there are requirements on data governance frameworks, interoperability standards, and quality requirements, the elaborate technical specifications which would be used to implement the information system in hospitals are not detailed greatly within the sources under analysis.

The practical implications of this gap are on the healthcare facility administrators mandated with the roles of making sure that the policy requirements are followed (Weber et al., 2014). Devoid of detailed data format standards, the hospitals will find themselves in uncertainty over the

technical specifications that their systems should meet in order to achieve successful Nphies integration. In the absence of functioning guidelines of data governing, facilities have to derive high-level policy specifications to local-level procedures without any authoritative direction. Such an imposition can create disparities in practises across the institutions, which can jeopardise the goals of standardisation that policy frameworks are trying to attain. The 80% data completion of infrastructure development programmes indicates that the issue is still being remedied (Council of Health, 2023). In the same manner, the Data Quality Maturity Index as one of the strategic key performance indicators shows that there is focus on data quality as an implementation priority. Nonetheless, operational specification, implementation support, and compliance verification mechanisms must remain the focus in the process of transitioning the policy to practise.

### ***5.3 Implications for Hospital Data Governance***

The policy framework that has been examined in this paper generates both requirements and possibilities of hospital data governance. Hospitals are functioning in a more detailed regulatory framework mandating regard to data administration structures, interoperability basic principles, privacy and security provisions, and claims processing methods. At the same time, the focus on the value-based care, quality measurement, and the use of evidence-based decision-making make data governance a strategic asset allowing hospitals to enhance their results (Kruse et al., 2016).

The implementation of the hospital data governance needs to focus on various dimensions according to the policy framework. The quality of data needs to be maintained so that data inlet at the point of care is capable of supporting clinical decision support, processing claims, reporting quality and conducting research. The integration of the systems should facilitate a free flow of information among facilities and integrate with applications outside the facility such as Nphies to exchange claims and the unified health record to provide longitudinal information about patients. The balance between the clinical and administration information needs and the protection against privacy invasion and security needs should be the access controls. The cluster-based care model as discussed in the Health Sector Transformation Programme develops further governance issues. With the increase in spread of hospitals in the form of clusters that cater to around one million people, data governance should consider the scope of data

governance beyond each facility to include primary care, general hospitals, and specialty services that are integrated systems (Health Sector Transformation, 2021). This is necessitated by governance structures that deal with data exchange within clusters, uniformity in standards across the different facilities and coordination systems that govern the flow of information across the care continuum.

## 6. Strengths and Limitations

The strengths of this research are such that it consists of systematised analysis of primary policy reports, the coverage of the regulatory environment through five primary sources, and thorough thematic coding, which allows the synthesis of cross-documental results. Evidence of the implementation to complement the policy analysis is the inclusion of the evidence of the 2023 Annual Report. However, constraints are worth being considered. The dependency on official documents immobilise policy as stated rather than policy as performed which might ignore the implementation challenges being faced in the facility level. The versions of the documents written in the English language might not be able to obtain all the subtle elements that are contained in the original Arabic writing. In addition, both analytical focus does not include the stakeholder viewpoints that would provide insight into an interpretation and reception of the policies within the healthcare ecosystem.

## 7. Conclusion

In this policy document analysis, Saudi Arabia has developed detailed strategic measures of health data governance in line with transformation goals in the vision 2030. Nphies platform has a coverage of 93 percent, regulations of claims processing identify timelines and Digital Health Strategy requires governance structures across the sector. Nonetheless, permanent discrepancies between strategic policy and specifications at an operational level of the hospital demand the presence of attention. The next wave of research ought to look into the experiences of facility level implementation and the views of stakeholders to lay an assessment on how policy frameworks can be converted into practise within the fast changing Saudi Arabian healthcare ecosystem.

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